Decision making and dental implant treatments in Saudi Arabia

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By:

Abdullah Ali H Alzahrani

Academic Unit of Dental Public Health - Department of Oral Health and Development

School of Clinical Dentistry

The University of Sheffield

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Abstract

Background: Little is known about dentist-patient interactions when engaging in decisions to have dental implants. Indeed, the process by which patients are selected for implant therapies is poorly understood. Although different models of decision making have been used to examine the decisions made in medical consultations these have yet to be explored in relation to the decisions to have dental implants. Likewise the role of power in the decision making process has never been explored in any depth. The aim of this study was to explore the decision making process associated with providing patients with dental implants.

Methods: This study involved a cross-sectional ethnographic study using participant observation of dental consultations and follow-up semi-structured interviews of dentists and patients. Convenience sampling was used to select a wide range of consultations. Data were analysed using the framework method, inductive thematic analysis and typology strategy of analysing qualitative data.

Results: Three dentists and thirty-two patients contributed in this study. No implant consultation involved a full shared decision making. Elderly patients 'above 55 years' with lower education levels tended to experience more paternalistic and interpretative decision making in their consultations. It was also found that power operated in the consultations through the use of authority, influence, manipulation, coercion and hidden decisions in the consultations.

Conclusions and clinical implications: Improving the quality of healthcare and cutting undesirable outcomes are central advantages of shared decision making. Respecting patients' autonomy, facilitating discussion on treatment options and gaining a better understanding and evaluation of patients' preferences, needs and values are critical if the desire is to employ shared decision making in implant consultations. Reducing the misuse of power is also important. This might be achieved by a range of factors including increasing patients' awareness, encouraging patients' participation their consultations and focussing training on dentist interaction skills amongst other things.

Keywords: SDM, power, implantation, decision making, ethics, ethnography, patient-dentist interaction, cultural influences, patient autonomy, clinical authority.

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List of Abbreviations

Abbreviation	Description
SDM	Shard Decision Making
DI-SDM	Dental Implant coding system for examining the Shared Decision Making
GDC	General Dental Council.
GDPs	General Dental Practitioners
OHrQoL	Oral Health related Quality of Life
IAN	Inferior Alveolar Nerve
MBR	Marginal Bone Resorption
PCM	Patient-Centred Medicine.
RIAS	Roter Interaction Analysis System
DAST	Guimond and colleagues Decision Support Analysis Tool
RPAD	Rochester Participatory Analysis Decision Making Scale
DAS-O	Decision Analysis System for Oncology
DEEP-SDM	Details of Essential Elements and Participations in Shared Decision Making

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Chapter (1)

Introduction

Chapter one: Introduction

1.1. Literature Review

The use of dental implants has expanded greatly in the last two decades. For example, from 2009 to 2013, the number of dental implants and oral surgeries that were performed at the Saudi Ministry of Health hospitals increased by 22% and to ~204,000 implant surgeries (Saudi Ministry of Health, 2013, p213). Current results from several European countries including Italy, Germany, Spain and France reveal that more than one million implants were inserted (Jokstad, 2009, p77). Similarly in the United States, from 2000 to 2005, a fivefold growth in dental implants was identified. More than one million dental implants are placed annually in the United States and this figure is expected to increase by 14% annually in the following years (Misch, 2008, p8).

This increase in the number of the implants placed over recent years highlights the importance of exploring not only the advantages and disadvantages of this technology but how practitioners and patients are arriving at decisions to have implants. This is particularly important if we take into consideration that the answer is not straight forward. Several models of decision-making have been found to be employed within medical consultations. These include the paternalistic, informed and shared decision making models (Wirtz et al., 2006). This thesis is about how decisions to have dental implants are made including what approach dentists might be adopting to undertake implant therapy with their patients in Saudi Arabia.

The subsequent sections of this review will start by providing a brief background of the kingdom of Saudi Arabia where the current study was conducted. Then the advantages, disadvantages and empirical evidence available in relation to dental implant treatments will be explored. Following this the approaches to decision making, patient-doctor communications, and power within medical consultations will also be introduced.

1.2. Background of Saudi Arabia

The kingdom of Saudi Arabia is the largest part of the Arabian Peninsula and the Middle East countries. Its borders shared with Oman, Iraq, Qatar, Bahrain, the United Arab Emirates, Kuwait, Yemen and Jordan (Bowen, 2014, p 2-6). According to the latest census of the Saudi Ministry of Health, the Saudi population is about 30 million citizens. Table 1 below describes and compares demographic, health, and mortality key indicators of the kingdom of Saudi Arabia with other developed countries including the United Kingdom and the United States of America (Saudi Ministry of Health, 2013, p 13-15, World Health Oragnisation, 2012, p 52-94).

Table 1 Demographic, health and mortality key indicators of Saudi Arabia, UK and USA

Indicator (both sexes male and female)	*Saudi Arabia*	*United Kingdom*	*United States of America*
Demographic Indicator	*Rate (%)*		
Annual population growth rate	2.7	0.65	0.75
Total fertility rate	2.81	1.90	2.10
Life expectancy at birth (years)	75	79	80
Health Indicator	***Rate Per 1000 population***		
Dentists	0.42	2.4	0.62
Nurses	5.15	10.13	9.82
Pharmacists	0.73	0.66	0.89
All Hospital Beds	2.16	3.3	3.0
Mortality Indicator	***Rate Per 1000 population***		
Crude birth rate	23.8	12.2	13.9
Crude death rate	3.8	9.1	8.1
Infants mortality rate	8.0	5.0	7.0
Under 5 mortality rate	9.0	5.0	8.0
Maternal mortality rate	1.4	1.9	2.1

Islam and Arab traditions are the cultural background that forms the behaviours and attitudes of the Saudis. All Saudis are Muslims and believe on one God that is 'Allah'. All Muslims such as Saudis revere 'Allah' who is honourable by his omnipotence, creatorship, and holiness. Saudis as Muslims originate their morals, ethics, values, conceptions, standards, legislature and laws from 'Allah' alone (Bjerke and Al-Meer, 1993). Accordingly, Islam considerably shapes Saudi culture and health care.

Saudis as Muslims believe in predetermination and the incidence of illness to the will of Allah. They do not commonly see disease as a form of punishment, however they commonly see it as a reparation of their iniquities or immoralities (McKennis, 1999). Moreover, Saudis are extremely encouraged to visit the sick. They commonly travel long distances to visit their sick relatives who have admitted for quite minor surgeries. It is not surprising if the patient's room is

accumulated with a lot of family members, friends, relative and neighbours that may cause enough delay with delivering proper health care. However, Saudi patients may considered discharging the visitors from their rooms by the nurses or physicians as disrespectful and embarrassing behaviours (al-Shahri, 2002). It can be concluded that Islam and Arab traditions form the Saudi culture and health. This consequently may or may not have influences on the decision making process about the implant therapy in Saudi Arabia.

1.3. Dental Implants

This section focuses on the advantages and disadvantages of dental implants as reported in the literature. This involves considering aspects of oral health related to quality of life, the survival of implants, patient satisfaction, social factors, contraindications, complications related to implants and finally the aesthetic evaluation of this technology. The section begins with a discussion of the main advantages of dental implants and then move on to describe the disadvantages of dental implants before drawing some preliminary conclusions.

1.3.1. The Advantages of dental implants

Dental implants are designed to facilitate replacement of teeth and can replace other dental technologies that may fail to achieve patients expectations and needs including removable partial dentures and conventional complete dentures (Henry, 2005). Three key advantages of implants are commonly cited in the literature. These include improving patient's oral health related quality of life OHrQoL, the survival of implants when compared with other dental treatments and finally, patient satisfaction and experience. In what follows each of these advantages will be discussed.

1.3.1.1. Improving patient's oral health quality of life (OHrQoL)

A common theme in the literature on dental implants is the claim that implants improve oral health related quality of life (OHrQoL)(Cibirka et al., 1997). In a cohort study of 26 individuals who had been treated with implants, Cibirka et al (1997) maintained that individual comfort, mastication and speech show a significant improvement when treated with implants in comparison to individuals who had been treated with conventional complete dentures. The follow-up period for this study was restricted to one year and so there are no data on the long-term OHrQoL of the implants. Despite this, other work has demonstrated an improvement in OHrQoL of up to six years for patients who had been treated with implants. This included improvements in speech and mastication (Leung and Cheung, 2003).

In an observational trial of 60 edentulous individuals it has been found that over-denture prostheses (implant supported dentures) provided considerable improvement in OHrQoL in comparison to conventional complete dentures (Heydecke et al., 2003). However, this study

only involved a follow up of 6-months, which may be a bit short for reliability. Nevertheless, an improvement in OHrQoL among patients who had received implant-supported dentures in comparison to conventional complete dentures was shown (Naito et al., 2006). In conclusion there are few reports in the literature that explore the link between OHrQoL and implant therapy, that which has found patients who had been treated with implants reported OHrQoL especially related to improved speech and mastication.

1.3.1.2. Survival of dental implants in comparison to other dental treatments

One of the key claims about the advantages of dental implants is that the treatment is long lasting compared to conventional care. This advantage is seen through the survival of different dental implant treatments in the long term. These include implant supported fixed dental prosthesis with cantilever, single implant crown and implant bridge. In a systematic review of the evidence a 94% survival rate after five years has been recorded for a dental implant supported fixed prosthesis with cantilever extension (Aglietta et al., 2009). The quality of the evidence presented here was good as no limitations about the process of conducting this review could be identified. While a well-designed 10-year prospective cohort study has reported the survival rate of implants on single crown and bridge after 10 years of insertion at 90 and 94% respectively (Bragger et al., 2005). Other work has indicated that the survival rate of over-dentures supported by dental implants was about 97% after five to six years of insertion (Makkonen et al., 1997). This 5-year prospective study did not however report on any randomisation or sample size calculation, and as such the quality of the evidence in this instance can be questioned. Nonetheless, despite variations in the strength of evidence in previous studies, the survival rate of different dental implant prostheses after 5 to 10 years has been consistently reported at above 94% of those placed. This figure becomes more significant when we compare alternative dental treatments.

Bragger et al. (2005) pointed out that the survival rate of conventional crowns and bridges was 68% after 10 years. They maintained that loss of retention and fractures of the porcelain were the main causes behind the high failure rate of fixed partial dentures. Additionally, Della Bona and Kelly (2010) recorded a survival rate of about 53% for porcelain veneers after 10 years. The authors maintained that different factors influenced the low survival rate of the veneer prostheses including de-bonding and tooth preparation. While Vermeulen et al. (1996) observed a low survival rate for removable partial dentures of 20% after ten years of insertion. There is also some evidence that complete dentures have survival rates of between 80% and 70% on mandible and maxilla after five years of insertion respectively (Dorner et al., 2010). Accordingly it seems that other dental treatments do not have the same survival rates as dental implants. These findings are summarised in Table 2 below.

Table 2 A comparison of the survival rates of different dental treatments

Type of dental treatment	*Survival rate*	*Duration of survival in years*
1- Dental Implants		
Dental implant supported fixed prosthesis with cantilever extension (Aglietta et al., 2009).	**94%**	**5**
Single crowns supported by dental implant (Bragger et al., 2005).	**90%**	**10**
Bridges supported by dental implant (Bragger et al., 2005).	**94%**	**10**
Over-dentures supported by dental implant (Makkonen et al., 1997).	**97%**	**5**
2- Other Dental treatments		
Crowns and bridges on fixed partial denture (Bragger et al., 2005).	**68%**	**10**
Porcelain veneers (Della Bona and Kelly, 2010).	**53%**	**10**
Removable partial dentures (Vermeulen et al., 1996).	**20%**	**10**
Complete denture-mandible (Dorner et al., 2010).	**80%**	**5**
Complete denture-maxilla (Dorner et al., 2010).	**70%**	**5**

It can be concluded that the survival rates of dental implants appears to be consistently higher than other dental treatments at five and ten years. However, the survival rate of implants is often used as a marker for success of care this can give a false impression as success is not only measured by the implant not falling out but also by the functional support provided by the implant and aesthetics of the prosthesis. The all or none criteria (presence or absence of an implant) will also mean that many implants that may be failing will be counted as a success. Disappearance of pain associated with implants under horizontal or vertical forces is a good example of robust functional support related to the survival of this therapy. Evidence has also demonstrated that the pain associated with implant is not commonly reported unless the implant is mobile and surrounded with inflamed tissue or the implant invades on a nerve (Misch et al., 2008). A further example of a good functional support related to the implant survival is the lack of implant mobility. This though does not mean the real disappearance of the implant clinical movement. Whilst a successful implant may move by 75 μm, and it still shows as zero clinical mobility (Winkler et al., 2001, Misch et al., 2008). Nevertheless, Smith and Zarb (1989) developed specific criteria for the success of implants. These include: absence of peri-implant

radiolucency when evaluated on an undistorted radiograph, and vertical bone loss is less than 0.2 mm annually after the first year of implant insertion. An important aspect also is disappearance of pain, mobility, discomfort, or infection in relation to the implant. Lastly implant design does not preclude placement of a crown or prosthesis with an appearance that is satisfactory to the patient and dentist (Smith and Zarb, 1989). Therefore, the powerful functional support of implants including disappearance of pain and lack of clinical mobility alongside with the longer survival duration of implants compared to other dental therapies would be considered as key advantages of this technology. The next section will explore patient satisfaction and experience of dental implants.

1.3.1.3. Patient satisfaction and the experience of dental implants

The literature is somewhat limited to a few studies on patient satisfaction and experiences with dental implants. However, convenience and comfort when eating are among the main reasons for replacing missing teeth. In this respect patients who had dental implant treatment were considerably more satisfied with this technology in terms of convenience and comfort with eating in comparison to patients who had treated with conventional complete dentures (deBruyn et al., 1997). In contrast, patients who had other treatments, such as removable partial dentures, report suffering from dentures sliding, and difficulties with eating (Kranjcic et al., 2012, Bae et al., 2006).

Dental implants have been designed to improve speech difficulties in comparison to other treatments including complete dentures or removable partial dentures (Kaptein et al., 1998). For example, Kaptein et al. (1998) measured patient satisfaction associated with complete and removable dentures after one year of placing implants. They concluded that dental implants had improved speech issues in comparison to complete dentures and removable dentures in the studied population. They found that 97% of the patients who had implants were extremely pleased with the speech aspect of the treatment.

In addition to patient comfort some researchers have evaluated overall patient satisfaction with dental implants. A ten-year prospective cohort study of 104 patients who had 214 implants indicated that 92% of the sample were highly satisfied with the treatment received in both functional and aesthetic aspects (Pjetursson et al., 2005). The authors however concluded that the cost of the treatment and bleeding of the gingiva or mucosa when brushing were the main sources of dissatisfaction (Pjetursson et al., 2005). Moreover, Vermylen et al. (2003) in a small pilot study maintained that patients who had implants were highly satisfied with results achieved after surgery. Though this study was a small pilot not a lot can be inferred from it. Nevertheless Gurgel et al. (2015) conducted an observational study to evaluate the patient satisfaction about the implant therapy among 147 participants. They found that 91% of patients

who had implants were satisfied with the treatment received. Taking into account the rarity of the literature that measured patient satisfaction with implants and the previous evidence presented, it can be concluded that patients who treated with implants were highly satisfied with comfort when eating, speech and generally highly pleased with the treatment received. However, cost of the treatment and bleeding of mucosa were considered to be the main sources of dissatisfaction.

In summary dental implants have been found to improve the patients OHrQoL. The survival of implants appears to not only be significantly longer than other treatments, but also implant has been shown to provide robust functional support such as disappearance of pain and lack of clinical mobility. It has also been shown that the overall level of patient satisfaction and experience with implants is good. These seem to be the main advantages of the technology. It should be noted however that the majority of studies in this section were cohort studies and randomised control trials. Consequently the quality of the evidence presented seems to be moderate to good.

1.3.2. The Disadvantages of dental implants

Dental implants, like any other restorative dental treatment, have some disadvantages. This section will explore and review the disadvantages of dental implants in four sections. The first section will deal with social factors related to the disadvantages of implants. Contraindications associated with the implants disadvantages will be explored in the second section. The third section will explore the complications in relation to implant therapy. The last section will discuss the aesthetic disadvantages associated with implant care.

1.3.2.1. Social factors related to disadvantages of dental implants

This section will describe how social factors influenced the disadvantages of implants through evaluating three social aspects. These: 1) age and gender, 2) smoking, and 3) cost and social class. This section seeks to provide an overview of the social factors associated with disadvantages of implants.

Age and gender

Jang et al. (2011) indicated that a patient's age and gender strongly affected the survival of dental implants. They pointed out that as patients get older they suffered more failures of implants so, for example, elderly patients above 79 years recorded higher failure rates than other, middle-aged patients. The authors maintained that the reason underlying the increased failure of dental implants among those elderly patients was bone resorption, as bone density reduced with increasing age. In other words, more failures of implants are seen in older patients. In addition, there was evidence that a patient's gender was shown to be associated with implant

failure. The findings of this study revealed that men were more exposed to failure of implants than women, with rates of 6.4% and 4.6% respectively (Jang et al., 2011). Moy et al. (2005) conducted a cohort study to investigate patients' age and gender factors associated with implant failure. They strongly maintained that implant failure rates were elevated as individuals got older. For example, individuals aged 60 and above were more exposed to implant failure than those in middle age. Interestingly, this study revealed that there was no significant relation between an individual's gender and implant failure (Moy et al., 2005). Meanwhile, Wagenberg and Froum (2006) argue that a patient's gender is strongly related to the failure of dental implants and maintained that males were nearly two times more exposed to implant failure than females. From these different studies, it can be concluded that implants may not be an appropriate therapy for every patient. It seems that age and gender can determine the suitability of patients for implant therapy and this might indeed become a major disadvantage of this technology as more patients are treated.

Smoking

There is evidence of a strong association between smoking and the failure of dental implants. Vervaeke et al. (2012) evaluated pre-implant bone loss and the survival of implants among smokers and non-smokers. They concluded that patients who smoke had a considerably lower implant survival rate and more bone loss, especially on maxilla arches, than non-smoking patients. This study showed that non-smokers were 2.5 times less exposed to implant loss than smokers. Moreover, Roos-Jansaker et al. (2006) maintained that patients who smoke experienced considerably greater bone loss, periodontitis, peri-implantitis and mucositis than non-smokers. All of these issues affected the survival of implants. In other work Koldsland et al. (2009) also conducted a cross-sectional study to evaluate factors associated with implant failure. The sample of this study was 109 individuals who had 372 dental implants between 1990 and 2005. The study concluded that patients who smoke recorded ~15% failure rates, whilst failure was observed in only 2% of non-smokers. While giving a very positive result there are few details about the method of sampling and selection of participations in this study, it may thus not have adequately eliminated bias in the findings. Hence, the results of the study may not be representative of the studied population and this might lower the validity of the results. Despite weaknesses in some studies many clinicians do advise patients that smoking is a risk factor.

Costs and Social class

The high cost and affordability of implant therapy has been considered a major disadvantage (Makkonen et al., 1997, Bragger et al., 2005). The cost of implant therapy is high and hence it is

not affordable nor accessible to every patient (MacEntee and Walton, 1998, Barrowman et al., 2010). As an example, the estimated cost of restoring a missing single tooth with implants (Straumann system excluding crown) has been shown to be about £2000 (Lunt and Carrera, 2010). While the cost of restoring all missing teeth with a conventional complete denture in Canada has been estimated at $892 (Ca), which is equivalent to about £575 (Kawai et al., 2010). Therefore, it is evident that the relatively high cost of implants in comparison to other dental treatments is a major disadvantage of this technology (Muller et al., 2012). Though this issue of high cost of the implant therapy is rarely explored in the literature.

The high cost is not only the disadvantage of implants, but also the affordability of implants among different socioeconomic layers of the community is an additional problem. This can hide a number of further problems. For example, Narby et al. (2011) pointed out that the income of Swedish individuals may be a major influence in their desire to undertake implant therapy. They maintained that individuals with high income demonstrated a greater desire for implants than those in lower incomes. No data however reported on the blinding of participants or examiners in this study. A further study in Nigeria patients who had implants were mainly considered to be from upper social classes (Akeredolu et al., 2010). Nevertheless the shortage of the literature that measured the association of different social classes with dental implants would be regarded as a key difficulty in confirming this relationship. However, with regards to the former evidence, it can be concluded that people in lower socioeconomic status will more often than not miss out on the chance to be treated with implants.

1.3.2.2. Contraindications related to disadvantages of dental implants

This section explores the contraindications associated with the disadvantages of implants including: 1) bone density and quality, reactions to metals and width of gingiva, 2) trauma and history of periodontal diseases, and finally 3) medications related to early implant's failure.

1) Bone density and quality, reactions to metals and width of the gingiva

An exploration of the literature reveals that, implant success is significantly affected by bone density and quality. Esposito et al. (1998) reviewed the relationship between bone quality, bone density and the loss of implants. The sample of this study included 2,812 implants. The authors concluded that about 225 implants had failed. Of these failed implants, 47% constituted an early implant loss resulting from poor bone quality. However, 53% of the failed implants were caused by bone density in the patient's mouth. Other dental researchers likewise, Lauc et al. (2000) concurred that bone quantity, density and quality obtainable at the site of the implant can be regarded as a significant factor in the success of the implant.

In addition to problems related to bone density and quality there are also problems associated with allergic reactions to the metals in implants. Dental implants have been manufactured and introduced to individuals with different types of metals such as titanium, chromium, nickel and others. Some of these metals were associated with implant failure among patients allergic to metals (Egusa et al., 2008, Krecisz et al., 2006). Evidence has demonstrated that nickel and chromium were the most sensitized metals related to orthopaedic implant loss (Krecisz et al., 2006). However, Egusa et al. (2008) maintained that employing titanium in dental implants may induce an allergic reaction. In brief, in patients who are allergic to metals it may not be advisable to undertake implant therapy as the possibility of implant loss is increased.

Another factor associated with a patient's suitability to have implants is the width of the gingiva. Baqain et al. (2012a) studied risk factors related to early loss of implants among 169 individuals who had 399 implants over a four-year period. It was found that a patient with gingival width of less than two millimetres at the site of insertion were five times more exposed to failure of an implant than a patient with a wider gingiva (Baqain et al., 2012a). The weakness of this study, however, was that no information was provided regarding the blinding of the clinicians and this may have introduced bias in the study's findings. Because the clinicians' decisions may be influenced by the truth that the study design was employed and thus improper outcomes of the study may guide clinical procedures. Moreover, Bouri et al. (2008) maintained that patients with gingival width of less than 2 mm were more exposed to implant complications, and hence the implant failure rate might also be increased. While the methods of selecting participants and sample size calculations in this cross-sectional study have not been reported, this might reduce the worth of the evidence presented. Taken into consideration the quality of the evidence, dental implant length, location and width of gingiva have all been related to the failure of this therapy. Dental implants therefore are not suitable for every individual because patients do not always have the same medical conditions.

2) Trauma and history of dental diseases

Another contraindication related to the disadvantage of dental implants is that they are not appropriate to be used with patients who have suffered from trauma and a history of dental diseases such as periodontal disease and infectious disease. Montes et al. (2007) studied retrospectively the causes associated with failure of implants during the period from 1996 to 2006. The study sample was 3,587 individuals who had implants. They concluded that the loss of implants recorded was 3.5%, and from this failure rate about 18% referred to trauma and other iatrogenic conditions such as contamination and surgical procedures. Moreover, Piattelli et al. (2003) maintained that not only was trauma significantly related to implant failure, but so also were periodontal diseases. Karoussis et al. (2003) pointed out that individuals with a

history of periodontal disease were more exposed to implant loss than other individuals. Additionally, Stanford (2010) systematically reviewed the relationship between periodontitis and implants. The author pointed out that implant failure rates were lower among individuals with non-periodontal disease than patients with periodontitis. However there is no clear information about the methodology of this study, which might make the quality of the evidence lower than expected. Accordingly there is no way to evaluate the quality of this evidence or to establish the generalizability of the sample, amongst other things. Nevertheless it can be reasonable to think that trauma and periodontal diseases are considerably related to the implant failure.

3) Medications associated with early failure of dental implants

Dental researchers have explored the relationships between medications and how these relate to the failure of implants (Goss et al., 2010, Shibuya et al., 2012). Two medications will exemplify this approach; these were oral bisphosphonate and steroids. Goss et al. (2010) conducted a retrospective cohort study to evaluate the relationship between bisphosphonates and osteonecrosis with a study sample of 16000 individuals. The study revealed seven individuals taking bisphosphonates with concomitant dental implants and all of those patients had implant failures. They concluded that despite the rarity of patients exposed to bisphosphonates and implant therapy, there was a negative association between bisphosphonates and implant therapy. This was mainly manifest through loss of the implant's integration. In another study, the association between osteonecrosis and bisphosphonate has been confirmed (Lo et al., 2010). The quality of both previous evidences was shown to be good and no limitations could be identified. Furthermore, the use of steroids has also revealed to be linked to osteonecrosis and failed implants (Shibuya et al., 2012). Accordingly ignoring the relationship between medications (oral bisphosphonate and steroids) associated with implant failure would be a risky thing to do. Dentists should pay sufficient attention when planning implant treatment and take into account their patient's medical history to avoid such as risk factors.

To sum up, it can be broadly concluded that there is a substantial list of contraindications that can result in failure of the implant care. These include, bone density and quality, reactions to metals, width of gingiva, trauma and history of periodontal diseases, and finally medications related to early implant's failure. However, there are a number of further complications related to disadvantages of dental implants, these will be explained next.

1.3.2.3. Complications related to disadvantages of dental implants

This section explores the complications associated with the disadvantages of dental implants. Theses include: 1) risk of injuring the inferior alveolar nerve in posterior mandible, and 2) risk of failure in relation to length, width and location of the implant (upper or lower jaw).

1) Risk of injuring the inferior alveolar nerve in posterior mandible

Injuring the inferior alveolar nerve (IAN) in mandibles during implant surgery is recognised as a common complication that should be with adequate planning preventable (Greenstein and Tarnow, 2006). Evidence has demonstrated that rehabilitation of an IAN injury is based on several factors including: injury timing, injury type, neurosensory disturbances and intra-operative findings (Kushnerev and Yates, 2015). IAN injury results in serious complications for affected patients. These complications result in disturbance of nerve function that can included pain loss of feeling or abnormal sensation (spontaneous or evoked) in the IAN distribution all of which affect eating and patients social interactions (Renton, 2010, Alhassani and AlGhamdi, 2010, Greenstein and Tarnow, 2006). The reported prevalence of the IAN injury associated with implants placed in the posterior mandible varies from 0 up to 40 per cent (Khawaja and Renton, 2009). The authors however concluded that a quick referral of the patient to oral specialists and early elimination of implants (18 hours- 36 hours) after nerve injury was shown to be valuable as patient's who had their implant's removed promptly after IAN injury were more likely to achieve full recovery of sensation (Khawaja and Renton, 2009). Yet the rarity of the cases included in this study (only four cases) may not be representative of the wider population.

2) Risk of failure in relation to location, length and width of implants

Cooper (2012) studied factors related to implant stability among 316 individuals who had 1,090 implants over a 10-year period. He concluded that implants in the maxilla were more associated with early loss of stability of the implant compared to implants placed in the mandible. The study demonstrated that implants of less than 15 millimetres in length were more associated with failure than longer implants (Cooper, 2012). In other words, the length and location of the implant was related to loss of stability. However the main limitation of this evidence is the degree of missing data concerning the sample size. It is unlikely that the sample was representative of the whole population.

Similarly in the United States, Quesada-Garcia et al. (2012) pointed out that the site of implant placement in the patient's mouth played a key role in failure. They maintained that implants inserted in maxillary arches were more associated with loss of stability and failure ($P<0.006$). Additionally, the length of the implant was regarded as a significant factor related to failure. Telleman et al. (2011) systematically reviewed the length of implants and failure rate among partially edentulous individuals from 1980 to 2009 through EMBASE and Medline. The study concluded that implants of less than 10 millimetres were associated with failure of implants when compared with longer implants. It should be made clear that the difference in the length of implants reported in the two previous studies (15 mm and 10 mm) was related to the different

systems used. Here the evidence is relatively good quality since the reviewers were blinded and the data presented was clearly explained. In short the length of an implant and its location influenced its failure.

Risk of implant failure has not only been associated with its location and length, but also with its width. Evidence has demonstrated that short and narrow implants were more exposed to early loss of stability and thus failure of the treatment would increase (Olate et al., 2010, Karthik et al., 2013, Baqain et al., 2012b). However, implant width exceeding ~4.0 mm is described as an optimal diameter in the posterior mandibles (Li et al., 2011, Shenoy, 2012). Accordingly, the width of the implant seems to be the critical aspect related to the failure of implant therapy. In this respect dentists should pay sufficient attention to avoid such risk factors during dental treatment planning.

The Marginal Bone Resorption (MBR) at the site of the implant also plays a significant role in the stability, survival and the aesthetics of implants. This could be explained through exploring the association of using improper hardware and improper clinical technique in relation to implant failure. Improper hardware and inadequate clinical techniques had affected the MBR. Inappropriate insertion depth of the implant and using unsuitable implant design (type, shape and length of implant) would increase the MBR and hence poor aesthetic and loss of stability would be the main outcome (Ostman et al., 2007). However, the quality of this evidence can be questioned because of the period of assessing the success or failure of the implants. In most cases this was only evaluated over one-year, while only in one case it was conducted over 5-years. Nonetheless it was confirmed that the wrong insertion depth of implants was significantly related to poor aesthetic outcome and the failure of the implant (Baelum and Ellegaard, 2004). Furthermore,Vandeweghe et al. (2012) indicated that the type of the implant and its design was associated with the implant's survival and aesthetic. They carried out a randomised control trail with a study sample of 59 individuals who had 111 implants and concluded that a 0.6 mm thread pitch of parallel-walled implants was more effective than 1.00 mm thread pitch of tapered implants ($p < 0.01$). Though the evidence presented here cannot prove if it is the implant's shape (tapered or parallel-walled) or the thread pitch design that was responsible for the high success rates, nonetheless improper hardware and clinical technique such as insertion depth, choosing the appropriate shape and design have been associated with increasing the MBR and the failure of implants.

To sum up, there are two key complications associated with failure of dental implants. These include, the risk of injuring the inferior alveolar nerve (IAN), and the location, length and width of the implant. When planning implant therapy, dentists should carefully consider avoiding such

as risk factors, which can result in serious complications and thus failure of the implant care. Though, there are a number of additional 'aesthetic disadvantages', these will be described next.

1.3.2.4. Aesthetic aspects related to disadvantages of dental implants

Dental implants have high survival rate, good functional characteristics and patients are mostly satisfied with this technology (Aglietta et al., 2009, Pjetursson et al., 2008, Kovacic et al., 2010, Pjetursson et al., 2005), the aesthetic results of implant care are not always ideal and can be a disadvantage of care compared to other methods of replacing missing teeth. Associated risk factors with aesthetic aspect of implants will be explored in the following sections. These included: 1) soft tissues related to aesthetic aspect of implants and 2) association of treatment planning with implant's aesthetic disadvantage.

1) Soft tissues related to aesthetic aspect of dental implants

Many researchers have evaluated the association between the conditions and topography of the peri-implant soft tissues and implant aesthetics. Chang et al. (1999) conducted a comparative observational study among 20 patients who had implants. They compared implant supported single crown replacement with the natural tooth replacement. They concluded that the relation between the peri-implant soft tissues and the final aesthetic result achieved with implant supported crowns could be a disadvantage of this treatment. The authors found that the soft tissues around implants revealed a greater frequency of bleeding on probing and mucositis. The study concluded that implants had a reduced bucco-lingual width of gingiva and a reduced height of the papilla which affected the aesthetic of crowns supported by implants (Chang et al., 1999). However, no data was reported about the method of sampling and blinding of the observers, which could moderate the quality of the evidence presented. Moreover, Meijndert et al. (2007) conducted a randomized controlled clinical trail in a sample of 93 individuals to evaluate the relationship between the aesthetics of single tooth supported implant crowns in anterior maxilla and peri-implant mucositis. They concluded poor aesthetic cases in 35 of the placed implants. Evidence has also demonstrated that soft tissues loss in the anterior zone of maxilla was a key disadvantage of implant care especially in cases of immediate implantation after extracting the tooth (Kan et al., 2003, De Rouck et al., 2008). It can thus be concluded that clinicians should pay adequate consideration to this aesthetic disadvantage of soft tissues when planning the implant therapy.

2) Association of treatment planning with implant's aesthetic disadvantage

Several factors should be considered in order to achieve an optimised level of aesthetic in implants including following recommended guidelines, knowledge about various techniques and concepts of dental implant and suitable treatment planning (Tischler, 2004, Leblebicioglu et

al., 2007, Rodriguez and Rosenstiel, 2012). Treatment planning, is generally deemed a crucial factor that affects the aesthetic appearance and stability of implants. Two main variables will exemplify the association between aesthetic disadvantage and treatment planning. These include aesthetic factors associated with patients at high risk of implant failure and the relationship between radiographs and the aesthetic disadvantage of implants (Yun et al., 2011, Rasmusson et al., 2001).

Patients at high risk of implant failure such as those who smoke and patients with poor oral hygiene were more exposed to marginal bone resorption (MBR). Thus, aesthetic disadvantage and failure of implants would be increased among those groups of patients. Lindquist et al. (1996) conducted a 15-year prospective clinical study to evaluate the MBR among 47 individuals who had 273 implants. They concluded that patient's with modest oral hygiene habits and smokers had substantially more MBR level when compared with patients who had good oral hygiene and non-smokers. Moreover, the association between smoking and increasing the level of MBR has been confirmed (Penarrocha et al., 2004). Consequently, wrong treatment planning in high-risk cases is a key problem associated with the aesthetic outcome and survival of implants.

At pre-surgical treatment planning, choosing inappropriate radiographic views for imaging implant sites was related to the aesthetic and functional failure of therapy. It was the dentist's responsibility to consider the various types of radiographs, patient's medical history and pre-surgical clinical examination (Lecomber et al., 2001). For example, it was evident that using a cone beam computed tomography (CT) scan, a technology providing 3D imaging, before the implant was placed, especially among those patients at high risk was beneficial in the pre-operative assessment of the site. Using proper radiographs of implants was shown to improve dentist's knowledge of particular anatomical cases and hence improve the diagnosis of the case presented. Accordingly this positively influenced the aesthetic and functional success of the implant (Guerrero et al., 2006, White, 2008). However, the CT scan would only be specified for anatomically challenging cases. This was because of the relatively higher dose of radiation from a reformatted CT scan compared to conventional 2D imaging (Lecomber et al., 2001). Therefore, taking into consideration the side effects of radiation dose, choosing suitable radiographs at the pre-surgical treatment planning stage, such as using CT scans for certain cases positively influenced the success of implant aesthetics and function.

1.3.3. A summary of advantages and disadvantages of dental implants

The advantages of implants were reported in relation to improving patient's oral health related quality of life and also their functional oral health, especially mastication and speech. In addition the survival rate of implants when compared with other dental treatments is another significant advantage along with the high proportion of reported satisfaction with this technology.

On the other hand, the disadvantages of implants are significant and ought not to be ignored. These relate to the social factors related to the disadvantages and risk factors of implant failure. Here the patient's gender, age, smoking habits, cost and social class present significant disadvantages. Secondly, contraindications are also related to the disadvantages of implants. This illustrates factors that have affected implants through evaluating associations of width of the gingiva, bone density and quality, patient's allergy to metal, trauma and history of periodontal diseases, and medications related to early implant failure. Complications that are related to disadvantages of implants including injury of inferior alveolar nerve (IAN) and the relationship of length and location of the implant to the failure of the implant care.

Lastly, this section has outlined aesthetic disadvantages related to implants through assessing different factors. These include soft tissues and the demand to good treatment planning. These various aspects associated with advantages and disadvantages of implants might play a key role in determining whether implants would be a suitable treatment or not. Nonetheless, it seems to be that this depends mainly on the patients' medical conditions and their choices alongside with the dentists' competence and optimised clinical experience (John et al., 2007). However, in my view, I would maintain that the disadvantages of implants would outweigh the advantages for the following reasons: firstly despite the fact that implants have been revealed to provide an improvement in the patient's OHrQoL and patients were mostly satisfied with this technology, implants have also been shown to not be suitable for every patient who might demand to have an implant. Secondly, taking into account the high cost of implants compared with other dental treatments, it is likely that implants might only be obtainable for high socioeconomic groups within society. Consequently poor people might not be treated with implants, as they have not been able to afford it. Lastly, the problem of the aesthetic look of implants may be an issue because some patients who have been treated with implants may be more worried about the aesthetics of the treatment rather than its function.

Although there are key advantages and disadvantages to the use of implants, it should be clear by now that having the technology placed in someone's mouth is by no means a simple decision. There is obviously a range of different factors to consider when assessing the appropriateness of the technology. Not only this, but, these factors may or may not feature

during the dentist-patient encounter once the decision to either go with implants or not will be taken. For example, when assessing the suitability of the implant therapy aspects such as how dentists make their decisions about whether undertaking implant therapy is suitable or not, and how patients are involved in the decision making process concerning their implant therapy, seem to be significant aspects that should be measured. This is particularly so when we pay attention to the existence of several medical decision making models employed within medical consultations. These include: paternalistic, informed, shared decision making models and others (Braddock et al., 1999, Elwyn et al., 2012). Hence, we are not sure which of these decision making models is employed within implant consultations and we do not know how patients who are interested in having implants are engaged in their treatment decisions. Therefore, this highlights the demand to explore the range of research that has been undertaken on decision making in relation to implants. This will be described in the following section.

1.4. The range of research on decision making in relation to dental implants

This section aims to review the range of studies that have been conducted on decision making in relation to dental implants. A literature search was conducted employing the Web of Knowledge, MEDLINE via OvidSP and MEDLINE via PubMED databases. The search terms employed were 'decision making' and 'dental implant'. Following this, the study inclusion and exclusion criteria were established. Two basic inclusion criteria were created to identify studies relevant to the aim of the review. Firstly, studies had to be published between 1950 and December 2015. Secondly, studies also had to be based on humans, which include randomised and nonrandomised control trials, case report studies, case-control studies, systematic reviews and cohort studies. The exclusion criteria included studies carried out on animals, studies that were not written in English, studies focussed on purely clinical decisions of dental implants such as clinical indications and contraindications of using dental implants. For example, patients who were treated with bisphosphonate were not recommended for treatment with dental implants because of the evidence that the bisphosphonate causes osteonecrosis. Thus, the failure rate of implants in this case would be high (Lo et al., 2010). Another example, studies that focused on the role of radiography on making good clinical decisions about implants (Lecomber et al., 2001). These kinds of studies were excluded from the review.

Based on the former proposed inclusion and exclusion criteria, the reviewer established a quality evaluation technique that included three main stages. Firstly, an Endnote reference library was created to import all relevant articles that were identified from dissimilar search databases. All of these articles were quickly examined and duplicated articles were deleted. In the second stage, the title and the abstract of each article obtained were assessed. If it was considered as a related article through the application of the inclusion and exclusion criteria papers were either included or excluded. The last stage of the evaluation technique was the assessment of the full-text of the articles identified as relevant articles in the second stage through complete reading of these articles. Figure 1 describes the process of searching the literature and identifying the relevant articles.

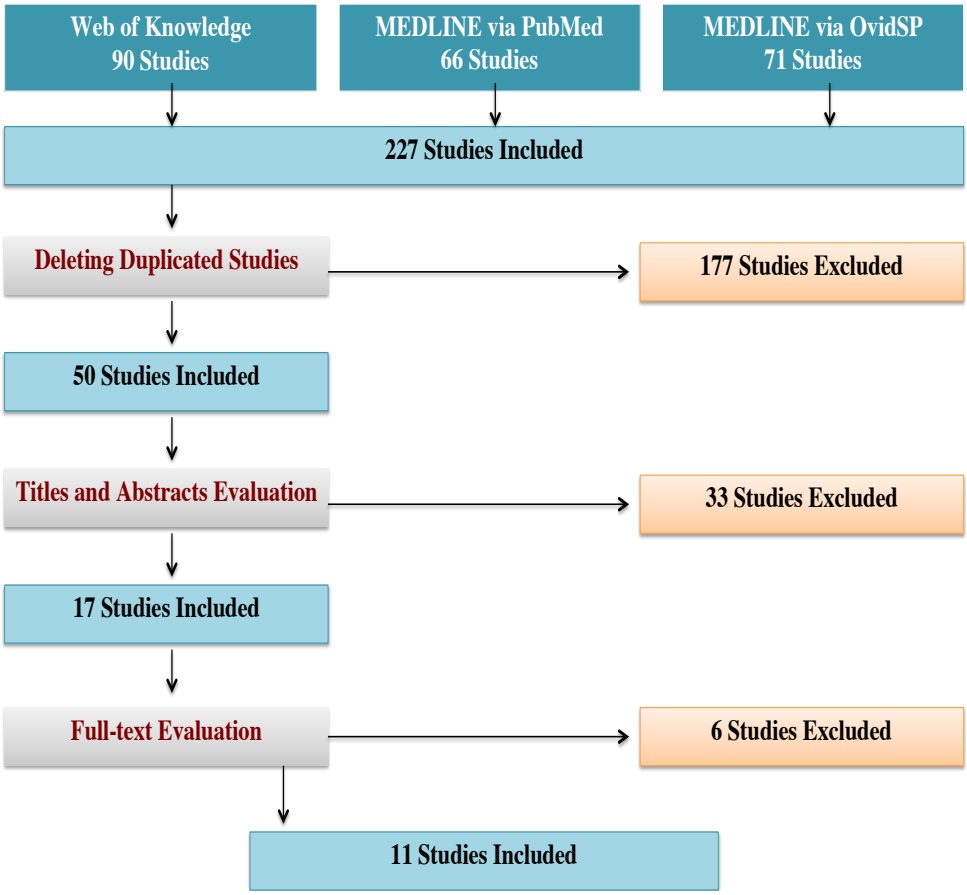

Figure 1 The process of searching the literature and identifying relevant articles

The findings of the review originally showed 227 articles. MEDLINE via PubMED identified 66 articles, Web of knowledge recognised 90 articles, and MEDLINE via the OvidSP documented 71 studies. The majority of the studies recognised were duplicated among these three databases. Using the Endnote library that was established earlier for the purpose of this review, and by eliminating the duplicated studies, 177 studies were omitted at this stage leaving 50 studies to be included. Then, a title and abstract evaluation technique was carried out to assess the relevance of each included article by applying the former proposed inclusion and exclusion criteria. A further 33 articles were excluded at this stage, while only 17 articles were included. Following this, reading all these 17 articles in full, this resulted in excluding six studies and only 11 studies were included. Please see Table 3, which identifies these 11 relevant studies and the purpose of each study included in the review.

Table 3 Studies on decision making in relation to dental implants & their key purposes

	Author & date	Journal	Type of study	Purpose of the study
1) Studies focussed on preserving natural tooth versus extraction and replacing with dental implant				
1	**John, V.** ***et al. (2007)***	Australian Dental Journal	Discussion	To make a comparison between 1) endodontic and prosthodontic rehabilitations and 2) extraction and inserting implant using the existing evidences in the literature.
2	**Tsesis, I.** ***et al.*** **(2010)**	Refuat Hapeh	A literature review	To review the literature on preserving natural teeth or extraction and replacing with implants.
3	**Cosyn, J.** ***et al. (2012)***	Clinical Periodontal	Questionnaire	To explore aspects related to the decision to make implant therapy after tooth extraction.
2) Studies on patient and dentist related factors in decision making one project funded by research councils				
4	**Exley, C.** ***et al.*** **(2009)**	BMC Health Research	Protocol	To explore how understandings of need and consequent decisions about implant therapy are facilitated by psychological consideration and with emphasis on the financial perspective.
5	**Field, J. C. et al. (2009)**	British Dental Journal	Questionnaire	To examine primary care practitioner contribution in providing implant over-denture.
6	**Exley, C.** ***et al.*** **(2012)**	BMC Health Research	Qualitative interview	To examine factors related to individuals with GDPs when making decisions on whether to pay or not for an expensive dental implant therapy.
7	**Vernassa, C.** ***et al. (2015)***	Community & Oral Epidemiology	Qualitative interview	To study how dentist involved in the decision making process about a high-cost implant therapy.

Table 3 (continued)				
3) Factors influencing the patients' decisions to go for implantation or re-implantation				
8	**Mardinger, O. *et al.* *(2008)***	Periodontal Journal	Retro-Cohort	To examine factors that can influence decisions to restore failed dental implant.
9	**Koele & Hoogstr (1999)**	Prosthetic Dentistry	Questionnaire	To evaluate dentists and patients' psychological factors of appropriateness for dental implants
10	**Nerby, B. *et al.* *(2012)***	International Journal of Prosthodontics	Grounded theory	To explain what factors influenced individuals' need for implant, to describe how individuals obtained implant information and to observe variations of patient experience in their OHQOL.
11	**Kashbour et al. (2015)**	Journal of Dentistry	A literature review	To summarise the findings of previous qualitative research related to patients' experience of implants at several stages.

It can be clearly seen that the eleven studies included in the review each had different aims and interests (see Table 3). In order to facilitate interpreting the results of these studies, it would be possible to categorise them into three main sections. These are: 1) studies focused on contradictions around preserving natural teeth versus extraction and replacing with implants, 2) studies on patient and dentist related factors in decision making, and 3) factors influencing the patients' decisions to go for implantation or re-implantation. These sections will be explained next in detail.

1) Preserving natural tooth versus extraction and replacing with dental implant:

The first study was undertaken by John et al. (2007) who discussed existing evidence concerning rehabilitation of a natural tooth with endodontic therapy versus removing the tooth and replacing it with a dental implant. The authors found that planning suitable dental therapy requires careful thought that should be conducted around four basic features. These are: elements associated with the patient, elements related to the dentist, tooth related elements and dental implant related elements. A patient's elements involved the ability to pay the cost of therapy and good oral health status. While dentist related factors included proper competence and optimised clinical experience. Moreover, the tooth related factors involved assessment of the patient's occlusion and evaluating endodontic and periodontal status. Whereas, the implant aspects involved factors such as the site of the placement (upper or lower), the aesthetics of the tissue, bone quantity and quality. The study concluded that proper maintenance and follow up protocols were required, as both teeth treated with endodontic therapy or implant therapy were shown to be at risk of complications (John et al., 2007)

The second study was similarly focussed on the dilemma of preserving natural teeth or removing and inserting dental implants (Tsesis et al., 2010). This study was conducted as a literature review of the existing evidence around making good decisions on implant therapies and endodontic treatments. The study findings revealed that the process of planning dental therapy should combine several aspects including prosthodontics, aesthetic and periodontal aspects. Moreover, the significance of suitable interactions between endodontist and prosthodontist to minimise possible risks of dental therapies failure was emphasised. It was concluded that deciding on proper dental treatments required consideration of all of these treatment-planning aspects.

The last study aimed to examine elements related to the decision to undergo single implant therapies (Cosyn et al., 2012). The authors employed questionnaires designed for dentists to measure treatment decisions and several dentist and patient associated factors. The study sample was 100 dentists who were selected randomly. The study findings revealed that, with regards to

fixed partial dentures, a dental implant was more prevalent when a female clinician removed the tooth and among those individuals with intact adjacent teeth. However, concerning removable partial dentures, implant therapy was more prevalent among patients who were more educated, with sufficient bone at the implant insertion site and limited missing teeth. Additionally, it was emphasised that implant treatment was clearly associated with the dentist's experience (Cosyn et al., 2012).

Nonetheless, the only criticism that can be highlighted around the former three studies was the fact that there is no study that has evaluated the social aspect of the dentists' decisions, as the focus of the studies was on the clinical aspect of the decision making process. For example, factors such as the patients' values and preferences, financial aspects related to implant treatments, and how patients and dentists interacted in making the treatment decisions may be considered as key factors that may affect the dentists' decisions. However, these social factors were poorly investigated in the literature (Grembowski et al., 1988).

2) Studies on patient and dentist related factors in decision making:

This section describes the four studies that were conducted in one project funded by the Research Councils. The project aimed to explore how understandings of need and consequent decisions concerning implant therapy are facilitated by psychological and social considerations, with an emphasis on the financial perspective in which such dual decisions are made (Exley et al., 2009). The project was carried out through three main stages: 1) a designed questionnaire was employed to collect data concerning all GDPs and to frame a sampling for stages two and three. 2) individual qualitative interviews were conducted with GDPs to evaluate their experience of discussing treatment decisions and needs for patients. And 3) sixty patients who had been offered implant over-dentures were involved in interviews to evaluate their experience and views of discussing treatment decisions and clinical needs (Exley et al., 2009).

The first stage of the project aimed to examine primary care practitioner contributions in providing implant over-dentures (Field et al., 2009). This stage was conducted through posting designed questionnaires to the providers of primary dental care. The study findings revealed a 74% response rate (217 from 322 questionnaires). 90% of the dentists would consider an implant over-denture as a treatment option through discussing this option with the patients. It was also interestingly concluded that male dentists were more likely to enable provision of implant over-denture treatment within primary care than female dentists (Field et al., 2009).

The second stage of the project was carried out through 27 qualitative interviews among individuals who considered paying for implant therapies (Exley et al., 2012). The findings of this study showed that paying for private implant therapies was not a simple decision and that

the choice was usually based on the cost of the therapy. However, decisions were shown to be affected by the following aspects: 1) apparent position of the implant therapy as either aesthetic or functional, 2) how patients determine their healthcare needs for implants, and 3) possible effects of patients' expenditure on themselves and others. It was found that some patients who declined their implant therapy maintained that implants were a luxury and cosmetic therapy; while removable dentures that are available through standard dental care can treat them. However, other patients who decided to go with implants argued that the therapy is a functional need that could prevent their suffering from dentures sliding. This clearly illustrates how functional or aesthetic aspects of the implant therapy may influence a patient's decision, and how patients value their implants needs from the aesthetic and functional aspects of this technology. Nevertheless some patients maintained that spending money on implants might be a selfish behaviour. Especially when they thought about what other purposes this amount of money could be used for. Those patients indicated that their money is family money, and that they should establish 'priorities' for how they should spend it without affecting other family members. This obviously illustrates how the implant decisions may be affected by possible effects of patients' expenditure on themselves and their families (Exley et al., 2012). Therefore, it can be concluded that implant therapy is not an easy decision. Several aspects may influence the patients' decisions to whether to go for this therapy or not. These included the financial, aesthetic, functional aspects associated with the implants.

The third stage of this project was carried out through interviewing sixty patients who had been offered implant over-dentures. The study concluded that dentist decision making was shown to be based on commercial factors, legal and professional obligations, and patients motivations to have implants and their ability to pay (Vernazza et al., 2015). Aspects including the patient's oral hygiene, the patient's appearance and demographic details such as socioeconomic status were associated with dentists' decisions to offer implants. Nonetheless, this project has examined how individuals were offered implant therapies with an emphasis on the financial aspect of the treatment and has not examined how individuals were involved in the process of decision making about implant therapy.

3) Factors influencing the patients' decisions to go for implantation or re-implantation:

Mardinger et al. (2008) conducted a retrospective cohort study on 194 individuals over a six-year period to examine elements that can influence patients' decisions to restore failed implants. They found that several key factors that can influence a patient's decisions for declining re-implant. These included: fear of another treatment failure (32 patients), anxiety of discomfort and pain (35 patients), extra cost of the treatment (53 patients) (Mardinger et al., 2008).

Koele and Hoogstraten (1999) conducted a quantitative study that used questionnaires among 30 Dutch dentists to evaluate dentists and patients' psychological factors of appropriateness for implants. They concluded that the factors affecting dentists' decisions to go with implants were, to some extent, individuals' socioeconomic status and their personal appearance. Though, individuals' desires, and individuals with good oral hygiene status, were shown to be the most significant individual aspects that could influence the dentists' decision to go for implantation.

Another study carried out by Narby et al. (2012) aimed to explain what factors influenced individuals' need for implant therapy, to describe how individuals who seek implants obtained medical information about their therapies and finally to observe the variations of patients' experience in their OHrQoL. The study was carried out as a qualitative study using grounded theory methodology. The study concluded that individuals who were treated with implants showed significant improvement in their OHrQoL. In addition dental anxiety and the cost of therapy were observed as significant factors in the process of the decision making before undergoing the therapy. Nonetheless, the suggestions and thoughts of dentists were key aspects for patients to undergo implant therapy (Narby et al., 2012).

The last study in the review concerning decision making in relation to implants was the literature review conducted by Kashbour et al. (2015). It aimed to summarise the qualitative research conducted on patients' experience in relation to implant therapy. The study showed that most of qualitative research on patients' experience with implants involved samples of elderly people who had wider tooth loss, and focussed on evaluating patients experiences before and after having the implants rather than on the therapy period itself. The shortage of qualitative research on patients' experience with implants was also emphasised (Kashbour et al., 2015).

It can be broadly concluded that only 11 studies were shown to be relevant to the purpose of the review. Interestingly, there is no study in the literature that has aimed to research how individuals who seek to have implant therapy are involved in the treatment decisions. Rather most work has focussed on the factors influencing decisions. However, the majority of studies have centred on the clinical aspect of the implants and have also highlighted some of the clinical factors associated with dentists' decisions for suggesting implants. While, very few studies have investigated the social and psychological aspects of implants such as improvement in patients' OHrQoL, high cost of the treatment, pain and dental anxiety. Nonetheless, there are no studies that have examined decision making within implant consultations. Additionally, there is evidence suggesting that individuals have different values and preferences with regard to the decision making roles, and these may not always be achieved during dental consultations (Chapple et al., 2003). Therefore, this highlights the need to explore the decision making approach in some detail. This will be described in the following section.

1.5. Decision Making

1.5.1. Decision making – An introduction

To "*make up one's mind*" may be the best expression that explains the verb "*to decide*" and this normally includes making a choice (O'Sullivan, 2010). According to O'Sullivan (2010), decision making can essentially be outlined as the process of making a choice once there is some amount of identification of desire or a need to choose. Decision making has been defined as "*the act or process of deciding something especially with a group of people*" (Merriam-Webster, 2005, p437). It has also been described as "*the thought process of selecting a logical choice from available options*" (Dignen, 2000). Furthermore, decision making was defined as selecting between alternatives (Thompson and Dowding, 2002). It is noticeable that the four previous definitions of the decision-making approach shared some key words or "characteristics" such as "process", "choice or selection" and "options or needs". However, it is surprisingly challenging to define decision making without including a specific theory that illustrates how a decision is made (Zeleny, 1981). In this study, it can be mead clear that decision-making will be defined as a process of selecting accessible options that suit individuals' needs or desires.

The approach to decision-making seems to be complex. This complexity comes from the interchangeable uses of this approach according to different thoughts that were employed to address it. As stated in Zeleny (1981) viewpoint, there are two main approaches to decision-making. These are the *outcome-oriented* approach and the *process-oriented* approach. The *outcome-oriented* approach is centred on the decision's outcome and its precise prediction. Expressly, it is focused on questioning when and what instead of how. For instance, if one can precisely predict the outcome of the decision process, then one visibly recognises the decision process. Normative decision analysis is a good example of this approach. The *process-oriented* approach, on the other hand, is targeted both prescriptive and normative features. In other words, this approach is significantly focused on how the decision is made. For example, if one recognises the decision process, one can precisely predict the outcome. However, O'Sullivan (2010) maintained that decision making is principally linked to other approaches including approaches to power, ethics and risks. He indicated that the combination between decision making and these three approaches provides a comprehensive context for studying decision making. These three combined approaches to decision-making will be described in the next few paragraphs.

The first approach linked to decision-making is power. The term "power" defined as "*the ability to act or produce an effect*" or "*capacity for being acted upon or undergoing an effect*" (Merriam-Webster, 2005, p1238). The importance of linking power to the decision-making approach comes from the point that social workers require to have an effective approach to

empowering service users. This means embracing a nature to confront at all levels of communication involving language employed to define difficulties, desires and making proper decisions (Smith, 2008). Moreover, O'Sullivan (2010) maintained that the capability to determine or influence a decision tends to be unfairly distributed between stakeholders. The author indicated that, for example, during face-to-face encounters stakeholders take their resources and capacities, and these could be unequal. However, it is to be expected that no person is totally powerful or totally powerless. Thus, the importance of power is not only centred on understanding the processes of determining what course of action to take, but also on why and how medical decisions are made. Therefore, it can be broadly concluded that approaches that use power are associated with the process of decision-making and hence may influence success in making the right decision.

The second linked approach to decision-making is ethics. Ethics has been defined as "*a branch of philosophy dealing with what is morally right and what is wrong, a belief that something is very important*" (Merriam-Webster, 2005, p684). Moreover, the implication of ethics in the decision making approach comes from the theory of competence. In this respect while there are competent individuals who are able to make their decisions, there are on the other hand some individuals who are incompetent to make a decision for themselves such as those who have mental difficulties or even ordinary people who are not able to decide what is good or bad for themselves (Buchanan and Brock, 1989). Accordingly the role of ethics in making a proper decision is chiefly centred on balancing two significant factors. First promoting and protecting the person's well-being. And second respecting and considering the person's self-choice. Nonetheless, beside these two previous factors, it is also vital to avoid two sorts of faults. These are the failure to safeguard the well-being of an incompetent individual, and lacking respect for the choice of a competent individual (Phil and Vincent Icheku, 2011). Though, the fact that understanding ethics is a legal requirement in making a decision in fields such as social work education, medicine, dentistry and the nursery it nonetheless confirms the importance of the relationship between ethics and decision-making. For example, in the UK, the establishment of the General Dental Council (GDC), the Nursing & Midwifery Council (NMC), the General Social Care Council (GSCC) and the Quality Assurance Agency (QAA) has had a significant role in preserving the health and well-being of the community (Phil and Vincent Icheku, 2011, Council, 2005). Hence, to a great extent, it can be concluded that making a proper decision would not only be based on the person's understanding and awareness of the factors that influenced the success of the decision, but also avoiding the faults that affected the decision. Additionally, a person's knowledge about ethics seems to be a significant aspect in making a suitable decision. This clearly highlights the significance of the relationship between ethics and decision-making.

The last joined approach to decision-making combines decision making with the concept and idea of risk. The term "risk" in the decision making approach originates from the situation where the result is uncertain when the decision is made. Since the result is uncertain, there is continually an opportunity to assess the degree to which an unwanted result will be obtained, perhaps some loss or harm. This loss or harm is occasionally signified as "risk" (Taylor, 2010). The approach of risk has been used differently in association with the decision-making approach. For example, using "*risk assessment*" in decision-making explained as the process of evaluating all possible risks before making a particular decision. While the use of the "*risk management*" in decision-making described as the process of controlling obtainable risks after the decision has been made (Bain and Carson, 2008). These different uses of "risk" in decision-making may indicate the demand to underline the importance of linking the approach of "risk" to decision-making. In this respect, great emphasis could be placed on determining and understanding why people choose to take or not to take risks are significantly associated with the evaluation of the process of the decision-making (Slovic, 2000). For instance, to understand why smokers decide to take the risk of smoking, it seems essential to examine the process of the smokers' decision-making. With regards to the various decision-making models, the examination may vary according to the decision making model employed. However, different factors may be included to examine this process. These include: social and behavioural factors, socioeconomic status, income, job, employment and educational level. Hence, understanding why someone does or does not take a risk seems to be associated with evaluation of the process of his or her decision-making. Therefore, it can be concluded that "risk" is associated with the process of the decision-making and consequently it seems to be worthwhile to combine this approach with decision making.

To sum up, it can be generally concluded that researchers have different thoughts about decision-making approaches, which have led to making this approach more complex. Other approaches such as power, ethics and risks have been shown to be significantly associated with decision-making. The theories of competence, uncertainty of outcome and social communication have also been shown to be related to the decision making approach.

Through exploring the literature, there is a very large body of literature on decision-making. However, not all of this literature is relevant to this study. What follows is a review of the industrial perspective, the management perspective, the social perspective and the medical perspective. These dissimilar perspectives have shown different models, processes and strategies of decision making. This indicates that these different models may not be used interchangeably. It was then essential to narrow the review of the literature to those areas of

decision making that might be relevant to this study. Consequently, only the medical and social perspectives associated with the decision-making approach were recognised and reviewed.

The next section of this review will start by exploring the medical approaches to decision making whilst specifically exploring the relationships between patient-doctor communications and decision making and explicitly the shared decision making model. The section will explore the association between power and the decision making process.

1.5.2. Decision making - Medical Perspective

Medical decision making is defined as "*the ability to make judgments and choose between two or more alternatives*" (Mosby, 2013, p492). This section will provide an explanation of all accessible medical decision making models in the literature in terms of their definitions, the processes of the models and the criticisms of these models. Four key models of medical decision making that have been commonly explored and discussed in the literature. These are: 1) Paternalistic decision making, 2) Interpretative decision making, 3) Informed decision making, and 4) shared decision making (SDM) (Laine and Davidoff, 1996, Charles et al., 1999). Table 4 compares the four models of medical decision-making. Following exploring these models in the subsequent sections, a brief discussion concerning the differences and drawbacks of these models will be provided, along with a summary.

Table 4 Comparing the four medical decision making models

Type of medical decision making model	Main decider in the decision making process		Assessing patient's preferences, values and needs	Agreement between both doctor and patient
	Doctor	Patient		
Paternalistic	✔	✖	✖	✖
Interpretative	✔	✖	✔	✖
Informed	✖	✔	✔	✖
Shared	✔	✔	✔	✔

1.5.2.1. Paternalistic Medical Decision Making Model

The paternalistic decision making model outlined through the role of a doctor who is the main decider in the process of decision making. The doctor selects the treatment for the patient according to the probabilities of the effectiveness of the treatment after assessing the patient condition. In this model, there is little or no contribution from the patient in the decision making process (Emanuel and Emanuel, 1992). Since doctors are the authorised decision makers in this

model, the process of the paternalistic model is consequently controlled and managed by the doctors.

There is some evidence that using the paternalistic model has influenced the unsuitable use of medications among elderly patients (Shaffer, 1992). The author conducted a qualitative study using semi-structured interviews to evaluate an association between the use of the paternalistic model of decision making and the unsuitable use of medication. Yet the quality of the evidence presented could be challenged. This is mainly because there are no sample size calculations and there is no indication about randomisation or blinding of the staff. This may have had a significant effect on the study through the possibility of increasing bias of the findings. Despite the fact that the paternalistic model was used over centuries (Wirtz et al., 2006), there have been several criticisms raised about it:

- The paternalistic model has been regarded as inappropriate for use in medical practice. This is mainly because it does not consider the patient's legal and ethical rights (Phil and Vincent Icheku, 2011). This can be clearly seen through the complete neglect of the patient's right to choose between accessible treatment options.
- The doctors, in this model, have not considered the role of power that is centred on understanding the processes of determining what course of action to take. As a result this model tends to neglect the patient's perspective in relation to their treatment decisions. A consequence of this is the probability of increasing undesired outcomes.
- This model also disregards addressing possible risks of the treatment for the patients. This may increase the possibility of unwanted results. With respect to implant treatments this is potentially very significant. It has been found that injuring the inferior alveolar nerve (IAN) in the mandible can be a problem in implant surgery (Misch and Resnik, 2010). If a patient had an implant in his/her mandibular arch and his/her IAN nerve was injured during the surgery, but the risk of injuring the IAN nerve had not been previously introduced to the patient before the surgery was commenced this would lead to an undesirable outcome.

1.5.2.2. Interpretative Medical Decision Making Model

The interpretative decision making model can be described as similar to the paternalistic model. Although there is a key difference between both models in that the doctor in the interpretative model considers the preferences and values of the patients. However, the doctor still, in the interpretative model, has the final decision and the patient does not make any significant contribution to the decision making process (Wirtz et al., 2006). Nevertheless, the interpretative model has two assumptions: 1) the doctors need to make the medical decisions as they have the duties to act in the best interest of the patients, and 2) patients are not able to make decisions

due to their disease, an absence of required knowledge and a lack of information (Emanuel and Emanuel, 1992). Several criticisms have been made:

- The interpretative model takes into account the preferences and values of the patients. Yet the patients have not substantially contributed to the decision making process because the doctor is still the main decider in this model. Thus the patient's rights to choose and decide which treatment option to undergo seem to be totally disregarded (Bremberg and Nilstun, 2000).
- The doctor's responsibility, in this model, to make the final decision about the patient's treatment may involve completely ignoring two associated aspects of the decision making process: power and ethics. Hence the decision made may not only increase the possibility of undesired results, but may also increase the possibility of patient dissatisfaction (Holmes-Rovner et al., 1996). For instance, bleeding of the gingiva or mucosa when brushing was the main source of dissatisfaction after patients had been treated with dental implants (Pjetursson et al., 2005). If this information has not been discussed with the patients before they undertake the implant therapy and those patients suffer from mucosa bleeding after the surgery, they may be dissatisfied with the outcome of the treatments they have received. This scenario addresses how the possibility of unwelcome outcome and the possibility of patient dissatisfaction may be increased in the interpretative model.

1.5.2.3. Informed Medical Decision Making Model

The informed decision making model can be explained as follows: after doctors provide information about risks, benefits and other treatment choices, the patients make decisions on their own regarding which treatment to undertake. This means that patients are the main deciders in this model, but only after they have received all of the necessary information about the benefits, risks and other treatment choices (Emanuel and Emanuel, 1992, Wirtz et al., 2006). Thus this model assumes that patients are able to and should decide which treatment option to receive.

The informed model of decision making is, to some extent, similar to informed consent, as the patients have the power to make the final decision in both situations. However, there are two differences between the informed model and informed consent: first in the informed model, the doctors introduce all of the accessible treatment choices and the patients subsequently make their own decision regarding which treatment to undertake. In contrast, informed consent does not require the patient to choose one treatment from a variety of obtainable treatment options. Mostly, patients provide authorisation concerning one treatment choice, whilst they are informed about others. Second dissimilarly to the informed model, informed consent is a form

of authorising legal permission for which definite standards and conditions require to be met before the patient's permission is effective. This includes, for example, the patient's understanding of the treatment information and the patient's competence (Fedan and Beauchamp, 1986, Emanuel and Emanuel, 1992, Conti et al., 2013).

Several criticisms have been addressed towards the informed model including:

- The amount of the treatment information has been provided by doctors in the informed model may not be sufficient to intensely support the patient's decision (Hibbard et al., 1997). The demand to provide an adequate amount of the treatment information to the patient perhaps a significant factor that needs to be considered in this model. Too much information or poor information may influence the decision made. For example, the relationship between smoking and the failure of dental implants has been confirmed (Baig and Rajan, 2007). In respect to this relationship and the informed model, take the example of patients who smoke and who have decided to have implant therapy. If they have not been informed of the negative link between implants and smoking before they have the implants and their implants subsequently fail to integrate with the surrounding bone, the patient may not be satisfied with the treatment received. This is because not only they did not know about the correlation between smoking and the failure of implants. But also they have not been informed about this link before they had the surgery. Thus, the patient may argue that if they had known that smoking was associated with the failure of implant, they would not have undergone this treatment. This example illustrates how poor information regarding the treatment may influence the patient's decision in the informed model.
- How the treatment information is interpreted by the patient may be another critical aspect of the informed model (Kozielecki, 1981). This can be explained through whether the patients have fully understood their treatment information disclosed or not. Hence the method of communication between doctors and patients that may include possible benefits and complications of the treatment may affect the decisions made.

1.5.2.4. Shared Decision Making Model (SDM)

This section will now provide an overview of the shared decision making model (SDM). However, due to the great tendency of researchers to employ the SDM in clinical practice over recent years (Thorne et al., 2013, Rockenbauch and Schildmann, 2011, van Staveren, 2011, Frosch and Kaplan, 1999, Coulter et al., 2011), a further section in this study will examine the SDM in more detail (See 1.5.4. Examining the shared decision making model (SDM)).

The SDM model has been outlined as the involvement of at least two participants (patient and doctor) in the process of treatment decision making. They shared information and treatment options and then both agree on the treatment decision (Frosch and Kaplan, 1999). Thus this model has assumed that patients are not essentially able to make decisions on their own; consequently, it is the doctor's responsibility to support and advise the patient's decision by outlining and discussing the values and preferences of the patients and then approving the decision made (Rockenbauch and Schildmann, 2011). Therefore, the duty and responsibility of the decision made are shared between the patient and doctor in the SDM model.

The SDM model has been developed to replace other medical decision making models, such as the paternalistic, interpretative and informed models. This is obvious because the key purpose of the SDM model is to assist patients to have a functional role in the decision making process involved in their treatments (Edwards and Elwyn, 2009). Expressly the SDM model aims to enable patients to be actively involved in their treatment decisions. The patients' role in this model is to transfer the preferences and values that are formed by their understanding of the treatment choices and social environment. This includes aspects such as building good interactions with their doctors, addressing their health issues, priorities and preferences, looking for supportive information and making joint treatment decisions with their doctors (see Figure 2 below describes the SDM model) (Coulter et al., 2011). Moreover, there have been significant alterations in practice and attitudes in recent years with respect to the SDM model. The General Medical Council (GMC) in the UK, for example, substituted its 1998 booklet entitled 'Seeking patients' consent: the ethical considerations' to 'Consent: patients and doctors making decisions together' in 2008 (General Medical Council, 2008, Edwards and Elwyn, 2009). This change from 'seeking patients' consent' to 'making decisions together' obviously reflects a massive change in the SDM model through involving patients in their treatment decisions.

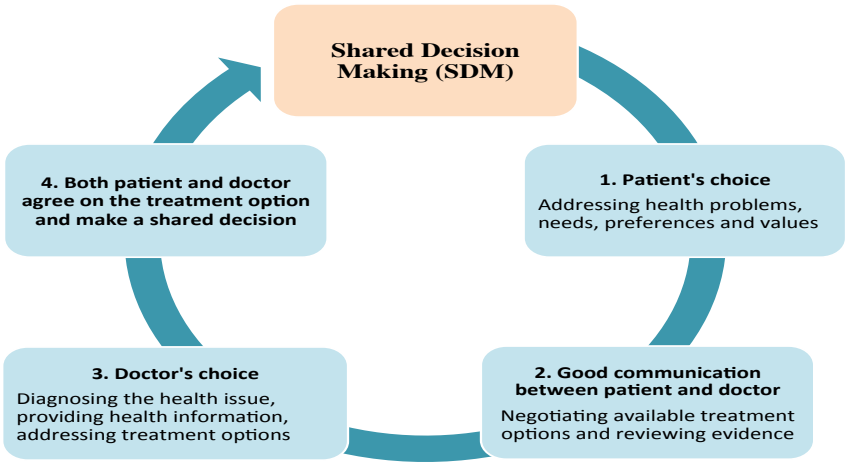

Figure 2 Shared decision making Model (SDM) (Alzahrani A, 2016)

Indeed, patients' engagement in health research and treatment decisions is being broadened. The scale of power has been reformed by enabling shared duties, responsibilities, risks and uncertainties about treatment decisions between both patients and doctors (Adams and Drake, 2006). Patients' engagement may be seen to be one of the main superior features of the SDM model when it is compared to other medical decision making models. This engagement of patients in the process of decision making is universally appreciated (Adams and Drake, 2006). 'Patients engagement' defined as a method of ensuring that medical decisions have been made based on doctors' knowledge of treatment choices combined with patients' personal knowledge of their preferences and the values associated with the implications of dissimilar treatment choices (Charles et al., 1997). Moreover, involving patients in their treatment decisions not only provides the advantage of doctors showing patients more respect. But also it is valuable to patients' wellbeing and health. However, in order to enable patients' engagement in their treatment decisions, it is evident that doctors must be sufficiently competent and improved essential resources such as decision aids are required (Edwards and Elwyn, 2009, O'Connor et al., 1999). Accordingly, patients' engagement in their treatment decisions would improve patients' wellbeing and health with more respect being shown to patients by doctors. This can be highlighted as a significant benefit that is only accessible in the SDM model.

Employing the SDM model in clinical practice has revealed a range of advantages. These include: developing a patient's self-esteem, improving the quality of healthcare, increasing the satisfaction of both doctor and patient, increasing a patient's confidence, improving regard for an individual's needs, reducing a patient's anxiety and developing a patient's ability to deliberate about their health problems in more positive interactions with their doctor (Crawford et al., 2002, Thornton et al., 2003). These key advantages of the SDM model have led to massive support from healthcare policy makers and researchers for the implementation of this model. On the other hand, recently, the employing of other decision making models, such as the paternalistic and the interpretative models, have received less attention in healthcare services (Coulter et al., 2006). Nonetheless, to implement the SDM model and obtain its optimal benefits, emphasis has been made in the literature to the demand to develop interaction skills between both patients and doctors through conducting several educational programmes. For example, educational programmes such as tools for reviewing evidence, improving broad interactions and possible training techniques for increasing patients' knowledge have been conducted to achieve the best benefits from implementing the SDM model (Edwards and Elwyn, 2009). Therefore, it is often claimed that the SDM model has the potential to improve health outcomes and increase patients' and doctors' satisfaction with the decisions made through the key advantages of this model mentioned formerly.

The suitability of employing the SDM model with patients at the planning stage of dental implant care is highlighted. The reason for this is largely as a result of the key advantages of the SDM model that have been discussed previously. Additionally, making the decision to either go with implant therapy or not is a complex decision that should be taken with care from both patient and dentist perspectives. This decision involves evaluating a range of different factors and aspects related to the appropriateness of the technology such as medical, social, psychological and economical aspects in relation to dental implants. Thus, the demand to share medical and personal information, making shared decision between both patient and doctor may improve the outcomes of the implant therapy by for example, reducing blame between the dentist and patient for the decision made if the implant failed. Nonetheless, because there are no studies on the SDM model in relation to dental implants in the literature, it may be a challenge to confirm the suitability of the SDM model in dental implants treatments.

It should be pointed out that the SDM model has been criticised for the following reasons:

- The SDM is based on establishing a good relationship between the patient and doctor, which allows them to share the information properly, and the patient is supported with regard to considering his/her views and preferences throughout the decision making process (Elwyn et al., 2012). However, this good relationship between may not always exist. Hence, achieving a good decision may be affected by how the process of SDM is conducted and how the doctor and patient communicate.
- It has been shown that the SDM cannot be used in patients with persistent and severe mental disease (Adams and Drake, 2006). In this respect, the SDM model may not be used for all individuals, especially those with mental diseases. Nonetheless, researchers have just begun to explore the relationship between mental disease and the possibility of implementing SDM model (Adams et al., 2007, Drake et al., 2010).

1.5.2.5. Medical decision making models - differences and drawbacks

This section introduces the main differences and drawbacks that have been raised around the four previous decision making models. It will start by addressing the main differences between the models, followed by which the basic drawbacks of those medical models will be introduced.

The four former decision making models have been shown to vary in their understanding of two main aspects: 1) the suitable scope of the patient's independence in the process of decision making, and 2) the doctor's duties and responsibilities associated with these decisions. Regarding the patient's independence considered in the decision making process, although some medical models work with 'deeper' thoughts of independence, other models are inclined to show superficial thoughts of independence. For instance, the SDM model proposes that

decision-independence is based on an atmosphere of interaction and deliberation between health care professional and patient (Emanuel and Emanuel, 1992).While the interpretative and informed models tend to reveal a binary image, where independence is either absent or present (Fedan and Beauchamp, 1986, Banning, 2008). Additionally, with respect to doctor's duties and responsibilities, the SDM model has clearly greater emphasis on the doctor's duty and responsibility to involve patient's preferences, thoughts, values, and to consider how these may be employed to make the treatment decision (Frosch and Kaplan, 1999). In contrast, other models like informed, interpretative and paternalistic have excused the doctor from those duties and responsibilities (Shaffer, 1992, Emanuel and Emanuel, 1992). In other words, in all medical models except SDM, the process of decision making is frequently with either the patient or with doctor, which highlights that deliberation does not need to be performed. This process subsequently does not require communication or shared opinions. Therefore, the final decision can be made outside the doctor-patient encounter.

These medical models have two basic drawbacks: 1) neglecting the formation of a choice set for decision making, and 2) disregard of the nature of how the communication between patient and doctor led to the final decision. With respect to the first drawback, there is sufficient evidence to suggest that about 43% of individuals were offered one or more treatment choices during their consultations (Wirtz et al., 2006). While only about 10% of the individuals were proposed other treatment choices (Braddock et al., 1999, Gattellari et al., 2002). Additionally, doctors have been shown to spend only a small amount of time introducing treatment choices during their primary care consultations (Elwyn et al., 2003). This accordingly highlights two main consequences: A) not all medical models represent the various treatment choices proposed to the patient, and B) the decision making process is commonly disregarded. Nonetheless, the various treatment choices that may be accessible to individuals are influenced by several factors. These include: doctors' responsibilities and duties, doctors' understandings of the individuals' preferences and values, policies and guidelines, and medical information about the treatment choices (Whitney, 2003). It can be concluded that neglecting the formation of a choice set for decision making in clinical practice is a basic drawback that is shared by all of the medical models.

The second drawback of these models is the nature of the communication between the patient and doctor, and the fact that how this progresses to the final decision is commonly disregarded (Charavel et al., 2001). The lack of detailed justification of how patients and doctors communicate with regard to the patient's beliefs, preferences, needs and values is considered to be a shared drawback of all former medical models. For example, there is evidence that suggests that the process of the patient-doctor communication during the consultations does not always

explain the options in depth (Charavel et al., 2001). It is frequently described as a "negotiation" or "mutual discussion" without any clarification of how this communication progressed (Elwyn et al., 2003). However, in the last few years, "*option scale"* has been established to empower the evaluation of the process of contribution and communication. For example, features such as the doctor investigating the patient's beliefs and concerns (ideas and fears) about how the problem is to be controlled and treated have all evolved (Elwyn et al., 2003). Nonetheless, the "*option scale*" does not capture the full process of deliberation and communication between the patient and the doctor (Wirtz et al., 2006). Therefore, it can be concluded that the nature of the communication between the patient and doctor and how this progressed to the final decision is commonly disregarded among all of the former medical decision making models. This may be highlighted as a main drawback of these models.

To broadly sum up, four medical decision making models have been explored and discussed: paternalistic, interpretative, informed and shared decision making models. Different assumptions and critiques around these models have also been introduced. Two main differences have been shown for these medical models: the suitable scope of the patient's independence in the process of the decision making and the doctor's duties and responsibilities associated with the decision. All of these models have been found to share two basic drawbacks: they neglect the formation of a choice set for decision making and they disregard how the communication between the patient and doctor progressed to the final decision. Accordingly the need to explore the patient-doctor communications and decision making in more detail may be highlighted. This will be described in the following section.

1.5.3. Patient-Doctor communication and decision making

The fact that some of the medical decision making models explained earlier have developed from broader concepts of patient-doctor communications and involve aspects irrelevant to the process of decision making has been acknowledged in the literature (Wirtz et al., 2006). For example, the SDM model has developed from the concept of patient-centred medicine (PCM). The concept of PCM explains the methods where the doctor practices medicine as a whole profession, not limiting to decision making. The PCM foundation has established from the theory that the integration of a patients' personal experience of an illness into medical practice is a crucial component of blameless medicine. Only two components out of six of the communication of the PCM process are associated with decision making between patient and doctor: 1) investigating the illness and patient's disease experience, and 2) establishing common ground concerning management (Strouse, 1996, Laine and Davidoff, 1996). These two components propose that the SDM or the interpretative models of decision making are employed according to the patient's preference.

Similarly, an additional broader concept, that some of the medical decision making models, such as SDM, have developed from is the concept of concordance. The concept of concordance defined as an agreement reached following a discussion between doctor and patient, which respects the patient's preferences and beliefs in deciding whether, how and when medications are to be taken (Royal Pharmaceutical Society of Great Britain et al., 1997). This concept endorses an entire approach of patient-doctor communications instead of merely an approach to decision making regarding the treatment of the patient. This concept has also shared an idea that is similar to that of the PCM concept, where that patient's experience of disease must be combined into the patient's care strategy. Nonetheless, because of the various developments, amendments and interpretations that have been made to the concept of the concordance, it has become gradually more challenging to recognise its main components. Consequently, comparing the concept of concordance to other medical decision making models such as SDM is difficult (Royal Pharmaceutical Society of Great Britain et al., 1997, Wirtz et al., 2006).

Communication between the patient and doctor is a key factor in the decision making process. This interaction supports patient involvement, influences patient satisfaction and enables a superior health status to be achieved (Stewart, 1995). Moreover, typical medical decision making consultations are evidence-based and patient-centred. During these consultations, most patients have consented to doctors' suggestions as they feel that the doctor has the decision making authority (Mendick et al., 2010). In this respect the discussion between the patient and doctor about treatment choices requires uncertain information that is centred on possibilities and may not be significant for the individual to be outlined. Patients are incapable of realising uncertainties otherwise and cannot properly participate in the process of decision making unless they are provided with the precise information. Additionally, influential interaction skills are a key aspect of patients' involvement in treatment decisions (Street and Millay, 2001). However, there is evidence suggests that some patients may not have the desire to participate in the process of decision making. This is related to different patients' social factors. For example, increased illness severity, lower educational levels, moderate income, and lower occupation levels of patients have all been shown to be related to patients having a preference of less contribution in the treatment decision making process (Waitzkin, 1985, Ende et al., 1990).

The majority of the studies that have been performed on the area of patient-doctor communications have focussed on interaction skills, such as the patient-doctor relationship and level of understanding. These are significant aspects of care and are patient-centred (Silverman et al., 2005). However, they are not crucial components of the shared decision making model (Singh et al., 2010). This highlights the need to explore and examine shared decision making in more detail.

1.5.4. Examining the shared decision making model (SDM)

Further to the previous section of the shared decision making in which the SDM model was introduced and critiqued, this section will describe how the SDM can be observed and examined. The dissimilar techniques of conceptualising the SDM were revealed in varying measurements. This accordingly made evaluating the structures of SDM a challenge. Few systems are currently established to examine the whole process of the SDM because the model is quite new (Kriston et al., 2010). However, observing consultations through employing coding systems can be regarded as the most effective technique of examining the SDM. This is mainly because it permits access to the natural process that occurs in consultations (Street and Millay, 2001, Dierckx et al., 2013). Nevertheless, it should be emphasised that there is no particular coding system that has been employed to examine the SDM within dental implant consultations. While most of the coding systems that have evaluated the SDM were established in cancer consultations.

A review of the literature concerning observing and examining the presence of the SDM in medical consultations, reveals that there are seven key coding systems that have been designed. These are: Street's technique of evaluating patient perception in medical consultations, Roter Interaction Analysis System (RIAS), Guimond & colleagues Decision Support Analysis Tool (DAST), Rochester Participatory Analysis Decision Making Scale (RPAD), Decision Analysis System for Oncology (DAS-O), Singh and Colleagues Coding System and finally Details of Essential Elements and Participations in Shared Decision Making (DEEP-SDM) (Street and Millay, 2001, Roter and Larson, 2002, Guimond et al., 2003, Shields et al., 2005, Singh et al., 2010, Brown et al., 2011, Clayman et al., 2012). Table 5 below describes these coding scales in some details.

It should be made clear that these coding systems differ in terms of their medical applicability for examining the SDM and their relevance to dental implant settings. Accordingly this highlights the need to discuss the applicability and validity of these seven coding systems in relation to dental implant settings. This will be introduced throughout the rest of this section.

Table 5 Different Coding Systems for observing and examining the SDM

	Coding scale system	*Description*
1	Street's technique of evaluating patient perception in medical consultations	Street's technique is based on dividing expressions of both patients and doctors into elements that are then coded. Elements include patients' behaviours in terms of asking questions, explicating concerns and providing confident answers, and doctor behaviour includes using helpful advice and partnership-building (Street and Millay, 2001).
2	Roter Interaction Analysis System (RIAS)	The RIAS tool was established to code the interactions of doctors and patients during the consultations. It is commonly used without the employment of a transcript, straightforwardly from audiotapes of the medical exchange (Roter and Larson, 2002).
3	Guimond & colleagues Decision Support Analysis Tool (DAST)	The DAST tool was designed to measure doctors' use of decision support and associated interaction skills in medical consultations. It includes four elements of interaction skills and six elements of decision support skills (Guimond et al., 2003).
4	Rochester Participatory Analysis Decision Making Scale (RPAD)	The RPAD system is mainly dependent on the emphasis on doctor's behaviour that supports patient involvement. The RPAD tool includes a 9-element scale in which coders determine how sufficiently a doctor demonstrated a specific behaviour, such as deliberating uncertainty and clarifying agreement (Shields et al., 2005).
5	Singh and Colleagues Coding System	This system was established as an oncology-specific system for SDM. It includes 20-elements and six themes. However, it is purported that this coding system requires additional confirmation and validation (Singh et al., 2010).
6	Decision Analysis System for Oncology (DAS-O)	The DAS-O technique was established to assess the SDM in breast cancer medical encounters. It is a reliable system that includes two subscales: producing the SDM context and providing well-defined information. It merely identifies doctor behaviour and does not consider patients' behaviour (Brown et al., 2011).
7	Details of Essential Elements and Participations in Shared Decision Making (DEEP-SDM)	The DEEP-SDM tool was designed to measure the SDM in breast cancer consultations. It includes 10- elements for measuring SDM. It also provides perfect information about employing each of those elements. It focuses on patients' perspectives regarding the decision of their treatments. However, it does not provide much information in respect of the doctors' role in the process of the SDM (Clayman et al., 2012).

Although Street's technique comprises measuring patients' involvement, it is not like the SDM model and eliminates the real nature of decision making communication. The main purpose of Street's system is to examine the scope of frequently asked questions by patients and deal with concerns during their medical consultations (Street and Millay, 2001). Though it neglects the key aspect of the SDM model that is how patients are really engaged in their treatment decisions. For example, aspects including how patients address their health problems, needs, preferences and values, and how the decisions concerning their treatments are made, seem to be completely ignored in Street's tool (Street and Millay, 2001). Accordingly it is doubtful that this technique could be employed to evaluate the real nature of decision making communication. Therefore, it may not be possible for this technique to be used in this study because it does not focus on the real nature of decision making communication. In addition, the RPAD system may also not be applicable to this study. This is because it merely focuses on the physician's behaviour that supports patient participation and neglects the assessment of the patient's behaviour. It also aims to examine aspects such as whether physicians deliberate about uncertainty and provide sufficient information related to the patients' health problems or not (Shields et al., 2005). Consequently, it may be apparent that the RPAD system does not examine the aspect related to patients' contributions in the decision making process, such as considering patients' views and preferences and involving patients in their treatment decisions. Therefore, both Street's and RPAD systems do not seem to be applicable to this study because they do not focus on the real nature of the SDM model and the approach centred on 'patients engagement' in treatment decisions, which is a key aspect of the SDM model.

The RIAS coding scale does not concentrate on the themes of the SDM model, yet it aims to assess aspects employed to activate patient centeredness such as patients' responses to doctors' emotions (social and positive chats) and doctors' ability to gather data from patients, that is, about how and where patients feel the pain (Roter and Larson, 2002). While the DAST system has been developed to measure doctors' use of decision support and associated interaction skills in medical consultations (Guimond et al., 2003). This system not only focuses on examining elements for assessing doctors' interaction skills, such as providing information and answering patients' questions. But also evaluating elements for assessing doctors' decision support skills, such as discussing the involvement of others, that is, family members, in the decision making process and evaluating the treatment information that the patients have about their health (Guimond et al., 2003). Nonetheless, these two systems (RIAS and DAST) do not assess patients' involvement in the decision making process concerning their treatment. For instance, aspects including investigating patients' needs, preferences, and expectations from the proposed treatments are absent in these systems. Hence, it would not be possible to capture the whole

nature of the SDM process by employing these two systems. Therefore these two systems seem to be not applicable to this study because they do not focus on the process involved in the SDM and how patients are really involved in the treatment decisions.

The DAS-O coding scale has been developed for use in cancer consultations, particularly breast cancer consultations. It has good content validity and great inter-rater reliability (Brown et al., 2011). Once again though the DAS-O scale does not evaluate patients' behaviour, but rather focuses mainly on the doctors' behaviour. This system consists of two subscales: first producing the SDM context that includes aspects such as checking patients' preferable decision making styles and examining patients' understanding and knowledge. Second providing well-defined information such as sufficient information about the cancer, risks involved with the treatment and any possible complications. These subscales clearly focus on examining the ability of the doctor to demonstrate specific skills. However, how patients contribute in the decision making process, including factors such as patients' needs and values and agreements between both patients and doctors over the decisions made, is neglected (Brown et al., 2011). Therefore, using the DAS-O system does not seem to be correct in the context of this study.

Singh et al.'s (2010) coding scale has also been developed for use in oncology consultations. Although this system focuses on the impact of doctors on patients' outcomes, it doesn't evaluate patients' behaviours. For example, this system examines aspects related to the doctors' contributions during medical encounters, such as presenting and critiquing research evidence, reviewing patients' social circumstances and medical histories, suggesting multiple possible treatment options, addressing the benefits and side effects associated with treatment options and, finally, providing an option for patients to postpone any treatment decisions to the next consultation. On the contrary, the DEEP-SDM technique for examining the SDM model focuses on patients' perspectives and neglects, to some extent, an evaluation of the doctors' role in the process of the SDM model (Clayman et al., 2012). For instance, the DEEP-SDM tool emphasises examining aspects related to the patients, such as patients' outcome expectations, understandings, needs, self-efficacy, preferences, values and most significantly the risk associated with the treatment option. These aspects obviously reflect the patients' real contributions in the decision making process. Please see Table 6 and Table 7 below describe the elements and the differences of both Singh and colleagues and the DEEP-SDM coding systems.

Table 6 Elements of DEEP-SDM and Singh and colleagues coding systems

Singh and Colleagues Coding Scheme Elements	DEEP-SDM Coding Scheme Elements
Theme 1: Establishing a problem: 1. Reason for consultation established 2. History reviewed 3. Social circumstances reviewed **Theme 2: Doctor-patient relationship** 4. Interruptions 5. Rapport building **Theme 3: Research evidence:** 6. Evidence presented 7. Quality of research discussed 8. Research reagent to the patient 9. Physician appraisal of the data **Theme 4: Patient perspective** 10. Patient's asked how much information they wanted 11. Patient's asked for decision making preference 12. Physician ensured patient' understanding 13. Patient's view enquired upon **Theme 5: Decision making:** 14. Treatment option presented 15. Multiple option presented 16. Treatment process described 17. Side effects discussed 18. Possible benefits discussed 19. Patient's values in decision considered **Theme 6: Time issues** 20. Option given to defer treatment decision ***(Singh et al., 2010)***	1. Rationale for option 2. Definition of the option 3. Process of the procedure 4. Risks/cons* 5. Benefits/pros 6. Patient's self-efficacy* 7. Patient's preferences and values 8. Patient's outcomes expectations* 9. Patient's understanding confirmed 10. Plan for follow-up* ***(Clayman et al., 2012)***

* Although these aspects seem to be important and represent the patients real contributions in the decision making process. They are not considered in the Singh and colleagues coding system.

Table 7 Differences between Singh and Colleagues and the DEEP-SDM tools

Singh and Colleagues Coding Scheme Elements	DEEP-SDM Coding Scheme Elements
1) It focuses on the impact of doctors on patients' outcomes and it neglects to evaluate the patients' behaviour. For example, it examines aspects related to the doctors' contributions during medical encounters, such as presenting and critiquing research evidence, reviewing patients' social circumstances and medical histories, suggesting multiple possible treatment options, addressing the benefits associated with treatment options and providing an option for patients to postpone any treatment decisions to the next consultation. **2)** It focuses on doctor-patient interactions, rather than decisional support in general. **3)** It provided a great emphasis on discussion of evidence and on individualising treatment options to the patient's clinical and social situation. **(Singh et al, 2010)**	**1)** It focuses on patients' perspectives and neglects, to some extent, an evaluation of the doctors' role in the process of the SDM model. For instance, it emphasises on examining aspects related to the patients, such as patients' outcome expectations, understanding, needs, self-efficacy, preferences and values. **2)** It includes evaluation of whether possible risks of the treatment discussed or not. **3)** It focuses on the contribution of participant e.g. Noting who initiated the segments (doctor or patient). **4)** It describes the temporal features of decision making such as the plan of the follow up. **(Clayman et al., 2012)**

Accordingly, because Singh and colleagues' system focuses on doctors' perspectives and the DEEP-SDM system focuses on patients' perspectives, it may be possible to combine and modify these systems into a single framework. This may result in an appropriate system that enables examining more comprehensively decision making communication between patients and dentists in dental implant consultations. Combining these two systems into a single framework will make it possible to evaluate both patients' and dentists' contributions in the decision making process about implant therapy. This can be achieved by including all aspects related to the dentists' contributions using Singh and colleagues' system, such as presenting and critiquing research evidence, reviewing patients' social circumstances and medical histories, suggesting multiple treatment options and addressing the benefits associated with treatment options, which will be employed in this study to evaluate doctors' contributions in the decision making process concerning the implant therapy. Similarly, all aspects related to patients' contributions using the DEEP-SDM system, such as patients' preferences, values, needs, understandings, expectations, and most importantly risks related to treatment options would be explored to enable the evaluation of patients' contributions to their implant decisions. Thus establishing this combined framework will provide strength in terms of capturing the total

contribution of both patients and dentists in the implant consultations. It will also limit the evaluation of one aspect of medical encounters (patients' or dentists' contributions), as most of the tools have been doing. Therefore, it might be suggested that it is possible to establish a dental implant-specific framework to examine the SDM model that would be mainly based on combining and modifying the DEEP-SDM and Singh and colleagues systems. Please see Appendix 1 describes the proposed technique (coding frame) for examining the shared decision making (SDM) in the implants consultations.

In summary, observational tools have been shown to be effective techniques for examining SDM as they permit access to the natural process occurring in medical consultations. There are seven different coding scales for examining SDM, which have been described above. The applicability of these systems for examining the SDM model in implant consultations has already been discussed. It has been suggested that establishing a dental implant-specific framework based on a combination of the DEEP-SDM and Singh and colleagues systems might be possible, enabling the true nature of SDM between both patients and dentists in consultations to be captured. There remains however an important dimension to decision making that has been largely absent in the debate, this being the role of power. The next section will describe the association between power and decision making approaches.

1.5.5. Power and Decision making

One subject that is frequently ignored in the literature on decision making is the problem and subject of power. This approach is complex it involves considering the dynamic nature of social communications, which is subject to several alterations from the effects of exercising power (Karnieli-Miller and Eisikovits, 2009, Lukes, 2005). In other words, how power has been exercised in the decision making process may have a significant influence on the decisions made.

It should be obvious that medical reality does not constantly follow theoretical decision making models and that these models have been developed as a critical lens through which to explore medical decision making. Gathering data from medical encounters delivers a greater understanding of how needs, attitudes and preferences are translated to particular behaviour in everyday medical practice (Karnieli-Miller et al., 2007). Moreover, the importance of the approach of power and its influence in relation to the decision-making process has already been explained in (1.5.1. Decision making – An introduction). It comes to conclusion that exploring the role of power in the decision making process is a significant consideration in this research. Nonetheless, it seems important to provide an overview of the approach to power in relation to decision making.

According to Lukes (2005), there are three dimensions to the understanding power these are: the one-dimensional view of power, the two-dimensional view of power, and the three-dimensional view of power. These views of power will be explored in the following paragraphs in terms of their definitions, focus and criticisms.

The one-dimensional view of power developed by American political scientists, such as Robert Dahl and Nelson Polsby (1961, 1968). It has been defined thus: "*A has power over B to the extent that he can get B to do something that B would not otherwise do*" (Dahl, 2005, p.14). This view of power focuses on five aspects: "*behaviour, decision making, key issues, observable overt conflict, and subjective interests seen as policy preferences revealed by political participants*" (Lukes, 2005, p.29). Although the one-dimensional view of power has paid sufficient attention to focusing on decisions; however it has been criticised for neglecting the focus on non-decisions (Bachrach and Baratz, 1970). Non-decisions defined as "*decisions that result in suppression of latent challenge to the values and interests of the decision makers*" (Bachrach and Baratz, 1970, Lukes, 2005, p.22). A further critique of that this view of power fails to take into consideration the fact that power may be operated to confine decisions to quite safe issues (Bachrach and Baratz, 1970). For example, it would not be possible for this view of power to evaluate whether the dentist made the decision to go for other dental treatments such removable dentures to avoid the complications of the implant therapy or not. This mainly because this view of power does not consider the hidden values and interests of the dentists or patients that may influence the decision whether to go with implant therapy or not.

The two dimensional view of power explained as "*a qualified critique of the behavioural focus of the one-dimensional view of power*" (Lukes, 2005, p.25). The author justified that he mentioned the term qualified in this definition because he thought that "*it is still assumed that non-decision making is a form of decision making*" (Lukes, 2005, p.25). He claimed that this view of power involves "*the means in which decisions are banned from being made in potential issues over which there is a noticeable conflict of personal interests seen as embodied in express policy preferences and sub-political grievances*" (Lukes, 2005, p.25). Additionally, Schattschneider and Adamany (1988) pointed out that "*all forms of political organisation have a bias in favour of the exploitation of some kinds of conflict and suppression of others, because organisation is the mobilisation of bias. Some issues are organised into politics, while other are organised out*". It can be clearly seen that this two dimensional view of power emphasises several aspects including "*decision making and non-decision making, behaviour, issues and potential issues, observable overt or covert conflict, and subjective interests seen as a policy preferences or grievances"* (Lukes, 2005, p.29). However, this view has been criticised through considering power as an approach that can operate in covert ways and can be noticed through

collective directions over which no definite person has control or through the actions and selectivity of an organisation where no definite person has a whole oversight but presents bias (Crenson, 1971). In other words, power can operate where we are excluded from the political process. For example, within implant consultations, patients may notice the power of the dentist which is based on convincing the patient to go for implants, as an example, and patients have no control over changing the decision because of different possibilities. These include patients may lack information about the treatment or may be because they believe that the dentist's idea is reasonable in relation to his/her own value and interest. The two dimensional view of power has also been criticised through the fact that it is dependent on observable conflict, and thus it ignores manipulation and authority concepts (Lukes, 2005). For example, a dentist can exercise power over the patient by shaping his/her interests, without knowing from the patient's perspective. This may highlight the fact that power and decision making are associated with many concepts, such as concepts of coercion, influence, authority and manipulation. These concepts will be described next.

The concept of *coercion* described as "*A secures B's compliance through deprivation when there is a conflict over values or a specific action*" (Lukes, 2005, p.21). For example, a dentist may secure the patient's compliance to go along with implants when the patient, in fact, is not interested in going for implant therapy but he/she complies because he/she has no power to contradict the dentist's decision. This may be because of a lack of knowledge about the treatment. On the other hand, the concept of *influence* explained as "*A makes B change their action without reverting to any form of overt implicit threat*" (Lukes, 2005, p.21). For instance, a dentist may make the patient change his/her decision to go along with implant therapy without an overt threat, such as convincing the patient to go for an implant because of the high success rate and several advantages of the therapy without indicating the disadvantages of implants, such as the aesthetic disadvantage a similar situation involves authority. Authority can be outlined as "*B complies because he believes that A's idea is reasonable in relation to his/her own value or because its content is legitimate or reasonable or arrived at through legitimate means*" (Alford and Friedland, 1985). For instance, the patient complies with going for implant therapy because he/she believes that the dentist's suggestion of going for an implant is the best available treatment option, or the dentist's mentioned the several advantages of implant, while, for example, the patient's does not recognise that the dentist have not introduced the disadvantages of implant therapy. Lastly, the manipulation concept identified according to Lukes (2005, p.21) as "*perhaps a sub-concept of force whereby compliance happens even though complier does not recognise the nature of what has been demanded of him or her*". For instance, the patient complies with the dentist's decision to go for implants even though the patient does not understand the nature of what is being asked of him or her, maybe because of a

lack of knowledge or lack of supported information. Hence, from the description of these previous concepts and examples, it seems obvious that these four concepts are significantly related to power and decision making and may also influence the decision made in different ways. This suggests that exploring the concepts of coercion, influence, authority and manipulation in relation to power and decision making about the implant therapy may be worth considering in some depth. Additionally the key aspects of the two dimensional view of power, "decision making and non-decision making, behaviour, issues and potential issues, observable overt or covert conflict, and subjective interests seen as a policy preferences or grievances" would be essential to evaluate the role of power in the decision making process within the implant consultations.

The last view of power is the three dimensional view that described as "*a critique of the behavioural focus of the two dimensional view of power*". This view focuses on "*decision making and control over the political agenda (not necessarily through decisions), issues and potential issues, observable (overt or covert) and latent conflict, and subjective and real interests*" (Lukes, 2005, p.26). However, the three dimensional view of power is challenging because it is difficult to determine where power is operating. Secondly, this view depends on establishing a counter factual which can be a challenge to establish (Lukes, 2005, p.27). For example, how do we establish that the dentist has managed to get the patient to do something that is against their real interests? This is really hard to show.

To sum up, the importance of linking power to decision making comes from the fact that the approach of decision making is a complex approach that involves a dynamic process of social communication, which is subjected to alteration of the internal and external effects of exercising power. The various dimensional views of power have been described in terms of their definitions, focuses and limitations. Nevertheless, four key concepts - coercion, influence, authority and manipulation - have shown a significant association with power and decision making approaches. It is argued that in this study, employing the one and two dimensional views of power beside the four previous concepts may be a suitable framework for exploring the role of power in the decision making process within the implant consultations. The next section explores the literature on the role of power in the decision making process and seeks to establish how existing approaches have sought to analyse this particular concept.

1.5.6. Examining the role of power in the decision making process

The role of power in the decision making process within medical consultations has rarely been explored in the literature. There are only a few studies have focused on this relationship (Karnieli-Miller and Eisikovits, 2009). For example, McDonald et al. (2012) investigated the effect of power dynamics on cooperation between health specialists over diabetes. The author

employed semi-structured interviews that were audiotaped, transcribed and analysed by a thematic analysis approach. The interview guide for the patients was established to explore the patients' satisfaction with and experience of the health specialised coordination, while the interview guide for the doctors was proposed to explore their collaborations with outside organisations and health practitioners. The study concluded that relationships between organisations remained problematic. Power dynamics have influenced the choice made by the doctor about whether to cooperate, to what level and with whom, which have also affected the patients' satisfaction and experience of healthcare services (McDonald et al., 2012).

Moreover, Pearce and Robinson (1987) employed the social power scale (SPI) designed by (Spekman, 1979) to examine the role of social power in decision making. The SPI scale involves 15 items denoting the base of social power, such as "I respect his competence because he is more experienced than I, or following his advice results in a better decision" (Pearce and Robinson, 1987, Spekman, 1979). The response rates were based on a five-point scale. However, this scale has limited choices and employs closed questions that can only be rated from one to five (Pearce and Robinson, 1987). Thus, participants may have other comments or choices that are not available in the scale and, therefore, it is not possible to measure these choices or comments.

Callon et al. (1986) established an ethnographic approach for examining power in the decision making process. The approach was aligned to perspectives that purpose to investigate how communications of interests are really established and replicated through sensible strategies and unwitting practices formed by the individuals themselves (Clegg, 1989, P. 203). According to Callon et al. (1986) interests act as "*temporality stabilised outcomes of previous processes of enrolment, which may intentionally produced or may not*". In this respect, 'temporality stabilised outcomes' might be practices usually encountered in their stability and reality, which no individual essentially 'intended' in any relevant way. While 'Enrolment' of others to individual's ideas is a tactic in which construction of individual's own and others preferences may have a strategic role. Callon's method has been named as 'sociology of enrolment' or 'sociology of translation' referring to the techniques by which these results are interpreted.

Callon's approach to power involves four key aspects. These are: problematization, interēssement, enrolment and mobilisation (see Figure 3). Problematization includes the agents' attempts to make others join their agency by placing their solution to the others troubles in front of them. For example, if the dentist said to the patient " I know you were suffering from denture sliding, but this will be completely disappeared if you go with implant therapy". So, the dentist here tries to make the patient join his interest by placing a implant therapy as solution for the patient's trouble about the denture sliding. While, the interēssement can be explained as the

technique of 'enrolling' or 'interesting' another agent to one's own agency. For instance, if the dentist said to the patient "I was at a dental implant conference last month, and there was an interesting new technique in placing an implant and (he explained the procedure of this technique", the patient then said "I would go with this new technique, if you provide it". Here, the patient has been enrolled to the dentist's interest, which is the new technique in placing implant. The third aspect of the Callon's approach is enrolment. It has been described as the purpose of agencies to establish incorporation and alliance between involvement and the meaning that they have sought to fix. For example, if the dentist said to the patient " I can see how it is difficult to eat on the left side as you do not have any upper teeth, but implant would sort this out, would like to go for it". So, the dentist establishes alliance between involving the patient in implant decision and showing understanding of the patient's suffering from eating in the left side. This is enrolment. Lastly, mobilisation signifies the range of systems that agencies employ to confirm the demonstrations of preferences, which other joined agencies develop, are indeed themselves fixed, throughout undercutting or betraying their demonstrations (Callon et al., 1986, Clegg, 1989). For instance, if the dentist said to the patient " there are several dental treatment options to treat your condition, including removable denture, fixed bridge and implant therapy, but I think the implant would be the most suitable". So, the dentist introduces several treatment options, but obviously he was interested in implant and he mobilised the patient's decision to go with implant therapy by stating that it is the most suitable.

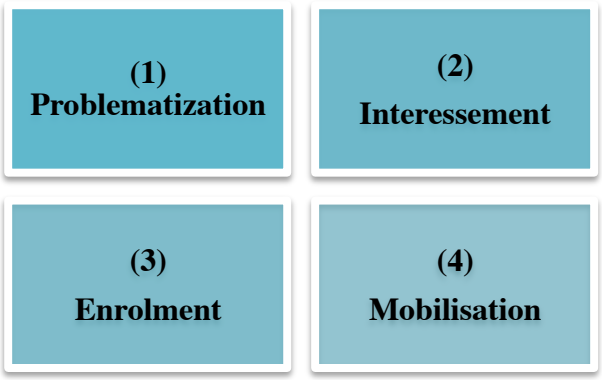

Figure 3 Callon's approach of power (Alzahrani A, 2016)

One of the problems associated with examining power in the decision making process is the fact that power mainly depends on theoretical position of how power is defined and how it is operationalized (Lukes, 1974, P. 31). For example, the Ethno-methodological school sees power in terms of the reproduction of practical rationality as it appears within the immediate setting. In contrast, the Annales School of History tends to realise less immediate perspectives of practical

rationality with extended, cyclical, slow and continuing changes. Nonetheless, broadly, a suitable framework of power should permits mapping a reasonable narrative (Clegg, 1989, P. 212). For this reason, it became important to determine an exact definition of power and to describe how it will be operationalized in this study.

Power will be considered in this study according to the definition of David Lockwood (1973), power must not merely signify the capability to recognise individual's end in a conflict position versus the preferences of others, but also involves the capability to stop opposition occurring in the first encounter (Scott and Marshall, 2005, P.520). In other words, power involves decision making and non-decision making (hidden decision to the interests of the decision makers), and also it involves overt and covert conflicts.

Moreover, operationalism is a key part of ethnography that is defined as determining particular methods and terms of measurement. Indicating that some individuals say this and others say something else might not be a problem. However, it is most important to establish a connection between theory and facts and then understanding the facts, which needs superior specificity (Fetterman, 2010, P.32). So for example, in this study, it is important to establish a connection in the relationship between theory (decision making about dental implant) and facts such as (authority of dentist to go for implant therapy) and then understand and clearly interpret the findings. There are several reasons may be behind why dentists are interested to go for implant therapies? These involve aspects such as cost benefits, dentist's strong thoughts about the success of implants, patient suitability to implants and so on. Establishing this relationship between theory (decision making) and fact (dentist's authority), understanding reasons and aspects associated with this relationship and then reporting the findings is the key task of this study.

In-order to evaluate the role of power in the decision making process, it was important to identify the epistemological foundation of the selected technique (Goetz and LeCompte, 1984, P.19). There is evidence suggested that interviewing and observing participants (as components of an ethnography approach), are useful methods in natural settings (Pelto and Pelto, 1978, P.113). This is because the ethnographic approach (including interviewing and observing participants) is based on understanding human behaviour and thought that involves (values, attitudes and interests) of participants (Fetterman, 2010, P.2). Thus, since we are interested in understanding how power affects the treatment decisions to whether to go for implants or not, employing ethnographic approach (including observing and interviewing participants) to evaluate both dentist and patient understandings, attitudes, values, interests and hidden decisions within implant consolations is a suitable approach. Accordingly semi-structured interviews could be designed that would permit access to the natural process of the role of

power in the decision making. This will also provide the participants (dentists and patients) of this study to have more chances to comment and express their opinions about the decision made or any other related issues to the consultations. It would correspondingly be possible to develop a proposed coding frame for analysing the data obtained from the interviews. This will be explained next.

Two semi-structured interviews were developed for the purpose of this study. One for the patients that aims not only to evaluate the patients' subjective perceptions of the implant decisions made. But also how the dentist's power may affect the decisions made. While the second interview targeting the dentists and aiming to evaluate to what extent dentists use their power to influence the decisions made. Both interviews involve evaluating aspects such as: decision, non-decision, coercion, influence, authority, and manipulation (Appendix 6 and Appendix 7). Additionally, for the purpose of analysing the obtainable data from these interviews, a specific coding scheme was also developed (Appendix 8).

1.6. Rationale

The increased use of dental implants over recent years highlights the importance of exploring the advantages and disadvantages of this technology. Although dental implants were described as improving patients' satisfaction, experience and oral health related quality of life; this therapy has also been shown several social limitations, contraindications, complications and aesthetical disadvantages. These include the relationship of the implants' failure with the patient's gender, age, smoking habits, cost and social class. Not only these aspects but also contraindications related to disadvantages of this therapy such as the association of the width of the gingiva, bone density and quality, trauma, history of periodontal diseases. Further complications related to disadvantages of implant care are also highlighted including injury of the inferior alveolar nerve (IAN) and the relationship of implant failure with its length and location. While the aesthetic disadvantages of implants include soft tissues and the demand to diagnose good planning and treatment. These various advantages and disadvantages of implants might play a key role in making any decisions regarding whether implants would be a suitable treatment or not complex. Accordingly a review of the literature on the decision making process with respect to dental implants was conducted. This review revealed that, interestingly, there are no studies in the literature that have examined how patients and dentists are involved in the implant decisions, it then became necessary to explore approaches to examining decision making in medical encounters.

The review uncovered four key medical decision making models: the paternalistic, interpretative, informed and shared decision making models. Different assumptions have been

made about and critiques of these models were also introduced. However, the increased emphasis on employing shared decision making (SDM) in the consolations due to its key advantages such as developing a patient's self-esteem, improving the quality of healthcare, increasing the satisfaction of both doctor and patient, increasing a patient's confidence, and reducing a patient's anxiety; guided this study to explore and examine this model in more detail. It comes to this conclusion that no single coding scheme has been developed to employ the SDM model fully in research on shared decision making in medical encounters. It was therefore suggested that further research looking at this scheme would be warranted. One possible way forward was to suggest a synthesis of combining the DEEP-SDM and Singh and colleagues' systems into a single framework. Doing so, it is claimed, would enable the evaluation of both patients' and dentists' contributions in the decision making process. Nevertheless, there is one factor missing from the existing decision making models in the literature and that is problems associated with power and the influences of this on the decision made. Few coding systems have been developed to evaluate the role of power in the decision making process but one is the SPI scale. However, the limitations of these systems centred on employing closed questions and having limited choices which may prevent participants from describing their views precisely, it was claimed that developing a semi-structured interviews for both patient and dentist that was based on the approach of power and related concepts such coercion, influence, authority and manipulation would be possible and enable evaluating the role of power in the decision making process within implant consolations.

In conclusion, given the concerns raised about many complexities to decisions and power relationships concerning dental implants and the lack of systematic research on the decision making process; it was therefore felt that a study into these processes was justified.

1.7. Aims and objectives

Aim: This study explores the decision making process associated with providing patients with dental implants.

Objectives:

1) To study and describe the dentist contributions in the decision-making process in the dental implant consultations.

2) To describe patient contributions to the decision reached in the consultations.

3) To evaluate if shared decision-making occurs in consultations about dental implants.

4) To examine the role of power in consultations about dental implants.

Chapter (2)

Methods

Chapter two: Methods

2.1. Research setting

This project was conducted in one of the medical centres in the Kingdom of Saudi Arabia. A dental implant specialist sees patients within six weeks maximum of their referral by a GP. During the initial consultation, which typically lasts 15 to 20 minutes, the dentist reviews the patient's medical history. Then, the patient is referred for radiographic scans and another appointment is arranged to discuss them and possible treatment available. When the patient comes for the second consultation and if the patient is interested in implant therapy, they will be asked to sign a consent form. It is often highlighted that all potential dental treatments are provided free of charge.

2.2. Research question and methods

This study seeks to explore the decision making process associated with dental implants. This study proposes to: first observe the participants (dentist and patient) through evaluating their contributions (behaviours) to the decision making process, which involves aspects including their, thoughts, needs, preferences, expectations in relation to the decision to have implants (Appendix 1). Second interviewing those participants to examine the role of power in the decision making process through evaluating characteristics of the interaction such as the hidden decision of decision makers, the presence of coercion, manipulation, influence and authority (Appendix 8). Accordingly, this study started by exploring implant consultations through examining their Saudi patients' understanding, needs, preferences, attitudes, values and expectations in relation to implant therapy (Goetz and LeCompte, 1984). This was achieved through observing as well as audiotape recording of the consultations and by also making notes that provided insights into the daily lives of Saudi individuals that participated in the study (James, 1980, p.12). After the consultations, both the dentists and patients were interviewed to evaluate the role of power associated with the decision made to have implant therapies.

2.3. Possibilities and challenges

One of the challenges of this study was selecting an appropriate coding system for evaluating the process of decision making. Several systems have been developed to assess the process of decision making in medical consultations, like Street's coding scale, RIAS, DAST, RPAD, DAS-O, Singh and colleagues coding system and, finally, the DEEP-SMD tool (Street and Millay, 2001, Roter and Larson, 2002, Guimond et al., 2003, Shields et al., 2005, Singh et al., 2010, Brown et al., 2011, Clayman et al., 2012). However, a number of these systems are not applicable to the dental implant setting and others have disadvantages (see Chapter one under the section 1.5.4. Examining the shared decision making model (SDM)). It was felt that establishing a dental implant-specific framework based on the combination of the DEEP-SDM

and Singh and colleagues systems (Singh et al., 2010, Clayman et al., 2012) for examining shared decision making was ideal; enabling the capture of the true nature of shared decision making between both patients and dentists during the implant consultations. This is because of the focus of these two systems on the real contributions of both the dentist and patient. Appendix 1 describes the proposed framework for this research, including all the variables and aspects explored.

Choosing the proper research approach for exploring the role of power in decision making processes was quite a challenge. However, observing and interviewing participants (as components of an ethnography approach) are useful methods in natural settings (Pelto and Pelto, 1978, p113). This is because the ethnographic approach that includes interviewing and observing participants, is based on understanding human behaviour and thought involving the values, attitudes and interests of participants (Fetterman, 2010, p2). Nevertheless, as stated previously, analysing power in the decision making process depends on the theoretical position of how power is defined and how it is operationalized (Lukes, 1974, p31). Carrying out a semi-structured interview and establishing a specific framework based on the one and two dimensional views of power - and the concepts of influence, authority, coercion and manipulation - would make it possible, however, and permit the evaluation of the role of power in the decision making process. See Appendix 6, Appendix 7, Appendix 8, and (section 1.5.6. Examining the role of power in the decision making process) for more information.

Translating the contributions of both patients and dentists in the decision process with regard to implant therapies from Arabic to English was difficult, especially if taking into account the fact that it may not be possible to find a third party to verify the translation and confirm its accuracy. However, Regmi et al. (2010) suggested a translation technique that can improve the accuracy of the context translated (see Figure 4 below). This technique consists of five stages: the first stage is the purpose of the context or relevance where I determined the context of the text being translated to enhance its relevancy to my research. Forward translation was then implemented. Here I started by translating the research tools such as topic guides and consent forms and then translated the transcribed consultations and interviews. Backward translation was the next stage and was conducted through revising and comparing the translated texts with the Arabic text. The fourth stage involved evaluating the interpreted senses in the target and source languages through the uses of English dictionaries to improve the meaning where possible. Lastly, re-considering the full process of the translation to obtain an accurate interpretation. This was carried out through revising the whole context to improve accuracy of the interpretation where possible (Esposito, 2001, Regmi et al., 2010). Therefore, this translation technique was utilised in this study to improve the translation of the content of the consultations and ensure accuracy.

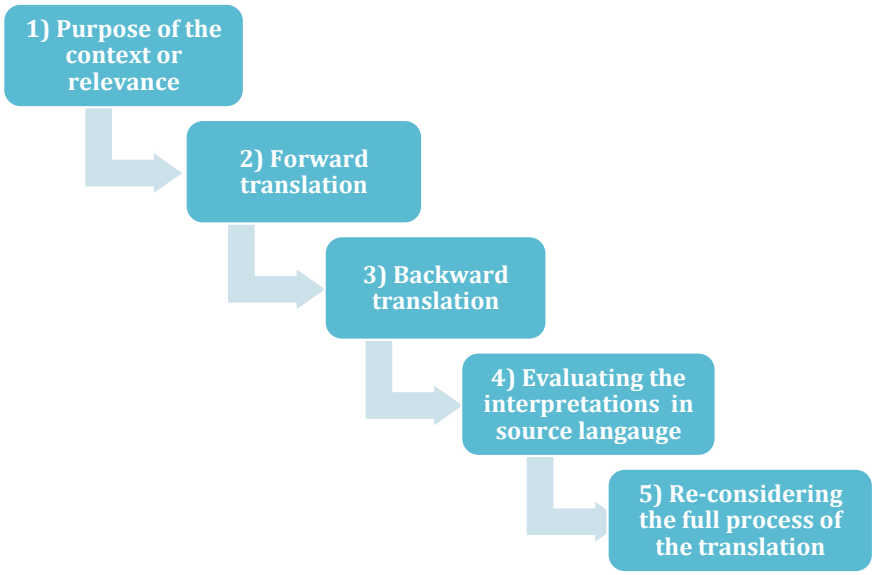

Figure 4 Regmi and colleagues technique of translating texts (Alzahrani, A, 2016)

Video recording was considered an alternative technique to audiotape recording in this study, particularly when paying attention to the advantages of video recording, like enabling a study of unspoken meaning in clinics and body language of the participants. However, employing a video recording technique may lead participants to feel less relaxed and more exposed, causing a change in their behaviours more so than with the audiotape recording technique (Thomas et al., 2011, p.301). Not only this, but the nature of Saudi individuals, particularly females, would disallow them from agreeing to be video recorded because of cultural and religious reasons that would interfere with video recording. It was for these reasons that audio recording was used in the current study.

2.4. Research approaches

This study was a cross-sectional ethnographic project that employed two qualitative methods. These were: 1) participant observation of dental implant consultations; and 2) semi-structured interviews of both patients and dentists.

2.4.1. Participant observation

Participant observation as part of ethnography includes identifying the participant's point of view in relation to his/her life and recognising his/her vision of his/her world (James, 1980, p.3). The participant observer has two key roles: 1) to be involved in actions suitable to the condition; and 2) to observe the actions, participants and physical side of the condition that is being observed (James, 1980, p.53). Moreover, the observer must keep detailed notes of both

observations and subjective feelings that will help him/her to analyse his/her data more accurately (Robert, 1972, p.15).

The advantages of the participant observation research technique (as a part of an ethnography approach) are as follows:

- This technique is employed to detect thoughts, attitudes, values, norms and the shared sense of observed participants (Creswell, 2012). As these are significant aspects that may impact the decision making process within dental implant consultations involving Saudi individuals, evaluating these aspects may be considered an advantage.
- Participant observation facilitates recognition of the richness of senses that are related to a participant's behaviour. So, the observer detects what occurs in the consultation instead of merely depending completely on interviews (James, 1980, p.8). It was for this reason that both participant observation and interviewing were used as to provide more strength to this study.

While the key disadvantage of employing the observation method is centred on the fact that participants may modify their interactions and behaviours because of the attendance of the observer. This intrusion however becomes practically unnoticeable over time. Subsequently, it would not dramatically modify the way that the participant interacts or behaves (Goetz and LeCompte, 1984, p 54).

2.4.2. Semi- structured Interviews

Semi-structured interviews tend to realise the basics of a society from an insider viewpoint. Questions are more expected to follow the participant's perception of reality versus the researcher's own perception (Fetterman, 2010, p.42). For this purpose, the questions of the interviews were developed according to the participant's perceptions about the decision made concerning their implant therapies. For example, the questions the interviews were based on cover seven key features associated with the decision making process and the role of power in implant consultations. These are: decisions, non-decisions, authority, influence, manipulation coercion, and any further comments related to the consultations. All these aspects propose to examine the participant's perception of reality in relation to the power relationships and the decision making process associated with dental implant therapies (see Appendix 6, Appendix 7, and Appendix 8).

The advantages of semi-structured interviews (as part of an ethnography approach) include:

- Semi-structured interview permit collecting extensive data from contributors to a study (in this case, dentists and patients).

- It enables exploration of the understanding of several participants who may be invited to impart dissimilar experiences (Fetterman, 2010, p.48). For instance, the participants in this study were from different ages, genders and had varying levels of education and socioeconomic status. Therefore, evaluating these qualities in relation to the decision made about the implant therapies was of interest.

One of the disadvantages of semi-structured interviews is that they are time consuming for both the participant and the researcher. Additionally, they offer only a short view at a specific period because after a year, for example, a participant's experiences may have altered through changing effects, meaning repeating the interview may result in dissimilar data (Schensul et al., 1999, p.152). Nevertheless, a justification for choosing those two particular qualitative ethnographic approaches (specifically, observations and semi-structured interviews) will be explained in the next section.

2.5. Methodological underpinnings

From a perspective of a philosophical continuum between "positivist" and "interpretivist", it can be distinguished that a positivist (realist) believes that reality occurs "out there" and it is measurable, stable and observable. Knowledge obtained within the exploration of this reality is marked "scientific" and involves the formation of "laws". Positivism identifies that knowledge is "relative rather than absolute" (Lin, 1998). It is most likely that quantitative research (experimental) undertakes a positivist (realist) stance. On the other hand, interpretative research assumes that reality is socially constructed. In other words, there is no particular observable reality. However, there are several realties or explanations of a particular event. Hence, researchers do not "find" knowledge. They create it. Qualitative research, commonly, undertakes an interpretative or (constructive) stance (Merriam, 2014, P 9-12).

Qualitative research is defined as a form of analysis that explores information from behaviours and languages of participants in natural settings (Crabtree and Miller, 1999). It is used to recognise expressive data that could not be examined by quantitative research, such as values, beliefs, motivations and feelings, which all underlie behaviours. It is also employed to deliver the required context to understand quantitative outcomes and recognize significant variables for future medical research (Berkwits and Inui, 1998). There are several advantages of carrying out qualitative research, like providing rich explanations of complicated phenomena, establishing primary evaluations to develop theories and examine hypotheses, and offering great opportunities to those whose opinions are rarely explored. Even so, the greatest qualitative research is rigorous and systematic that seeks to minimise error and bias (Sofaer, 1999).

One of the most robust technical qualitative research methods is ethnography. Ethnography is a "a semi-structured way of learning about people and their culture" (Ventres and Frankel, 1996). Ethnographers focus on the social communications between individuals and/or some members of the group to examine events, life cycles and cultural themes (Fetterman, 2010, p.4). Similarly, in the work presented here, the focus was on the participant contributions (both patient and dentist) to the decision making process associated with dental implants, to explore and understand the decision making process and examining if shared decision making occurs during implant consultation and the role of power in the decision making process. It was therefore apt that this study made use of participant observation and interviews as components of a basic ethnographic approach.

2.6. Carrying out the research

2.6.1. Recruitment, consent, and ethics

The dental assistants identified adult Saudi individuals who were considering undertaking implant therapy and were eligible for participation in this research. Those identified were invited to take part in the study. Individuals who agreed to participate were provided with a patient information sheet designed particularly for the purpose of carrying out the research. Those who had read the information sheet and supplied full written consent were included. Additionally, the dentists and dental assistants who had agreed to be involved in this project were asked to sign a consent form (Appendix 2, Appendix 3, Appendix 4, and Appendix 5).

Ethical considerations had been given a great deal of attention here. The patient information sheet places a clear emphasis on the confidentiality of the data obtained, anonymity of the results and rights of the participants to withdraw from the study at any time without any reason (Appendix 2). Moreover, the patient, dentist and dental assistant informed consent sheets were also designed to make sure that participants understood all matters pertaining to this research and to protect participants and researcher's rights with respect to any issue that may arise (Appendix 3, Appendix 4, and Appendix 5).

Three approvals were obtained before conducting this study. The first approval had been obtained from the medical centre where this study was conducted with reference number: 19-1-680-04-2 (in Arabic). Approval was also obtained from the University of Sheffield Research Ethics Committee for secondary approval with application number: 74 (Appendix 10). The last approval was acquired from the researcher's sponsor that is the Saudi Embassy in London with reference number: 7370978 (in Arabic).

2.6.2. Data collection

The data was collected from dental implant clinics belonging to one of the medical centres in Riyadh – Saudi Arabia. The process of collecting the data was as follows: dental assistant, who had signed a consent form designed for the study, identified from the target population of the study and invited any eligible patients to take part. If the patients had agreed to participate, they were asked to read the research information sheet and were given a chance to pose any questions relevant to the research. They were then asked to sign the patient consent form. The dentists were also asked to sign the dentist consent form. After obtaining all required consent, the researcher audiotaped the implant consultation and made notes of any features related to the decision making process. At this stage, the researcher was examining elements of the consultation that involved shared decisions making (Appendix 1). At the end of the consultation, the researcher asked the patient for a suitable date and time to be interviewed by telephone. Next, patient interviews were conducted as arranged using the proposed patient's topic guide for the study and the researcher made notes of any details related to the interview (Appendix 6). The dentists were interviewed immediately after the consultation using the proposed dentist's topic guide where the researcher audiotaped the interview and made notes of any factors related to the interview (Appendix 7). During both sets of interviews, the researcher was specifically reviewing any qualities that involved the possible effects of power in the decision made about the implants (Appendix 8), which would have included decision, hidden decision, influence, authority, manipulation and coercion.

2.6.3. Sampling

Convenience sampling in qualitative studies has been described as securing data from individuals or settings for a reason of convenience. This sampling method has the advantages of ease of recruitment, usually favourable response rate, and smooth control of participants and follow-up (Bowling, 2014, p266). Evidence has also demonstrated that convenience sampling is commonly used for investigating complex research phenomena (Barbour, 2001). Likewise, because no study in the literature have explored the decision making process in relation to implant therapy among Saudi patients (the aim of the current study) which may highlight the challenge of designing a study to explore the real nature of the decision making process in the implant consultations (see Chapter one under the sections 1.5.4. Examining the shared decision making model (SDM) and 1.5.6. Examining the role of power in the decision making process), and with respect to the complexities of providing dental implants (Chang et al., 1999, Bragger et al., 2005, Meijndert et al., 2007, Ostman et al., 2007), it was therefore thought to be appropriate to employ convenience sampling in this study.

In qualitative studies, deciding a suitable sample size is a difficult matter (Sandelowski, 1995b). However, while this study used participant observation and interviewing as components of a

qualitative ethnographic approach, there was evidence suggesting that 30 to 50 observations or interviews would be an appropriate sample size (Morse, 1994). Moreover, existing research examining the process of shared decision making in medical consultations suggests a range of sample sizes between 34 to 76 patients are appropriate for surveying the nature of shared decision making between both patients and doctors (Guimond et al., 2003, Singh et al., 2010, Brown et al., 2011, Scholl et al., 2011). Taking this range into account, and the need for extensive in-depth description of the data, it was proposed that observing 40 implant consultations and then interviewing the relevant dentists and patients would be befitting of the study objectives.

2.6.4. Research 'tools'

This section explains the materials that were used and developed for the purpose of this study:

1) Patient's information sheet.

2) Patient, dentist, and dental assistant consent forms.

3) Patient and dentist semi-structured interviews.

4) Two coding schemes for data analysis purpose.

All these materials are described in more details in the following sections.

2.6.4.1. Patient information sheets

Patient information sheets provided an introduction to the study, its potential impacts, and what the research included that would be provided to patients. It was developed to ensure that patients understood all matters associated with this study before they participated (Appendix 2).

2.6.4.2. Patient, dentist, and dental assistant consent forms

All consent forms (patient, dentist, and dental assistant) were drafted to comply with the University of Sheffield Ethics guidelines, the medical centre ethics guidelines, and the Saudi Ministry of Higher Education ethics guidelines (Appendix 3, Appendix 4, and Appendix 5). All participants (dentist, patient, and dental assistant) signed the appropriate consent form before they participated in this study.

2.6.4.3. Patients and dentists semi-structured interviews

The patient and dentist semi-structured interviews were developed based on the one and two dimensionally views of power and associated concepts as mentioned previously in the section (1.5.6. Examining the role of power in the decision making process). The objective of the interviews was to assess the role of power in the decision making process during implant

consultations (Appendix 6 and Appendix 7). Both patient and dentist interviews can be divided into the following sections:

- **Introduction:** introduced the project to the participant describing the aim of the project, the length of the interview, the process of the interview, the emphasis on confidentiality and the anonymity of the data. Also featured welcoming and thanking the participant for his/her involvement in this study.
- **Decision:** evaluated the participant's satisfaction on the decision made and explained the reason behind the participant's satisfaction or dissatisfaction about his/her implant decision.
- **Non-decision:** assessed the hidden decision behind the decision maker's rationale. This included characteristics that may have affected the decision, such as describing the process of surgery, the option to defer the treatment decision and providing sufficient information about the implant therapy.
- **Coercion:** examined the presence of the concept of coercion in the decision through evaluating joint agreement between dentist and patient and the reason behind joint agreement existence or absence, whether alternative dental treatment options were introduced or not and properly explaining the reason.
- **Influence:** reviewed the presence of influence in the decision made about implant therapy through seeing whether there were any disagreements over the patient's preferences, values, needs with explaining how and why this happened.
- **Authority:** examined the concept of authority through investigating the reason behind the patient's compliance with decision made by the dentist about his/her implant therapy. For example, the dentists' mentioned the several advantages of implant, while, for example, the patients did not recognise that the dentist did not mention the disadvantages of implant treatment.
- **Manipulation:** looked at the presence of manipulation in the decision made about the implant therapy through evaluating reasons behind, for instance, the patient's compliance with the dentist's decision to go through with a dental implant even though the patient does not understand the nature of what is being asked of him or her, perhaps because of a lack of knowledge or lack of information.
- **Conclusion:** provided the participants with space to add any other comments or issues related to the consultations or the decision made that they may want to talk about and not had been discussed during the interview.

2.6.4.4. Two coding schemes for the purpose of data analysis

Two coding schemes were developed for data analysis. More details will be provided in the data analysis section below.

1. ***Coding scheme for observing implant consultations and examining the presence of shared decision making.***
2. ***Coding scheme for evaluating the role of power in the decision making process associated with implant therapies.***

It should be noted that all the material 'research tools' mentioned previously (including the research protocol) were introduced to one of the monthly research group meetings (PAPOR) at the Unit of Dental Public Health at the University of Sheffield. The advantages of this was to mitigate researcher bias, improve the validity of the materials and obtain any feedback that may help improve the materials used in this study. Moreover, before the researcher went to collect the data in Saudi Arabia, he was enrolled in two training workshops on ethnographic observations and interviews besides analysing and writing qualitative data.

2.7. Recording the Consultations

Implant consultations were recorded on audiotape, transcribed and analysed. Interviews were conducted in two stages: 1) dentist interviews that were audiotaped, transcribed and analysed; and 2) patient telephone interviews that were carried out the week following the consultation where the researcher took notes and then analysed them. Employing these methods in this research provided data about the content of these consultations, the nature of both patient and dentist contributions to the decision making process, what qualities of the consultations might be said to involve shared decision making, and, finally, investigating the role of power in the decision making process.

2.8. Data management

The data derived from participant observations and interviews were transcribed verbatim. All the transcripts were anonymised and study identification numbers were assigned to each medical consultation and dentist interview. A folder on the researcher's computer was created that consisted of several Microsoft Word documents. Each Word document was labelled with a study identification number and was also protected by a password to make sure that all the data was kept confidentially. Passwords were kept in a locked cabinet to ensure that they were secure. Conversely, the patient telephone interview notes were recorded by hand. Then, similarly, the aforementioned technique of transferring data from the implant consultations and dentist interviews was used to transfer the patient telephone interview data to the researcher's computer. These notes and transcripts were translated to English, which made it possible for the supervisors of the project to verify and confirm the validity of the data. Moreover, the technical plan for this

study made specific reference to a description of the contributions of both the patient and dentist in the decision making process. This all led to the data analysis stage, which is explained next.

2.9. Data Analysis

All data obtained from the implant consultations and interviews involved a triangulation of different techniques in data analysis. All data were analysed using the Ritchie and Spencer technique of analysing qualitative data (Ritchie and Lewis, 2003), the inductive thematic analysis (Elo and Kyngäs, 2008), and the typology strategy of qualitative data analysis (Berg and Lune, 2014). This section describes the process of the data analysis followed in this study.

2.9.1. Coding and analysis of implant consultations and interviews

Data was categorised using the proposed coding frameworks of this study through employing thematic framework analysis. This technique differs from alternative analytic qualitative techniques such as grounded theory. While the key aim of the grounded theory approach is to explore, discover or generate a theory from data question (Glaser and Strauss, 1967). However, the thematic framework analysis technique described as a well-organized technique of processing information and gathering expressive findings to tackle a particular research question (Ritchie and Lewis, 2003).

In order to answer the aims of this study, a particular technique of identifying patterns in qualitative data was employed. An analysis of the dental consultations and the dentist and patient interviews were carried out using the Ritchie and Spencer technique of analysing qualitative data (Ritchie and Lewis, 2003). This technique involved five stages that are described below in Figure 5 (Ritchie and Lewis, 2003).

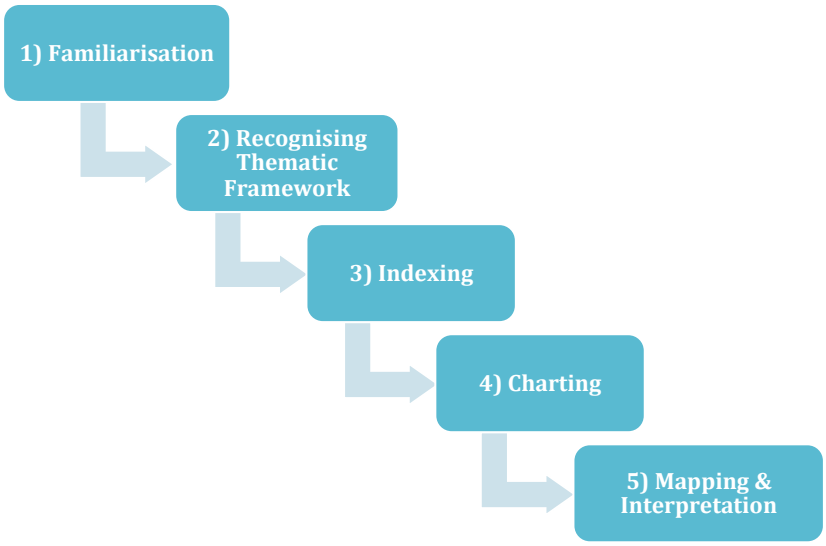

Figure 5 Ritchie and Spencer technique of analysing qualitative data (Alzahrani A, 2016)

Accordingly, after the data had been transferred to the Word document, the familiarisation stage took place through reviewing the context of the transferred data while the recorded audio taped consultation was being listened to. This was important to make sure that all data (recorded and transferred) were identical. The second stage, recognising a thematic framework, employed the proposed frameworks of the study (Appendix 1 and Appendix 8). At this stage, the data were divided into meaningful utterances; these utterances were labelled according to a suitable theme or concept and then synthesised. For example, if the dentist said to the patient "we know from thousands of men like you that an implant will reduce further bone resorption, but in your condition there is a very small chance that we might injure your inferior alveolar nerve, would you still like to undergo implant therapy?", the statement was divided into two utterances. These were: "we know from thousands of men like you that an implant will reduce further bone resorption", which was assigned to the codes "research evidence reviewed" and "dentist's manipulation" in the proposed frameworks of data analysis (Appendix 1 and Appendix 8). While, the second utterance "there is a very small chance we might injure your inferior alveolar nerve, would you still like to undergo implant therapy?", was assigned to the codes "risk of dental implants in the dentist behaviour section" and "dentist's manipulation" in the proposed frameworks of data analysis (Appendix 1 and Appendix 8). By utilising this phase, a form of responses could be determined for each participant in this study. Following this, established themes were indexed and grouped under the main theme or subthemes and placed within the overall framework. The last stage was mapping and interpreting the analysed data in light of the literature and debate on shared decision making and power in medical consultations. Regardless that this technique took a long time, however it did make it possible to capture all details connected with patient and dentist contributions and ensure that the data were analysed and reported to the best level of accuracy (Ritchie and Lewis, 2003).

It should be noted that the researcher was involved in dental implant clinics belonging to the Charles Clifford Hospital in Sheffield as an observer of oral surgery. This was to pilot the proposed two frameworks of the study and to ensure that the researcher could recognise and identify all aspects associated with this study, including evaluating the presence of shared decision making, the role of power and the connected concepts of coercion, manipulation, influence and authority before starting data collection.

Employing a coding system for observing consultations has shown to be successful approach of examining if shared decision making happened. This is because it accesses the natural process that occurs in consultations (Street and Millay, 2001, Dierckx et al., 2013). The coding system defined as "the process of studying the qualitative data that will in the form of words, expressions, sentences or paragraphs and allocating codes or labels" (Strauss and Corbin, 1990).

Correspondingly because this study employed participant observations and interviews, as components of a qualitative ethnographic approach and the study needing in-depth narrative data, it was felt that employing coding systems would be suitable. The critique and justification of choosing and developing particular frameworks of data analysis for this study were previously introduced (see the sections: (1.5.4. Examining the shared decision making model (SDM), and 1.5.6. Examining the role of power in the decision making process - Chapter one). However, according to the purpose of the study, analysis of qualitative data may be employed deductively or inductively. This will be explained in the next section.

2.9.1.1. Inductive or deductive qualitative approach

Content analysis has been described as a technique of analysing transcribed, visual or verbal interactions (Sofaer, 1999). It has also been explained as a method of describing and quantifying data in a systematic and objective means (Downe-Wamboldt, 1992). It targets constructing valid and replicable inferences from data in their context with the key role of delivering knowledge, new visions, a representation of realities, and a valuable guide to action (Sandelowski, 1995a).

Content analysis in qualitative data is a really complicated process (Dierckx de Casterlé et al., 2012). Conflicting thoughts and unsettled issues associated with meaning and employment of themes, procedures and reporting findings have been commonly addressed in qualitative data analysis (Berkwits and Inui, 1998). However, content analysis may be utilised deductively or inductively according to the purpose of the study. The approach of deductive content analysis is employed specifically when the study seeks to test theory or retest obtainable data in a new context, and the analysis structure is based on former knowledge. Hence, its data develops from the broad to the specific. On the other hand, if there is not sufficient theory or knowledge concerning the researched phenomena or if the theory or knowledge is disjointed, inductive content analysis is recommended. In the inductive approach, data moves from the specific to the broad so that specific cases are detected and subsequently merged into a broad report (Cavanagh, 1997, Elo and Kyngäs, 2008, St. Pierre and Jackson, 2014). Taking into account that the current study explored the decision making process within implant consultations, besides that there is insufficient data in the literature about how dentists make their decisions regarding patient suitability for implant therapies and how patients are involved in the decision making process concerning their implant care, and, most significantly, the goal being not to test or re-test theory; consequently it can be justified that the inductive data analysis approach was applied to this study. Therefore, data obtained from this study were moved from the specific to the broad so that specific aspects of shared decision making, such as patient preferences and values discussed, benefits and risks of the implant discussed, and also aspects related to the role of power in the decision making process, like concepts of authority and influence, were detected and subsequently merged into a broad report.

There has been evidence suggesting that there are no particular rules for analysing qualitative data (Cole, 1988, Cavanagh, 1997, Graneheim and Lundman, 2004). However, Elo and Kyngäs (2008) developed a processing technique for analysing inductive qualitative data. It consists of three key stages: preparation, organising and reporting. This analytical technique was used in the current study. Figure 6 describes the inductive process of analysing qualitative data developed by Elo and Kyngäs (2008).

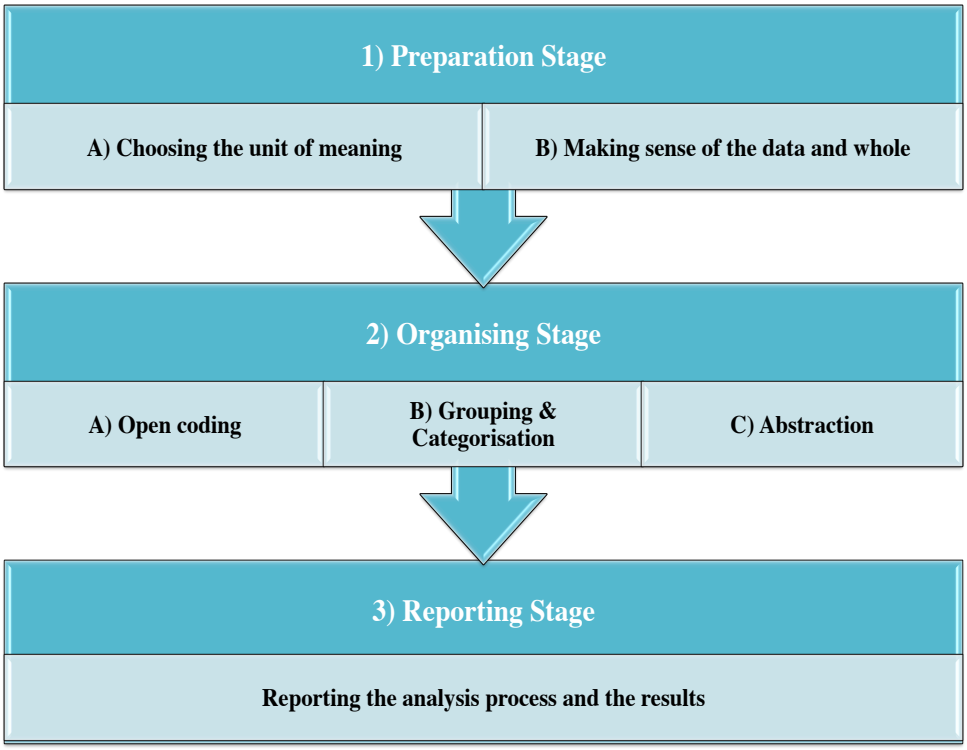

Figure 6 Inductive process of analysing qualitative data (Alzahrani A, 2016)

1) **Preparation stage:** includes two sub-stages:
   a) *Choosing the unit of meaning:* This could be one sentence or more and could contain several meanings, but it shouldn't be one word to avoid fragmentation (Graneheim and Lundman, 2004).
   b) *Making sense of the data and whole:* This refers to familiarity of the researcher with his/her data and asking questions while reading the data such as who is telling? What's happening? When did it happen? Why it is happening? (Burnard, 1991).

2) **Organising stage:** includes three sub-stages:

a) *Open coding:* this refers to writing headings and notes in the text when reading it. Then, these headings and notes are read again and printed in margins to explain all sides of the content (Cole, 1988, Burnard, 1991).

b) *Grouping and categorisation:* this phase conducted after the open coding phase is complete. The lists of categories are classified under developed order headings. This phase is to cut down the amount of those categories that are alike or different into larger developed and ordered categories, delivering a way of describing phenomena, rising thoughts, and creating knowledge (Burnard, 1991, Cavanagh, 1997).

c) *Abstraction:* expressing a broad explanation of the research topic through creating groups. Each group is titled through content-representative words. Subgroups that have the same observations and occurrences are classified together as groups and groups are classified as key groups (Burnard, 1991, Dey, 1993). Figure 7 portrays an example of the abstraction process from the current study.

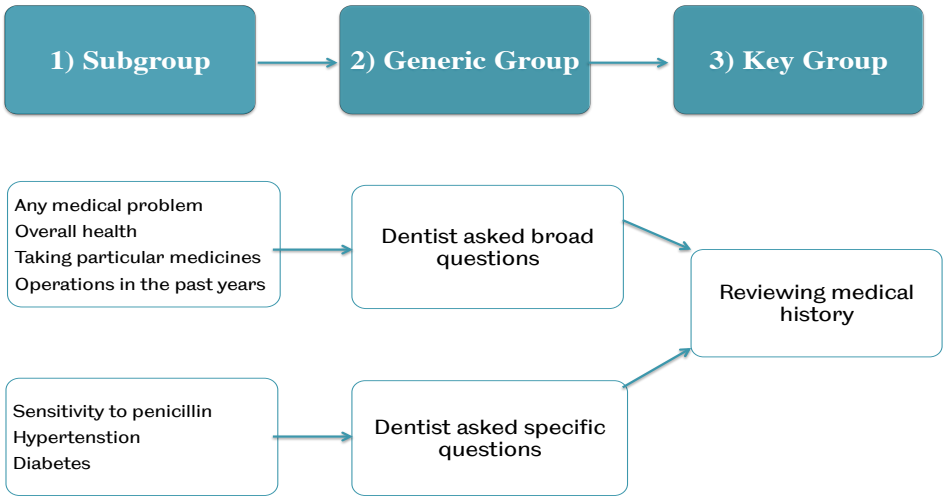

Figure 7 An example of the abstraction process of the data (Alzahrani A, 2016)

3) **Reporting stage:** writing up the findings from the analysed data.

Making use of inductive thematic analysis and the two proposed coding frameworks of the study empowered the researcher to describe the decision making process during dental implant consolations and if there was an effect of power on it. However, in order to describe the degree to which shared decision making took place and what kinds of decision making were

implemented, a qualitative strategy of typology was also employed in this study. This will be explained in the next section.

2.9.1.2. Typology and qualitative data analysis

Typology in qualitative research is a systematic technique for grouping similar objects, events, actions, places, or individuals into a discrete category (Berg and Lune, 2014). Referring in particular to this definition of typology, it is really similar and practical when looking to achieve what the objectives of this study were. So, describing the degree to which there has been shared decision making during implant consultations required grouping similar consultations (objects), decision making models (events), dentist- patient interactions (actions), implant settings (places) and patients (individuals). Therefore, the rationale behind employing qualitative typology in the present work was felt justified. According to Berg and Lune (2014), the typology strategy consists of three key phases:

1) Evaluating collected data and looking for mutually exclusive groups. The intention of this phase is to guarantee that each item being measured only appears in a particular group.
2) All items being grouped have been accounted in "an exhaustive categorising of items". Hence, each item must be located in one or another of these groups.
3) Examining the groups and their content and making ideally expressive appraisals. This mainly means attempting to reach a social sense of the way things fall into groups in the proposed typology.

In this study, the typology technique was initiated by establishing the proposed criteria for grouping the implant consultations into different types of shared decision making. This was conducted throughout evaluating the collected data based on the similarities and differences that were observed during implant consultations. Doing so, it was possible to group the data into three main forms of the shared decision-making model. These were: marginal shared decision-making model (MSDM), typical shared decision-making model (TSDM), and the ideal shared decision-making model (ISDM). Thereafter, in the second phase, all implant consultations were grouped and allocated to the relevant shared decision-making model. The last phase examined the content of the implant consultations and making ideally expressive appraisals such as why a typical shared decision model does not reach the ideal shared decision model and what factors make a particular type of shared decision-making model pertinent to some consultations and not other. It should be underscored that the definition, description, grouping criteria and expressive appraisal of those three types of the shared decision models will be described together in the results chapter under the section (3.2.2. Typologies of shared decision making within

consultations). As well, examples from the implant consultations will be provided wherever possible.

Overall, it can be concluded that the analysis plan of this study used triangulation technique of analysing obtainable data through employing the Ritchie and Spencer technique of identifying and coding patterns of qualitative data (Ritchie and Lewis, 2003), the inductive thematic analysis (Elo and Kyngäs, 2008), the typology strategy of qualitative data analysis (Berg and Lune, 2014), and the two proposed frameworks of the study (Appendix 1 and Appendix 8.) This was an attempt made to improve the credibility and confidence on the results of this study (Patton, 2014, p316-318).

2.9.2. Implant coding system for observing and examining shared decision making

This section briefly describes each of the themes of the proposed framework for observing implant consultations and examining the presence of shared decision making during implant consultations. However, for detailed information and examples of each theme and sub-theme of this framework see (Appendix 1). As mentioned previously, this framework was developed based on Singh and colleagues and DEEP-SDM tools (Singh et al., 2010, Clayman et al., 2012). The framework consists of six key themes and each theme is comprised of a number of sub-themes. This will be described next.

Theme 1: Establishing a problem:

1) **Definition of dental implants:** dentist provides a description of implant treatment and procedure that will be followed.
2) **Medical history reviewed:** involves issues related to the patient medical conditions. In other words, dentist reviews the recent medical history of the patient.
3) **Social circumstances reviewed:** refers to reviewing the social situation of the patient. This is particularly relevant when it comes to costs and payment. Dentist establishes the patient's social and employment circumstances.

Theme 2: Dentist-patient relationship:

4) **Interruptions:** refers to when consultation is interrupted by one or more phone calls or the dentist is called out of the clinic.
5) **Rapport building:** refers to dentist attempting to build rapport through social exchange or empathetic responses.

Theme 3: Research evidence:

6) **Research evidence presented:** includes introducing scientific evidence from the literature on dental therapy options to the patient. Dentist presents the evidence concerning the treatment option being discussed.
7) **Quality of the evidence presented:** refers to the comments of the dentist on the strength of the evidence that he/she presents.
8) **Research relevant to the patient:** includes individualising the evidence to the patient's circumstances.
9) **Dentist appraisal of the data:** includes providing a recommendation based on the dentist's appraisal of the data.

Theme 4: Patient perspective:

10) **Patient asked how much information they need:** refers to when dentist offers a range of information and determines patient's preferences.
11) **Patient asked for a decision making preference:** refers to when dentist asks how involved the patient wants to be in the decision.
12) **Patient's understanding confirmed:** refers to a confirmation of the patient's understanding about the information covered. Dentist checks that the patient has understood what was discussed and presented.
13) **Patient views sought:** refers to when the dentist checks what decisional learning the patient has.
14) **Patient's expectations:** refers to an assessment of the patient's expectations for the implant treatment. Dentist asks patient about his/her expectation of the treatment.
15) **Patient self-efficacy:** includes reference to or mention of patient perceived self-efficacy to adhere to the decision by either the dentist or the patient.

Theme 5: Decision making:

16) **Multiple dental treatment options presented:** dentist introduces multiple dental treatment options if appropriate.
17) **Process of the surgery:** relates to a clear description of the surgery to the patient. Dentist clearly describes the process of the surgery.
18) **Side effects of the treatment discussed:** implies dentist considerations of the side effects of each possible dental treatment talked about.
19) **Possible benefits of dental implant discussed:** refers to a description of any benefits or advantages of dental implant therapy. Dentist clearly states the benefits of dental implants.

20) **Possible risks of dental implant discussed:** includes describing any risk related to implants. Dentist clearly states the possible risks of implants.
21) **Patient's preferences and values:** dentist provides his/her own preferences and values or makes it clear that he/she would/would not regard implant to be a viable option. Then dentist asks the patient about their own preferences/values.

Theme 6: Time issues:

22) **Patient given an option to defer the treatment decision:** implies providing an option to the patient to postpone his/her decision and take more time to think before decision made.
23) **Plan for the follow-up:** includes reference to a plan for follow-up regarding the discussed treatment option. Further information needed to reach the decision may include making other decisions or scheduling consultation with additional specialist.

2.9.3. Implant coding system for examining power in the decision making process

This section describes each of the themes of the proposed framework for examining the role of power in the decision making process during implant consultations. However, Appendix 8 illustrated a detailed information and examples of each theme about this framework. As mentioned earlier, this framework was developed based on the one-dimensional and two-dimensional views of power besides the linked concepts of coercion, influence, manipulation and authority (Lukes, 2005, p.25). The framework is made up of two key themes (patient and dentist) and each theme consists of a number of sub-themes. This will be described next.

First: Patient interview:

1) **Decision:** implies evaluating how the patient came to seek dental implants, the patient's overall experience with the consultation, his/her satisfaction or dissatisfaction on the decision made and the reasons, if any, behind this satisfaction or dissatisfaction.
2) **Non-decision:** refers to evaluating the hidden decision behind the decision maker's interest. This includes aspects that may affect the decision, like describing the process of the surgery, option to defer the treatment decision and providing sufficient information about implant therapy.
3) **Coercion:** this theme refers to examining the presence of of coercion in the decision made on implant therapy through evaluating joint agreement between the dentist and patient and the reason behind joint agreement existence or nonexistence and whether alternative dental treatment options were introduced or not with explanation of the reason.

4) **Influence:** implies assessing the concept of influence in the decision made on implant therapy through seeing whether there were any disagreements over the patient's preferences, values, or needs explaining how and why this happened.
5) **Authority:** refers to examining the presence of authority in the decision made on implant therapy through investigating the reason behind the patient's compliance with decision made by the dentist.
6) **Manipulation:** implies reviewing manipulation in the decision regarding implant therapy through evaluating patient compliance with the dentist's decision to undergo an implant even if the patient does not understand the nature of what is being asked of him or her, possibly because of a lack of knowledge or supporting information.
7) **Conclusion:** refers to the researcher's asking about any other comments or issues related to the consultations or the decision made that the patient may want to talk about and had not been discussed during the interview.

Second: Dentist interview:

1) **Decision:** implies evaluating how the dentist came to his/her implant decision for the patient, the dentist's satisfaction or dissatisfaction on the decision made and the reasons, if any, behind this satisfaction or dissatisfaction.
2) **Non-decision:** assessing the hidden decision behind the dentist's interest. This included qualities that may have influenced the decision made, like describing the process of the surgery and the option to defer the treatment decision and providing sufficient information about the implant therapy.
3) **Coercion:** refers to examining the presence of coercion in the decision made regarding implant therapy through evaluating whether there was a joint agreement between dentist and patient and the reason behind whether there was a joint agreement or not.
4) **Influence:** implies investigating the concept of influence on the implant therapy decision through assessing to what degree that the dentist thought his/her influence would encourage the patient to undergo the implant.
5) **Authority:** refers to examining the presence of the concept of authority in the implant therapy decision by looking at the reason to influence the patient to undergo the implant.
6) **Manipulation:** implies reviewing whether manipulation was present in the decision making process during the implant consultation by evaluating whether the dentist described the benefits, risks and related information to the patient or not.
7) **Conclusion:** refers to when the researcher asked about any other comments or issues related to the consultations or the decision made, which the dentist may have wanted to talk about and had not been discussed during the interview. Nevertheless, it seems to be

there was an important feature related to analysing and interpreting data that has not yet been discussed, being reflexivity. This will be described next.

2.9.4. Reflexivity and qualitative research

Reflexivity has shown as a central process in qualitative research through which the researcher reflects always on how his/her own values, perceptions and actions influence the research process during the stages of his/her data collection and analysis (Lambert et al., 2010). Qualitative researchers and particularly ethnographers have controversial dilemma about whether should researchers be reflexive on their data collection and analysis or not (MauraDowling, 2006). For example, Etherington (2004) maintained that researchers are required to be closely involved in collecting and analysing their research data. However, other ethnographers have argued that it is important to moderate the risks of reflexivity by emphasising the researcher's role and influence on the data collocation and analysis. Reflexivity can often make this process unclear and indefinite (Lamb and Huttlinger, 1989). Nevertheless, it has been argued that there is no particular technique of fully eliminating and controlling the researcher bias through the use of the concept of reflexivity as each technique has its strengths and limitations (Allen, 2004).

Evidence has demonstrated that reflexivity necessitates critical self-reflection and awareness of the degree to which the researcher's behaviour, position, personality, social background and personal assumptions can influence his/her research process and specifically his/her data collection and analysis (Lipson and Morse, 1991). In this respect, I decided not to contribute to any of the consultations observed. While I had started recording the consultations, then remained silent and acted just as an observer, focussed on the process of the decision making and the patient-dentist interaction during the consultation alongside with making detailed notes of any observations. However, during interviewing both patients and dentists who participated in the current study, I had employed standardised wording of questions that described in the interview topic guides (See Appendix 6 and Appendix 7). This was consistent with the evidence suggested that using standardised wording of questions by the ethnographer interviewer has shown to reduce his/her reflexivity effects on the social encounter (Davies, 2008, p8). There is also evidence suggesting that not wearing a hospital uniform dress during interviews to ensure that the researcher's performance can be facilitative to communications with participants during the interviews (Johnson et al., 2008). Consequently, I had decided to not wear a hospital uniform during all the consultations and the interviews to avoid being recognised as a member of the hospital staff and being expected to participate to the activities of the staff. While, indeed I had chosen to wear the Saudi traditional formal dress (Thobe and Ghutra). Accordingly, this was an attempt made in the present study to reduce my bias during

the collection of this data. Nevertheless, it has been argued that the influence of the researcher's reflexivity on his/her data collection and analysis is an un-avoidable part of any research project. This is because it is difficult for the researcher to remain separate from the subject area being examined (Parahoo, 2006, p326, Allen, 2004).

Reflecting a 'reasonable' level of objectivity on the findings of the study by considering the perspectives and thoughts of all contributors in the study regardless of their position is often seen as a way to reduce the impact of the researcher on his/her data analysis (Dingwall, 1980). Likewise the current study, I attempted to reflect on the results through considering and discussing all thoughts and perspectives of the participants (dentists and patients) whether these thoughts were frequently or exceptionally occurred (see examples of exceptional cases described on pages 91, 121, and 128).

Chapter (3)

Results

Chapter three: Results

3.1. Summary of the consultations

Thirty-six dental consultations were observed and audiotape recorded. Eighty-seven patient information sheets were administered to patients who have had some consideration of dental implant therapies. Thirty-six of those patients agreed to participate and signed the patient consent forms, while 51 patients refused participation. Four patients (one male and three females) from the 36 patients were withdrawn. Thus, in total, 32 patients (14 males and 18 females) participated with mean age 43 years (range 18-66 years), level of education (37.5% postgraduate, 34.4% undergraduate, 15.6% high school, and 12.5% primary education). Three dentists (two males and one female) and three female dental nurses also contributed to this research. Figure 8 below, illustrates the summary of the participations in this study.

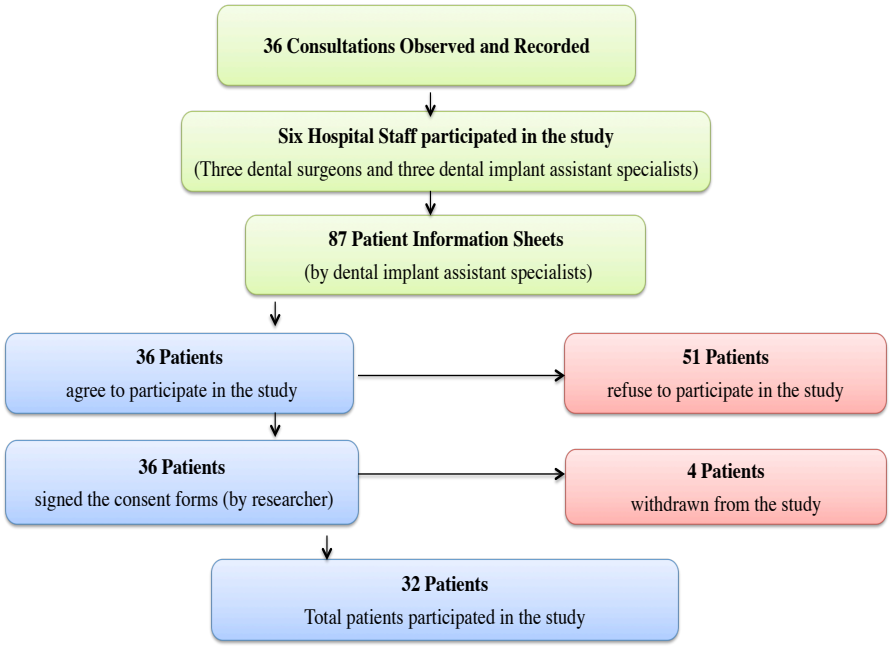

Figure 8 Summary of participation in this study

In order to facilitate presenting the findings of this study, it would be possible to divide the findings into two key sections. Section one illustrates the findings of shared decision making in the consultations. While section two describes the findings of the role of power in the decision making process within the dental consultations. Section one consists of five sub-sections. These

are: 1) Describing the consultations using the DI-SDM theoretical framework that was proposed for this study, 2) Illustrating the degree to which there has been shared decision making in the consultations, 3) Describing the different models of decision making implemented within the consultations, 4) Patient perspectives on decisions to have dental implant therapies, and 5) Dentist perspective on the decisions made within the consultations.

Section two describes the elements of power that appeared to be affecting the consultations. The data for this section are derived from the patient and dentist interviews and the consultations.

3.2. Shared decision making in consultations

3.2.1. Describing the consultations using the DI-SDM framework of the study

This section describes the findings from the consultations and introduces what elements of the dental implant shared decision-making (DI-SDM) coding framework occurred and what have not. Examples are provided wherever possible. The responses of all participants (dentists and patients) are described together under the relevant theme.

3.2.1.1. An overview

In general, the dentists reviewed the patient's medical history, took a brief description of the patient's current situation and demonstrated a good plan for the follow up (elements 2, 3 and 23). Dentists often attempted to establish a good relationship through social conversation and empathic responses with their patients (element 5). However, the dentists often provided a short description of the implant treatment and the reason for establishing the consultations (element 1). Significantly, there were no interruptions through all the consultations observed (element 4). The dentists' appraisal of the data, asking patients how much information they need, asking patients for the decision making preferences, and given an option to defer the implant decisions were almost completely neglected (9, 10, 11 and 22). While, patients' understanding and their ability were usually confirmed by the dentists (elements 12 and 15). Dentists rarely asked patients about their expectations from the implant therapy and at times explored what decisional learning their patients have (elements 13 and 14).

Although, dentists occasionally presented evidence related to implant treatment and the patients, the quality of the evidence presented tended to be moderately explored and discussed (elements 6, 7, and 8). Several dental treatment options and the process of implant surgery were not introduced in all consultations (items 16 and 17). The side effects and benefits of implant therapy were infrequently described (elements 18 and 19). Significantly the risks of the implant therapy were only very rarely introduced to patients (element 20). Nonetheless, patients preferences and values were often evaluated during the decision making process (element 21).

3.2.1.2. Theme 1 and 2: Establishing a problem and dentist-patient relationship

In this section we will explore how theme one and two of the DI-SDM coding frame was used to explore reasons for the consultations whilst establishing the dentist-patient relationship. This includes evaluating aspects such as what an implant is and reasons for consultations, reviewing patients medical history, their social circumstances, consultation interruptions, and lastly making rapport with patients through social interactions and empathic answers. Providing patients with relevant treatment information and reviewing patients' medical history are important aspects of the shared decision making model. It is evident that these two aspects significantly guided the final diagnosis and supported making the right decision (Peterson et al., 1992, Castrejón et al., 2012). Similarly, building rapport with patients during medical consultations is crucial in shared decision-making. This is because it enables clinicians to elicit relatable information from patients with treatment decisions. This consequently increases patients' satisfactions and leads to desirable outcomes (Workman, 2013, Ross, 2014).

Either dentists or patients often established reasons for consultations. Some dentists spoke to patients about how they got their referrals to check those patients for implant therapies:

> *"Dentist: OK, dentist (X) has seen you and has referred you to my clinic to check your suitability for implant surgery. Is this right?*
>
> *Patient: Yes, doctor.*
>
> *Dentist: Good. You have one tooth on the right, which hasn't been included in your treatment plan. Did you have a chat about it with your previous dentist?*
>
> *Patient: No, we didn't. I'd be grateful if you check this tooth and put it in my treatment plan.*
>
> *Dentist: OK. That's absolutely fine." (Patient (1), Dentist (1), 12/08/14)*

Most commonly, other dentists asked patients about their dental problems and patients then addressed their problems:

> *"Dentist: What is your main dental problem?*
>
> *Patient: I want an implant to replace my broken molar. This molar causes me a lot of pain and I just want to extract it and get an implant.*
>
> *Dentist: Just one moment, I'll have a look on your X-ray.*
>
> *Patient: No problem, doctor. Take your time." (Patient (3), Dentist (1), 13/08/14)*

Additionally, patients moderately initiated conversations and addressed their dental problems without requests from their dentists:

> *"Patient: I've got solid pain in one of my teeth. It's getting me down. Sometimes I won't even eat or drink, to avoid the pain!*
>
> *Dentist: Oh dear. I will check it for you. Could you please open your mouth for me to see what is going on? Yes, good. Is it this tooth?*
>
> *Patient: Yes, it is." (Patient (13), Dentist (1), 01/09/14)*

All dentists who participated in this study reviewed the patients' medical histories although there were differences in how dentists achieved this. Sometimes dentists asked patients very broad questions such as any medical issues, overall health and whether the patients had any operations in the past years. Here is an example from the consultations about how the dentist reviewed the patient medical history with broad questions:

> *"Dentist: Let's discuss your health in general. How is your overall health?*
>
> *Patient: I'm very well.*
>
> *Dentist: Are you taking any medicines?*
>
> *Patient: Yes, for diabetes*
>
> *Dentist: Any other medicines? Medical issues?*
>
> *Patient: No.*
>
> *Dentist: That's fine. Can I have a look at your mouth, please?*
>
> *Patient: Yes, of course you can." (Patient (24), Dentist (1), 01/10/14)*

While at times, dentists asked the patients specific questions such as whether the patient has hypertension, diabetes or sensitivity to penicillin beside the broad questions mentioned in the previous example:

> *"Dentist: How do you evaluate your overall health?*
>
> *Patient: As I told you, the biggest issue that I have now is my teeth; I have a lot of missing teeth and can't even eat sometimes. Also, I'm diabetic and I have hypertension.*

Dentist: OK. No problem. Have you ever had heart surgery or any other operations that you may want me to know about?

Patient: No, but I have been admitted to hospital because of hypertension, and I was discharged two days later, after I had been prescribed aspirin. Overall, I'm OK.

Dentist: What's your diabetes range when you measured it?

Patient: In the morning, I got 130 and up to 180.

Dentist: What about the hypertension?

Patient: From 130 to 150.

Dentist: Are you following up with a physician about your diabetes and hypertension here in this medical centre?

Patient: No, with the hospital (X) near where I live.

Dentist: Are you sensitive to penicillin (an antibiotic)?

Patient: No." (Patient (2), Dentist (1), 12/08/14)

A common finding in this study was that dentists often did not attempt to establish a good relationship with their patients. However, dentists very rarely did try to establish good communication and build a rapport with their patients:

"Dentist: Good morning. How are you?

Patient: Good morning. I'm not very bad, just surviving with my bad oral health.

Dentist: Oh dear! We are going to sort every issue that you have, and I'm sure we can improve your oral health and you'll be happy at the end of your treatment plan. But we need some time to get everything sorted" (Patient (2), Dentist (1), 12/08/14)

Nevertheless, dentists would establish the patient's social circumstances. However, in such cases this was short and brief, as we shall see in the following case:

"Patient: Good afternoon. How are you, doctor?

Dentist: I'm very well. Thanks for asking. What about you?

Patient: Thanks to God. I'm fine." (Patient (21), Dentist (1), 25/09/14)

Reviewing medical history and building rapport with patients improves patients' satisfaction, obtaining desired outcomes and therefore supports making the right treatment decisions (Castrejón et al., 2012, Clayman et al., 2012). To sum up, there were no interruptions through all consultations observed. There was a tendency for dentists to review patient's medical histories through broad questions and occasionally take brief descriptions of patients' current situations. Dentists often did not build a rapport with their patients by developing their social conversation and empathic answers with their patients. However, dentists often provided short and simple descriptions in order to establish the consultations. Although several difficulties with proper interactions between dentists and patients have been acknowledged in the literature including dentists high-load of work, fear of verbal or physical abuse, and patients' anxiety (Ha and Longnecker, 2010, Fentiman, 2007). However, in this study it is challenging to confirm if these aspects were the key reasons why dentists often provided short and simple descriptions during the consultations. Several explanations may answer this. Firstly, it was not the aim of this study to evaluate why dentists provided short and simple descriptions in the consultations. Secondly, in-order to evaluate these aspects, specific questions and several psychological variables in the interviews such as the degree of the anxiety, dentist and patient exposure to infections or radiation and others may have been required (Moore et al., 1993, Ayatollahi et al., 2012). Yet, the interviews in this study did not include particular questions about anxiety and work high-load. Lastly and most importantly, both dentists and patients who participated in this study appeared to be very satisfied with the decisions. No participant highlighted any issue associated with anxiety, fear from abuse and/or the high-load of the work.

3.2.1.3. Theme 3: Research evidence

Theme three of the DI-SDM coding framework aims to evaluate and explore the research evidence presented through all the consultations. This includes evaluating aspects such as quality of evidence presented, research relevant to patients presented, and lastly appraising the evidence (Singh et al., 2010, Clayman et al., 2012). Providing patients with the evidence and relevant treatment information is beneficial from both a physical and psychological perspective (Ford et al., 2003). For instance, it is evident that diabetic control can be improved when patients are provided with relevant diabetes information and actively involved in their treatment decisions (Greenfield et al., 1988). Moreover, the General Dental Council (GDC) in the UK has been emphasised on presenting research evidence including describing benefits and risks of the treatments to the patients. This was clearly stated in the Standards for Dental Professionals made by the GDC: *"Listen to patients and give them the information they need, in a way they can use, so that they can make decisions. This will include: communicating effectively with patients; explaining options (including risks and benefits); and giving full information on proposed treatment and possible costs"* (General Dental Council, 2005, p7). Consequently this

justified the significance of presenting and evaluating research evidence to the patients in the shared decision making model.

There was little reference to the evidence in these consultations. Evidence from the literature about possible dental treatment for the patient such as introducing the survival rate of fixed partial dentures such as fixed crowns and bridges were seldom presented to patients. Although this was not universally the case the evidence could be discussed:

> *"Patient: This Bridge failed and I had it done two years ago. I think if we go with the implant, it would be better because I don't want to come here after two years and get another new bridge. Do you see what I mean?*
>
> *Dentist: Well, it's totally up to you. I think you've got a point. If you go with treating the decayed abutment and a new bridge, it shouldn't fail after two years. According to literature, there is evidence that bridges have a life cycle between 5 and 10 years." (Patient (21), Dentist (1), 25/09/14)*

The introduction of evidence associated with treatment options was therefore uneven although in some cases dentists did discuss the importance of oral hygiene to the success of implant therapies:

> *"Dentist: From a clinical perspective you are suitable for implants if you improve your oral health. There is enough space for the implants and enough bone quantity. So don't worry, you'll be fine.*
>
> *Patient: OK, as I understand it, you will do the implants for me if I improve my oral health, won't you?*
>
> *Dentist: Yes, sure. This is not difficult if you follow the instructions that I gave you.*
>
> *Patient: I will improve it.*
>
> *Dentist: that's good." (Patient (7), Dentist (1), 18/08/14)*

Dentists tended not to make any comments on the strength of the evidence they presented. Although again the exceptions provide interesting cases for analysis:

> *"Dentist: there is a strong evidence that the implant's success is significantly associated with patient's good oral hygiene. So, you should take this home message with you, do you get me?*
>
> *Patient: yes I do doctor." (Patient (30), Dentist (3), 07/10/14)*

The most common finding of this study was that dentists who participated tended not to provide patients with recommendations based on their appraisal of the data. Though, dentists occasionally individualised the evidence and presented patients' circumstances through asking patients about previous implants:

> *"Dentist: When did you have this implant done? I mean this one on the left?*
>
> *Patient: I had it done about three years ago here in this clinic.*
>
> *Dentist: OK. Do you have any problems with this implant?*
>
> *Patient: No. It works very well. I have never experienced pain with it. Thanks for doing it for me.*
>
> *Dentist: No problem at all.*
>
> *Dentist: OK, do you feel any pain from this bridge? Is it moving?*
>
> *Patient: Honestly, no. But I went to two dentists before I came here. Both of them said that the bridge has failed and needs replacement!" (Patient (21), Dentist (1), 25/09/14)*

Other dentists individualised evidence by presenting the limitations of alternative dental treatment such as fixed partial denture or removable prosthesis. The following example describes how dentists individualised the evidence to their patients by presenting limitations of alternative dental therapies:

> *"Dentist: If you choose to go with the bridge, we'll need to prepare two adjacent teeth to use them as a base for the bridge. Bridges generally have some disadvantages, such as being difficult to clean and possible decay after a period, and then they may need extraction. The bridge has only one advantage in that it does not need surgery.*
>
> *Patient: According to your explanation, I think implants would be better, wouldn't they?*
>
> *Dentist: Actually, yes. Implants are the best treatment option in this century from both functional and aesthetic aspects. I believe that other alternative treatment have become old-fashioned.*
>
> *Patient: OK. I will go for implants.*
>
> *Dentist Good choice." (Patient (11), Dentist (2), 24/08/14)*

In the previous example the dentist had looked at the patient (11) who was a male aged 39 years old. It was clear from the case that the dentist tried to influence the patient's decision to go with implant therapy by signifying the superiority of implants from both aesthetic and functional perspectives. However, the dentist did not present any limitations of the implant therapy such as association of poor oral hygiene and smoking with failure of implants, nor complications of implants such as swelling and bleeding were introduced. This case clearly deals with dentist's power and decision making process. These aspects of the consultations will be described in the next chapter (See the section

4.4. Power and decision making in relation to dental implants).

Nevertheless, some dentists did provide individualised evidence related to particular medical issue that the patients have such as association of implant with the diabetes:

> *"Patient: Do diabetes affect my implants?*
>
> *Dentist: Actually, no, if you have control over your diabetes and are taking your diabetes medicine on a regular basis. I think there won't be a problem at all. I have done a lot of implants for many diabetic patients who have control over their diabetic level.*
>
> *Patient: OK. I actually have good control over my diabetic level.*
>
> *Dentist: That's good. Another important thing—you must improve your oral hygiene by brushing your teeth three times daily. I will also give you a mouthwash to use twice a day. This is really important because an implant's success is associated with good oral hygiene. OK?*
>
> *Patient: OK. Thank you.*
>
> *Dentist: No problem at all." (Patient (6), Dentist (1), 17/08/14)*

Providing patients with research evidence is valuable from both physical and psychological perspectives (Ford et al., 2003). In summary, dentists occasionally introduced research evidence to their patients but mostly this evidence was about the association between the success of implant therapy and the role of good oral hygiene. At times dentists presented evidence related to the patient's condition such pervious implants, or evidence associated with alternative dental treatment options such as fixed and removable prostheses. However, all dentists did not appraise the data provided to their patients, except in one case.

3.2.1.4. Theme 4: The patient perspective

Theme four of the DI-SDM coding frame aims to explore patient perspectives in the decision making process within consultations. This includes evaluating aspects such as if patients asked how much information they need, if the patients' understandings were confirmed, their views sought, their expectations explored and lastly their ability to understand the information being provided. These aspects are significant in the shared decision making model as they have shown adherence to treatment plans, increasing patients satisfactions, and reducing unwanted outcomes (Ford et al., 2003, Edwards and Elwyn, 2009). It is also evident that providing patients with multiple treatment options and then allowing them to choose their preferable option can improve the patients' well-being (Thornton et al., 2003, Crawford et al., 2002). This consequently justified the significance of evaluating the patient perspective in the shared decision making model.

Although all patients participated in this study were not asked about how much information they needed, or how involved they wanted to be in their treatment decisions, they frequently understood what was discussed with the dentists and their understanding often confirmed. Confirming patients' understandings of what was happening in their mouths was frequently explored very briefly, such as the following example,

> *"Dentist: Your missing upper teeth can only be treated with an implant, because there are no adjacent teeth that can help us to do other options such as a fixed bridge. Do you understand what I'm saying?*
>
> *Patient: Yes I do." (Patient (6), Dentist (1), 17/08/14)*

While at times, patients' understandings were confirmed throughout the dentists' rich descriptions of the patient's clinical situation such as the quality and quantity of the patient's bone and the available space for the implant as in the following example:

> *"Dentist: OK. On your referral form it says you have a decayed and broken left molar, which needs extraction, and you want to replace it with an implant. Is this right?*
>
> *Patient: Yes, it is.*
>
> *Dentist: OK, can you please sit on the dental chair so I can check your mouth?*
>
> *Patient: OK.*
>
> *Dentist: Open your mouth. Close. Open again. OK, this lower molar on the left will be extracted and replaced with an implant. Also, you have this upper bridge that has failed and needs to be removed. So, we'll remove it and insert only one implant*

because your sinus is lowering, and there isn't sufficient bone quantity for more than one implant. Do you get me?

Patient: Yes. So, is it possible to have at least two implants to replace this bridge? You know, doctor, losing a three-unit bridge and having only one implant is really difficult. Isn't it?

Dentist: Yes, it is. But unfortunately, as I told you, it is because of your sinus location and the bone quantity, which are really associated with the success of the implant. Do you understand what I mean?

Patient: Yes, doctor, I do. Thanks for your clarification. Just do what you think is suitable for me. I really don't mind." (Patient (3), Dentist (1), 13/08/14)

Patients' views about the implant therapy were irregularly checked. So some patients were asked whether they have particular questions about the implant surgery or broad questions about their consultations. However, significantly, most patients from those who were asked answered that they did not have any questions:

"Dentist: Do you have any questions about the implants?

Patient: No, I don't have any."(Patient (14), Dentist (1), 02/09/14)

While, other patients addressed their views to the dentists through building good interactions. The next example shows how patient (10) who was a male aged 60 years old addressed his view about the implant therapy and built good conversations with the dentist. The patient was interested in replacing his old bridge with a new fixed bridge. However the dentist used his clinical experience, knowledge and authority to shape the patient's decision to choose an implant. This was may be due to the patient's lack of knowledge and lack of supportive information about possible choices:

"Dentist: This bridge is moving because of the abutment that's holding it. It's really weak and decayed. So, the best option for sorting this out is removing the bridge and replacing it with implants.

Patient: Oh no. Is it possible to remove it and replace it with a new bridge?

Dentist: Sorry, it isn't possible. First of all, the bridge was held by one abutment. The dentist who did this bridge for you did it incorrectly, unfortunately. Any bridge must have two abutments working as a strong base to bear the load on the bridge. So if we remove the bridge, there will be one prepared and very decayed abutment, which

needs extraction and replacing with two implants. I think the only treatment option for this bridge is implant therapy. What do you think?

Patient: If there is no other option and you recommend implants, I'll go for them. As you said, no other option is available.

Dentist: That's absolutely fine." (Patient (10), Dentist (1), 21/08/14)

Moreover, explorations of patients' expectations about implant therapies seldom happened. In this respect some dentists asked patients about their expectations of the implant treatment:

"Dentist: I'm wondering if there is any particular reason why you want an implant?

Patient: Well, I had an implant five years ago. I have never felt discomfort with it. I really like it and wouldn't go with any alternative dental treatment. Some of my friends have really bad experiences with fixed bridges. That's why I chose an implant.

Dentist: Fair enough. I'll evaluate your suitability for an implant soon." (Patient (23), Dentist (2), 30/09/14)

While, at times patients described their expectations of implant treatment by reflecting on their previous implant surgeries they claimed that they did not had any problems with them. For example,

"Patient: I did not have any problems with previous implant." (Patient (26), Dentist (3), 05/10/14)

"Patient: Implant is very good treatment. Never had a pain or problem." (Patient (29), Dentist (3), 06/10/14)

In other cases patients preferred to explain their expectations of the implant therapies by reflecting on either the cost of the treatment or their friends' implant experiences. They maintained that their friends have good implant experiences and were satisfied with implant treatment:

"Patient said he wants implant because he knows that implant is expensive and the best option!" (Patient (25), Dentist (1), 02/10/14)

"Patient said, "I want implant because I know it is the best dental treatment. I saw many friends who have implants, they really like them and recommend me to go with this therapy." (Patient (31), Dentist (3), 08/10/14)

In the previous two examples, 'lay referral' is a key component of decision making. This will be introduced and discussed in Chapter 4 under the section (

4.3. Patients previous experiences and lay referrals in relation to the implants decisions).

An exception where patient (2) showed bad expectation of all dental treatments; the patient confirmed neglecting his oral health because of his bad previous experience with one dentist. Patient (2) was a male aged 54 years old and suffered from diabetes and hypertension:

> *"Dentist: Do you have any questions?*
>
> *Patient: Yes. Honestly, I neglected my oral health because of my bad experience with one dentist. This dentist extracted one of my teeth and I had heavy bleeding because of hypertension, as I was using aspirin at that time. He didn't ask me whether I have hypertension or not and I also didn't tell him. Since that time, I am really scared of the sound of drilling and associated complications with dental treatments.*
>
> *Dentist: OK. I see what you mean. I think it's not fair to neglect your oral health because of your bad experience with one dentist. I really understand what you're saying, but what we're going to do is to let you stop the aspirin 10 days before your implant surgery to avoid bleeding. Do you take any other medicines?*
>
> *Patient: No, I don't. OK, can you please let me know what the implant is and how you will do the surgery?*
>
> *Dentist: Yes, sure. Let me just bring the implant model. OK, the implant is made from titanium, and what we'll do during surgery is open your gums to reach your jawbone and then insert the implant into the bone. While the teeth that will be extracted … we'll just take them out and then immediately insert the implant. The crown will be fitted three months after surgery. This is because we want the implant to integrate with the bone. When you come for your crown-fitting appointment, we won't use any anaesthesia or surgical instruments. We'll only be taking impressions and fitting the crowns two weeks later. Do you get me?*
>
> *Patient: Yes. Thank you for your explanation." (Patient (2), Dentist (1), 12/08/14)*

Not all the patients participated in this study perceived that they had the ability to adhere their implant decisions. However, some patients were asked whether if they fully read and signed the provided implant consent forms or not:

> *"Dentist: Have you read the patient's consent form?*

Patient: Yes, doctor, I read it. Actually, I have been waiting for this implant for more than six months. Just, please, if you can speed up the appointments, it would be really good.

Dentist: We are trying our best with the appointments. We have a long waiting list and we deal with all patients equally. Anyway, do you have any questions about the consent form or implant surgery?

Patient: No, doctor. Thank you very much." (Patient (5), Dentist (2), 14/08/14)

Though, some patients maintained that the dentists' knowledge and skills are the right ways of making the right implant decisions. They claimed that their dentists knowing more than they do about which treatment suit their conditions:

"Dentist: OK, there is one tooth—the lower last molar—it hasn't been included in your treatment plan? Have you discussed this with your previous dentist?

Patient: No, I haven't.

Dentist: OK. It seems to me that this tooth is very decayed and broken; I think it needs extraction and replacement with an implant. What do you think?

Patient: I don't know, doctor. Do what you believe is best for me. You know more than I do about dental treatment. I totally have no idea and I don't mind any treatment. I just want to be treated, as I'm really suffering from my horrible oral health." (Patient (2), Dentist (1), 12/08/14)

Also, an exceptional case where patient (12) demonstrated real ability to make the decision. The patient seemed to know what the dentist was planning to do:

"Dentist: Do you understand what we're going to do?

Patient: Yes, you will take these bridges out and put implants in, won't you?

Dentist: Yes, that's completely right.

Patient: OK.

Dentist Do you have any questions?

Patient No." (Patient (12), Dentist (1), 28/08/14)

Evaluating patients' perspectives concerning their treatment decisions has shown to increase patients' satisfactions and improve their well being (Crawford et al., 2002, Ford et al., 2003). To summarise, dentists tended not to ask their patients about how much information they needed. All dentists also failed to ask how involved the patients wanted to be in their treatment decisions although there was a tendency to confirm patients' understandings when this was necessary. Although, at irregular intervals dentists did check if patients had understood their decision, most patients from those who were asked answered that they did have not any questions. Broadly, explorations of the patients' expectations from the implant therapies seldom happened.

3.2.1.5. Theme 5: Decision-making

Theme five of the DI-SDM coding frame focused on the decision-making around implant therapy. This included evaluating if the dentists presented several treatment options wherever possible, if they described the process of the implant surgery, introduced the side effects, possible benefits and possible risks of implant therapies and lastly if they considered patients' preferences and values. In other studies these aspects of shared decision making have shown to be appreciated and valued by the majority of patients (Wagner et al., 1995). It has also found that involving patients in their treatment decisions by describing the process of the surgery, providing benefits, risks and side effects of treatment; have the advantage of enabling doctors to show patients more respect. It is also valuable to patients' wellbeing and health (Edwards and Elwyn, 2009).

When appropriate several dental treatment options were occasionally introduced to patients. Options presented could be classified into four categories. First, the dentist provided two choices: implant treatment that suits the patient's condition or to leave the gap as it is:

> *"Dentist: Can you just open your mouth for me? Bite, please. Excellent. Open now. Yeah. Bite again. That's fine. Actually, this tooth is broken and there is only a small portion left. So, this needs extraction. Unfortunately, we can't do any other dental treatment except an implant because the tooth is the last molar and you have no tooth behind it to fit a bridge, for example. Do you understand me?*
>
> *Patient: Yes, I do." (Patient (17), Dentist (2), 12/09/14)*

Secondly, dentists appeared to present two choices to patients either preserving the tooth with a root canal treatment or implant therapy:

> *"Dentist: All right, we have two options: we can preserve the tooth and put a fixed crown in—this is the first treatment option—or we can extract the tooth and insert an implant. Which treatment do you want to undergo?*

Patient: Honestly, I don't like fixed crowns. I'll go for implant therapy. What about my upper molar? Can you put an implant there?

Dentist: Yes, sure. But I will save you time and do both implants in one surgery appointment. Is this OK for you?

Patient: Yes, thank you very much." (Patient (1), Dentist (1), 12/08/14)

Alternatively dentists asked patients whether they wanted orthodontic treatment and then the implant, or a second option often presented was a fixed bridge:

"Dentist: Could you please open wide for me. Very good. Close. Open again. Close. OK, we can do an implant here. But, we can't do an implant for this missing tooth because there isn't much space. You have two choices. The first is to do an orthodontic treatment to create enough space for the implant. The second option is to prepare the adjacent teeth and put in a bridge. It's completely your decision. What do you prefer?

Patient: Um. Can I decide later? I think I need more time to think about this. Let's do the implant for the first tooth, and I will leave this gap till I make my decision.

Dentist: It is completely up to you. But you should know, if you want orthodontic treatment, we must do it before the implant surgery. Do you get me?

Patient: Yes, doctor. No problem. Let's get the first implant done and I'll think about the second gap later, if that's OK?

Dentist: Yes, it is OK. No problem at all." (Patient (4), Dentist (1), 13/08/14)

Lastly, some dentists infrequently introduced two options for replacing missing teeth. These were implants or fixed bridges:

"Dentist: Well, Implantation is the best dental treatment. But you could have fixed bridges to replace these two teeth if you want. What do you think?

Patient: Actually, no. I am happy to go with the implant." (Patient (20), Dentist (1), 20/09/14)

Nevertheless, wherever the dentists did not introduce possible dental treatment options, some patients would ask for other options. For example,

"Dentist: Open your mouth please. Close. Fantastic. Open again. Close now. Good. How long did you use the retainer after your orthodontic treatment?

Patient: About four months.

Dentist: OK. No problem. Actually three of your missing teeth are suitable for implants, while there is no space to insert an implant for the fourth. I mean this one.

Patient: OK, what is alternative treatment?

Dentist: You have two options. One is to go for orthodontic treatment again and create enough space for the implant. The other option is to have a fixed bridge.

Patient: Oh. I don't want to go with orthodontic therapy again. It's really difficult and I honestly hate it! I will go for the bridge.

Dentist: That's absolutely fine. No problem at all. It is totally up to you." (Patient (8), Dentist (1), 19/08/14)

Although the process of implant surgery was not always described to the patients it was often left to patients to ask their dentists for more information:

"Patient: OK. I was wondering, doctor, what is an implant? And will you do all these implants in my next surgery appointment?

Dentist: Well, all your implants will be done in one day. The implant is made from a titanium base, which we'll insert into your bone. After insertion, we'll leave the implant for about three to six months for integration with the bone. After this, we'll fit the crowns on to these implants. Is that clear?

Patient Yes, it is clear. Thank you.

Dentist: you are always welcome." (Patient (6), Dentist (1), 17/08/14)

Even though it very rarely occurred, some dentists clearly described the process of the implant surgery without requests from their patient:

"Dentist: The implant is made from titanium and will be inserted in the bone in the jaw. Then it'll be left for three to six months for integration. When it is successfully integrated with the bone, a crown will be fitted. What do you think? Are you happy to go with implant therapy?

Patient: Yes, because, as you said, there is no other treatment choices.

Dentist: Fantastic." (Patient (17), Dentist (2), 12/09/14)

In the previous example, the dentist had examined the patient who was a male aged 55 years old and with postgraduate education. Clinicians have a great effect on patient participation in medical encounters. For instance, it has been reported that patients were actively involved in their treatment decisions when they were more educated and networking with clinicians. As a result clinicians tend to engage in supportive talk and partnership –building (Street et al., 2005, Street, 1991, Beisecker and Beisecker, 1990). This was similar to the previous example when the dentist provided a supportive talk through the description of the process of the implant surgery and then asking the patient about his decision. This had the effect of enabling the patient to be more involved in his treatment decision.

Dentists tended not to introduce the side effects of implant therapy to their patients. There were some patients who asked their dentists about the side effects and of course received a very helpful reply. This begs the question, should this information not be available to everyone? Or is it correct to provide information on an 'as needed basis'? In the following example we can see how dentists dealt with introducing the side effects to their patients,

"Patient: Is the surgery hurting?

Dentist: Well, you will feel some pain, but it's not really strong. An implant is like any surgical operation. It has some side effects such as swelling and bleeding. Usually, after two days these side effects will disappear. However, you could prevent these by using the antibiotic and painkillers that I'm going to give you. You should be fine. Don't worry!

Patient: OK. I hope so." (Patient (19), Dentist (1), 15/09/14)

Similarly, the benefits of dental implants were not continually provided to support patients making the right decisions. Though, at times some dentists introduced the benefits of implants:

"Dentist: Well. I introduced to you the limitations of the fixed bridges, but the implant therapy has superior advantages over the other dental treatment such as durability, stability, aesthetics and loading. The decision is completely up to you, and if you have any questions, I am here to answer them. Think about it and let me know.

Patient: Um. It's a really difficult question. What do you recommend, doctor?

Dentist: Well, if I were you, I would go for the implant

Patient: Honestly, I came here and I'm interested in implants and you also recommended them to me, so I will go for them.

Dentist: OK. That's absolutely fine." (Patient (5), Dentist (2), 14/08/14)

While, there was only one case throughout all the consultations where the patient asked the dentist about the benefits of the therapy:

"Patient: I was wondering, how would you do the implant surgery? Will you extract the tooth and insert the implant at the same time?

Dentist: Yes. I am going to extract this broken tooth and immediately insert the implant base for you. It should not take a long time. It's only about 30 to 45 minutes. I suggested the implant because alternative treatment are not being possible with your condition. Implant therapy has a long survival rate and it really has a good aesthetic aspect. Nobody will notice that you have an implant! Do you understand what I have explained?

Patient Yes. It seems to me that an implant would be perfect for me, right?

Dentist: Yes. That's right." (Patient (17), Dentist (2), 12/09/14)

On the other hand describing any risk related to the implants was exceptional through all the consultations observed. This happened in particular cases or where the patients asked about the risks:

"Dentist: Do you have any questions about the consent form or implant therapy?

Patient: Do implants fail?

Dentist: Yes, sometimes it fails. The failure rate in literature is under 5%. So it is not common that implants fail.

Patient: Why does it fail? Is there a reason?

Dentist: Good question. Implants have no disadvantages. An implant may fail because it doesn't integrate with the bone. However, if this happens, the implant can simply be removed. I mean, it's not a big deal.

Patient: Thank you for your explanation." (Patient (8), Dentist (1), 19/08/14)

Patients had different preferences and values about the treatment options, occasionally presented to them. So, at times, some patients demonstrated great interest to go with implant therapies.

They highlighted their preferences at the beginning of the consultations that they want implant therapy and dentists consequently considered the patients' preferred treatment options. For example,

> *"Dentist: This tooth is very decayed and the decay reaches the roots. Also, it's broken and there is only a small portion of the tooth. So, unfortunately, it can't be preserved and it should be extracted. You also have this tooth in the upper jaw, which needs root canal treatment.*
>
> *Patient: OK, is it possible to have implant therapy?*
>
> *Dentist: Actually, let me check again. Bite for me. Open. Close again. And open now. Well, just have a seat there while I have a look at your X-ray.*
>
> *Patient: Sure.*
>
> *Dentist: Yes, we can do implant therapy if you want. How are your lower implants working? Are they good? Any problems?*
>
> *Patient: They are doing very well. I have never had any problems with my implants. That's why I am asking for implant therapy.*
>
> *Dentist: Sounds great." (Patient (13), Dentist (1), 01/09/14)*

In one exceptional case the patient refused implant therapy and chose to go with a fixed bridge. The patient claimed that she did not want the implant because she was going to undergo orthodontic treatment:

> *"Patient: I don't want orthodontic therapy. My friend had it and she said that it's really painful and that she was really disappointed. I'll go for the fixed bridge, if that's OK, or I'll leave the gap as it is!*
>
> *Dentist: That's absolutely fine. You could have the bridge inserted if don't like orthodontic therapy. It's completely up to you.*
>
> *Patient: Yes, please, I'll go for the bridge.*
>
> *Dentist: That's OK. No problem at all." (Patient (16), Dentist (2), 11/09/14)*

Nevertheless, there was only one patient who wanted implants and his dentist refused to do it. In this case the dentist claimed the patient's tooth could be treated with a "root canal treatment" and explained to the patient that implants were limited to patients who really needed them:

"Dentist: Why did you come to this clinic today?

Patient: I have one tooth, which is very decayed. I would like to have an implant if possible.

Dentist: That's fine. I'll evaluate your condition and see which treatment suits you. Well, with regard to your decayed tooth, it doesn't need implantation. The tooth can be treated (root canal treatment) and preserved.

Patient: No, doctor. I don't want root canal treatment. I want it out and I want an implant!

Dentist: Dear brother, implant therapy is limited to some patients who really need it and have no chance of being treated with any alternative dental treatment. But in your case, the tooth is not very decayed and it could be treated and preserved. Your tooth is healthy and if we do root canal treatment, it would work perfectly.

Patient: Doctor, please, it is my tooth and I have the right to choose which treatment I want.

Dentist: I really understand what you were saying, but as I explained to you, implants are limited to patients who really need them. Please understand that. Believe me if your tooth were broken or really couldn't be preserved, I would do an implant for you without a request from you. Do you get me?

Patient Thanks for your clarification. But I still want an implant and don't want root canal treatment.

Dentist: OK. I'm sorry. I can't do the implant. If you want root canal treatment, I could refer you to the specialist now. If you don't want it, you can fill in a complaint form and make a complaint to the centre's manager. He should be able to sort out your treatment.

Patient: That's really strange. It's my tooth and I have the right to make the decision that I want and not you!

Dentist: Anyway, I told you what I could do for you. If you still want the implant, just make a complaint. Sorry for any inconvenience.

Patient: Yes, I do. I'll make a complaint to the manager, and I'll even take this matter to the minister if I need to. You provide a really bad service. The implants are paid for by the government and not from your account!

Dentist: not a problem at all" (Patient (24), Dentist (1), 01/10/14).

In the previous example, the dentist had checked the suitability of the patient for implant therapy by looking at his mouth and x-ray. The patient was a male aged 60 years old and with postgraduate educational level. The dentist believed that the patient did not need an implant as the patient's tooth can be preserved and treated with endodontic treatment (root canal therapy). The patient claimed that it is his right to decide which treatment to undergo. This conflict between the dentist and the patient is associated with ethics and clinical judgements in relation to decision-making (see Chapter 4 under the sections 4.4.1. Clinical judgements and patient choice 'overt conflict', and 4.5. Ethical consequences associated with power and decision making).

Although, dentists rarely suggested implant therapy and then asked the patient about his preferences/values, for example,

"Dentist: Open your mouth, please. Oh, I can see why you're suffering, you have these two teeth, and they're really decayed and broken. They can't be preserved. Bite for me, please. Open again. That's it. Would you like me to extract these decayed teeth and fit you with implants?

Patient: I don't mind. I just want to stop the pain." (Patient (22), Dentist (1), 29/09/14)

Yet, there were some cases where the dentists asked the patients about their preferences/values without suggesting particular treatment options:

"Dentist: Excellent. Open your mouth for me, please? Good. Bite. Open. And bite again. That's fine. Actually, you have three missing teeth. So, you want to fill these gaps, are you looking at specific dental therapy?

Patient: Yes, doctor. I want implants because they are the best. I really hate other treatment such as a fixed bridge. I had a bad experience with it. It failed to work and also fell out after a short period.

Dentist: Oh, really? Well, I totally agree with you that the implant is the best option, but this doesn't mean that other therapies are bad. According to what I saw, you can

have two implants, but there is no space here to insert the third implant. So, unfortunately, you should go with the fixed prosthesis for this gap. Anyway, I would suggest that you go for the two implants to fill these two gaps. Then you can think more about the one that you can't get an implant for. What do you think?

Patient: It's a good idea. OK, go ahead." (Patient (14), Dentist (1), 02/09/14)

Involving patients in their treatment decisions by describing the process of the surgery, providing benefits, risks and side effects of the treatment; is valuable to patients' wellbeing and health (Edwards and Elwyn, 2009). Through each of the consultations, multiple treatment options were not commonly introduced to the patients. Similarly, the process and possible side effects of the implant surgery were not always described. They were only occasionally explained when patients asked for more information. Some dentists did not always take patients preferences and values into account, yet some patients demonstrated their preferences to the dentists and asked for implant therapies. However, there were very rare cases where the dentists asked the patients for their preferred treatment options.

3.2.1.6. Theme 6: Time issues

Theme six of the DI-SDM coding frame aims to explore how the problem of time was handled during implant decisions. This includes evaluating two key aspects: whether or not patients have been given options to postpone implant decisions and if there has been a plan for follow-up. It has been found that providing patients with options to defer their treatment decisions leads to a key ethical problem in healthcare; Autonomy. Autonomy is a moral and ethical principle that represents the right of 'self-determination' (Beauchamp and Childress, 2001). "Patients have not only the right to choose, but also the right not to choose or even to defer their treatment decisions" (Ritter and Hoffman, 2011, p 151). This consequently justified the significance of the time issues in the shared decision making model.

None of the patients who participated in this study were provided options to postpone their implant decisions and take more time to think before decisions were made. Most patients were offered plans for follow-up or for doing their implant surgeries:

"Dentist: OK, take this note and give it to the appointment receptionist and she will book you in.

Patient: Thanks a lot, doctor. I'll see you.

Dentist: You're welcome. See you later.

Patient: Bye." (Patient (3), Dentist (1), 13/08/14)

At times, some dentists did refer particular patients to other dental specialists when further dental treatment was needed:

> *"Dentist: I'll give you two appointments: one with me to do the implant surgery, during which I'll extract your broken teeth and immediately insert the implant—this is exactly what we did with your previous implants—and the second with the specialist to do your root canal treatment. Is that OK with you?*
>
> *Patient: Yes, it is. Thanks for that.*
>
> *Dentist: OK. Take these two appointments and please register them at the desk over there. This is an antibiotic; you should use it two days before the surgery.*
>
> *That's all for today. Any questions?*
>
> *Patient: No. Thanks again. See you later.*
>
> *Dentist: See you. Bye. Patient: Bye." (Patient (13), Dentist (1), 01/09/14)*

It can be highlighted that the results of this section involved describing all the consultations observed and the decision-making processes within these consultations using the proposed DI-SDM framework of the study. This involved describing each theme and subtheme of the DI-SDM coding framework. Yet, the degree to which there has been shared decision making with the consultations will be introduced in the next section.

3.2.2. Typologies of shared decision making within consultations

This section describes the degree to which there has been shared decision-making within the consultations. Three types of shared decision-making approaches were observable. These could be argued to correspond to the marginal shared decision-making model (MSDM), the typical shared decision-making model (TSDM), and lastly the ideal shared decision-making model (ISDM). Figure 9 describes these three typologies of shared decision making. However, in what follows the degree to which consultations fitted different aspects of the various models of shared decision-making will be described along with examples from the data. Also, the description, grouping criteria and appraisal of these types of shared decision making models are detailed below together under the relevant section.

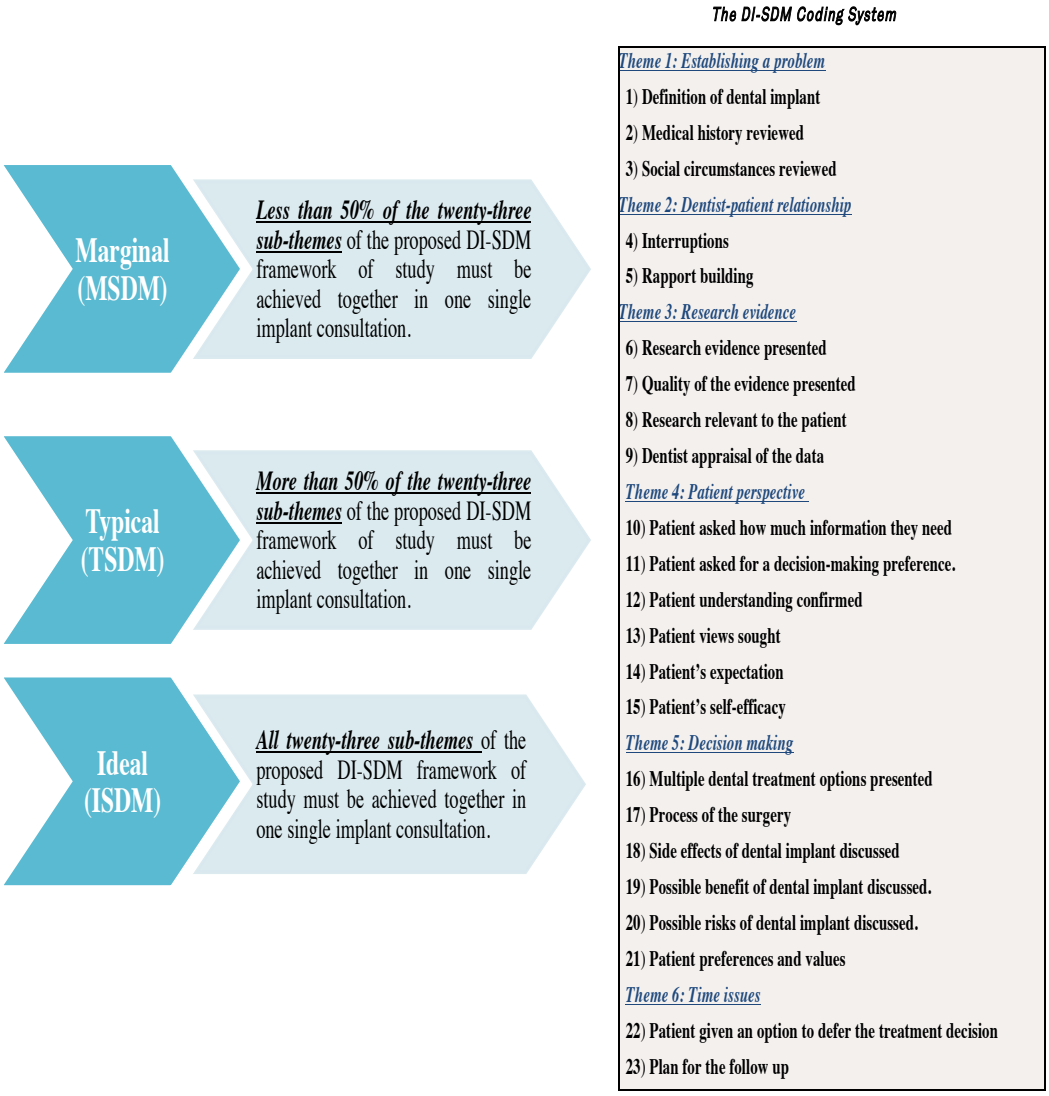

Figure 9 Typologies of shared decision making (Alzahrani, 2016)

3.2.2.1. Marginal shared decision-making model (MSDM)

Results and example of the MSDM model

The majority of the consultations observed were grouped under the marginal shared decision making model (MSDM). This is because in these consultations less than 12 aspects (sub-themes) of the DI-SDM occurred. Throughout these consultations, it can be emphasised that patients and dentists contributed to the decision-making processes and reached joint agreements on the decision made. However, various aspects (more than 12 sub-themes) of the DI-SDM framework were completely absent. For instance, research evidence and research relevant to patients were often not introduced to patients, dentists did not present the quality of evidence, and they also did not appraise relevant data for the patients. Patients tended not to be asked about the quantity of information they needed, nor did the dentist inquire about their decision making preferences. Patients' expectations of the implant were not evaluated, the side effects, the possible benefits and risks of implants were not introduced to patients, and patients were not given the choice of postponing their treatment decisions. Patients' views were not evaluated and considered, and lastly, the process of implant surgery was not described to patients. The following implant consultation describes how the MSDM model was employed:

"Dentist: Good morning.

Patient: Good morning.

Dentist: How are you?

Patient: Thanks to God, I'm good. How about you, doctor?

Dentist: That's good. I'm fine. Thanks for asking. OK, dentist (X) has seen you and has referred you to my clinic to check your suitability for implant surgery. Is this right?

Patient: Yes, doctor.

Dentist: Good. You have one tooth on the right, which hasn't been included in your treatment plan. Did you have a chat about it with your previous dentist?

Patient: No, we didn't. I'd be grateful if you check this tooth and put it in my treatment plan.

Dentist: OK. That's absolutely fine.

Patient: Can I have an implant to replace this tooth?

Dentist: One moment. I'll check your suitability for the implant and let you know. Have you had root canal treatment on this tooth?

Patient: Yes, doctor. I had it done two years ago.

Dentist: Would you prefer to have a dental implant or a fixed crown?

Patient: I really don't want a fixed crown. I want an implant.

Dentist: OK. I'd like to highlight that this tooth can be preserved and we can do a fixed crown instead of extracting it and inserting an implant. What do you think?

Patient: What do you mean? Do you recommend that I go back to my previous dentist to get a fixed crown?

Dentist: Actually, yes, because we can preserve the tooth—but the decision is totally up to you.

Patient: Um...

Dentist: Can you open your mouth for me, please? Close. Open again. Close. OK, before we go ahead with any treatment option, I want to check your medical history. How is your overall health? Do you have any medical problems?

Patient: I'm OK. No, I don't have...

Dentist: Are you diabetic? Have you got hypertension?

Patient: Yes, I'm diabetic, but I don't have any other medical problems.

Dentist: All right, we have two options: we can preserve the tooth and put a fixed crown in—this is the first treatment option—or we can extract the tooth and insert an implant. Which treatment do you want to undergo?

Patient: Honestly, I don't like fixed crowns. I'll go for implant therapy. What about my upper molar? Can you put an implant there?

Dentist: Yes, sure. But I will save you time and do both implants in one surgery appointment. Is this OK for you?

Patient: Yes, thank you very much.

Dentist: I'd like to let you know that your appointment will be in two months at least, as we have a big long waiting list.

Patient: So, will you give me a surgery appointment now?

Dentist: Yes, sure. Just go with my assistant (X) to the appointment reception. And, please, if you can't come for any reason, please let us know 72 hours before your surgery so we can put someone in your slot.

Patient: OK. Thank you, doctor. Is that all?

Dentist: Yes. Just wait for me for a minute. I'll give you some medicine: a mouthwash, and antibiotics to be used two days before the surgery, and painkillers. I'll also give you pre-surgery instructions.

Patient: OK. Sounds good. I was wondering, doctor, will you do an implant bridge or just one implant in each place?

Dentist: Only one implant. There is no need to destroy your adjacent intact teeth. Do you get me?

Patient: Yes, doctor. Thank you so much and I'll see you later.

Dentist: You're welcome. Do you have any other questions?

Patient: No.

Dentist: OK. That's all. See you later.

Patient: Bye. Dentist: Bye." (Patient (1), Dentist (1), 12/08/14)

The marginal shared decision making model (MSDM) can be described as "an achievement of less than 50% of the twenty-three sub-themes of the DI-SDM framework in a single implant consultation with emphasis on agreement of both dentists and patients on the decisions made and a full concern of the MSDM criteria during the evaluation process" (Figure 9, Page 103).

In order to consider particular implant consultation for a marginal shared decision-making (MSDM), the following criteria must be achieved:

1) The involvement of at least two participants (patient and dentist) in the process of treatment decision-making. They share information and treatment options and then both agree on the treatment decision (Frosch and Kaplan, 1999).
2) *Less than 50% of the twenty-three sub-themes* of the proposed DI-SDM framework of the study are achieved and observed together in one single implant consultation. So, for example, observing seven sub-themes out of the twenty-three of the DI-

SDM framework in a single consultation would be considered as a case of the MSDM.

Expressive appraisal of the MSDM model

When the MSDM was implemented in consultations, it was clear that within this model only slight involvement of dentists and patients in the decision making process was observable. The absence of several key sub-themes of the DI-SDM, mentioned previously, prevented this model from reaching the TSDM or IDSM models. Yet, it should be emphasised that patients and dentists did make joint decisions.

Significantly, and unlike the TSDM, the dentists who contributed to the MSDM consultations usually established conversations with their patients. For example,

"Dentist: Good morning.

Patient: Good morning.

Dentist: How are you?

Patient: Thanks to God, I'm good. How about you, doctor?

Dentist: That's good. I'm fine. Thanks for asking. OK, dentist (X) has seen you and has referred you to my clinic to check your suitability for implant surgery. Is this right?

Patient: Yes, doctor." (Patient (1), Dentist (1), 12/08/14)

" Dentist Good afternoon. How are you?

Patient: Good afternoon. I'm fine.

Dentist: You were here three weeks ago, weren't you?

Patient: Yes, I was." (Patient (3), Dentist (1), 13/08/14)

In the MSDM, it was also very common that dentists talked more than patients, speaking about two thirds more than patients during the consultations.

3.2.2.2. Typical shared decision-making model (TSDM)

Results and example of the TSDM model

In this study the typical model of shared decision-making (TSDM) only happened rarely within consultations. Throughout all consultations; only two consultations could be grouped under the TSDM model. These two consultations achieved the TSDM criteria (detailed below) and both

patient and dentist participated in the decision-making process, shared information about possible dental treatment and both agreed to go with the implant therapy. The following sub-themes of the DI-SDM framework were observed in these two consultations:

- Providing a definition of what an implant is including giving reasons for the consultation.
- Reviewing the medical history and social circumstances.
- No interruptions in the consultations.
- Some discussion of research evidence and discussion of research relevant to the patient.
- Checking the patient's understanding and seeking the views of the patient.
- Exploring patient's ability to understand the dentist's instructions.
- Provision of multiple dental treatment options
- Describing the process of the surgery
- Exploring the patient's preferences and values
- Including a plan for follow up.

The following implant consultation illustrates how this model manifested:

"Patient: Good afternoon. How are you, doctor?

Dentist: I'm very well. Thanks for asking. What about you?

Patient: Thanks to God. I'm fine.

Dentist: Was your X-ray taken today?

Patient: Yes, it was.

Dentist: OK, how is your overall health? Do you have any medical issues such as diabetes?

Patient: I'm OK. I have no medical troubles.

Dentist: Do you take any medicines?

Patient: No, doctor.

Dentist: Are you sensitive to penicillin?

Patient: No, I'm not.

Dentist: When did you have this implant done? I mean this one on the left?

Patient: I had it done about three years ago here in this clinic.

Dentist: OK. Do you have any problems with this implant?

Patient: No. It works very well. I have never experienced pain with it. Thanks for doing it for me.

Dentist: No problem at all. So, I have got your referral form and it was mentioned that your lower bridge needs removal and replacement. Is this right?

Patient: Yes, it is.

Dentist: OK, do you feel any pain from this bridge? Is it moving?

Patient: Honestly, no. But I went to two dentists before I came here. Both of them said that the bridge has failed and needs replacement!

Dentist: Well, on the X-ray, it seems that there is a little decay in one of the abutments holding the bridge. However, we can treat you by removing the decay and the old bridge and then doing a new bridge for you. Let me just check your mouth, and we'll see what we can do further.

Patient: Sure.

Dentist: Open your mouth for me, please. Bite. Good. Open again. Yes. Bite now. Actually, about the bridge—as I told you, we can preserve the abutments and do a new bridge for you, or we could do one implant to replace the decayed abutment if you want. Also, the space here in the upper jaw—we can do an implant to fill this gap. What do you think?

Patient: I really don't mind. It's your field and you know it better than I do. But this bridge failed and I had it done two years ago. I think if we go with the implant, it would be better because I don't want to come here after two years and get another new bridge. Do you see what I mean?

Dentist: Well, it's totally up to you. I think you've got a point. If you go with treating the decayed abutment and a new bridge, it shouldn't fail after two years. According to literature, there is evidence that bridges have a life cycle between 5 and 10 years. I agree implants would be best. But the decision is totally up to you!

Patient: OK. You said it. Implants would be best. I'll go for them. If that's possible.

Dentist: Good. Yes, sure it is. Have you read the implant consent form?

Patient: Yes, I have read and signed it.

Dentist: Do you have any questions about the implants or your consultation today?

Patient: No.

Dentist: That's good. So we'll do two implants: one to replace the decayed abutment and one here in the upper jaw. After doing both implants, we will fit a new bridge and crown for you. Is that clear?

Patient: Yes, it is.

Dentist: Any questions? Patient: No, thank you.

Dentist: I prescribed an antibiotic that you should use two days before your surgery and painkillers for after surgery if you have pain.

Patient: Thank you very much. I am wondering, will you do the extractions and the implant surgery in one appointment?

Dentist: Yes, we will extract the abutment and insert the implant at the same time. It's similar to the previous implant that you had here.

Patient: Thank you very much.

Dentist: Any more questions?

Patient: No, thanks. See you later.

Dentist: You're welcome. Please register this appointment at the desk over there. I'll see you later.

Patient: Sure. Bye. Dentist: Bye." (Patient (21), Dentist (1), 25/09/14)

The typical shared decision making model (TSDM) can be described as "an achievement of at least more than 50% of the twenty-three sub-themes of the DI-SDM framework in a single implant consultation with emphasis on the agreement of both dentists and patients on the decisions made and a full consideration of the TSDM criteria during the evaluation process" (see Figure 9, Page 103).

In order to consider a particular implant consultation for a typical shared decision-making (TSDM), the following criteria must be achieved:

1) The involvement of at least two participants (patient and dentist) in the process of treatment decision-making. They share information and treatment options and then both agree on the treatment decision (Frosch and Kaplan, 1999).
2) *More than 50% of the twenty-three sub-themes* of the proposed DI-SDM framework of the study are achieved and observed together in one single implant consultation. So for example, the observation of 14 sub-themes of the DI-SDM framework in single consultation would be seen as achieving the TSDM.

Expressive appraisal of the TSDM model

The TSDM in the two previous consultations did not reach the ideal shared decision-making (ISDM) because several significant aspects (sub-themes) of the DI-SDM framework were missing. These included: presenting the quality of evidence, and appraising relevant data for the patient. Patients tended not to be asked about the quantity of information they needed, nor did the dentist inquire about their decision making preferences. Patients' expectations of the implant were not evaluated, the side effects, the possible benefits and risks of implants were not introduced to patients, and lastly, patients were not given the choice of postponing their treatment decisions. However, both patients and dentists shared information about possible treatment options; the patient's values and preferences were considered and both the dentist and patient made a joint agreement to go with the implant therapy. Notably, in both consultations where the TSDM model was implemented, dentists did not establish conversations with patients. Although, patients did attempt to establish conversations with their dentist at the start of the consultations:

"Patient: Good morning. How are you?

Dentist: Good morning. I'm very good, thanks for asking.

Patient: It's been a long time since I've seen you. How are you doing?

Dentist: Not bad, I'm working hard. Anyway, how is your overall health?

Patient: I'm good." (Patient (20), Dentist (1), 20/09/14)

"Patient: Good afternoon. How are you, doctor?

Dentist: I'm very well. Thanks for asking. What about you?

Patient: Thanks to God. I'm fine.

Dentist: Was your X-ray taken today?

Patient: Yes, it was."(Patient (21), Dentist (1), 25/09/14)

Although both patients read and signed the consent forms, they mentioned that they did not know much about dental treatment and asked their dentist indirectly for supportive information. Please see the following example from the consultations about how the patient sought supportive information:

> *"Patient: Well, I don't know much about dental treatment. But I believe that implant therapy would be good. You did it for me last time, and I really like it. But you may see something that I can't see. Do you get me?*
>
> *Dentist: Well, I totally agree. Implantation is the best dental treatment. But you could have fixed bridges to replace these two teeth if you want. What do you think?*
>
> *Patient: Actually, no. I am happy to go with the implant." (Patient (20), Dentist (1), 20/09/14)*

The next section describes the degree to which the ideal shared decision making model was realised within the consultations.

3.2.2.3. Ideal shared decision-making model (ISDM)

It should not be a surprise to find that throughout all consultations there were no consultations that fulfilled the ideal of shared decision-making (ISDM). This was because no implant consultation achieved the ISDM criteria and not all the DI-SDM themes and sub-themes occurred in any implant consultation. The ISDM model is an ideal (perfect) type of communication and therefore it would be unlikely to find it in empirical reality. The implications of this highlighted the importance of briefly discussing the use of ideal types in empirical research.

Max Weber defined the ideal type in social sciences as "A type formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasised viewpoints into a unified analytical construct" (Sturm, 1974, p48). Ideal types have also been explained thus: being unreal, the ideal type has the merit of offering us a conceptual device with which we can measure real development and clarify the most important elements of empirical reality (Cahnman, 1965). It is obvious from these two definitions that the ideal type should never be real, but must always be understood. The ideal type helps researchers to form their hypotheses and then join these hypotheses with the situations that brought the phenomenon into prominence (Psathas, 2005). This fits what I proposed to do with the ideal shared decision-making model (ISDM) within the

consultations. In this study the ISDM was considered as "the perfect form of shared decision making within the consultations that we can employ to evaluate the real shared interactions between patients and dentists with great emphasis on the agreement of both dentists and patients on the decisions made and a full consideration of the ISDM criteria during the evaluation process". Therefore, the ISDM is the perfect model of decision making that we would want to see (assumption), within the consultations (situation), which brings the advantages and impacts of the shared decision-making model (phenomena) into sharp relief.

In order to consider particular consultations for ideal shared decision making (ISDM), the following criteria must be fulfilled:

1) The involvement of at least two participants (patient and dentist) in the process of treatment decision-making. They share information and treatment options and then both agree on the treatment decision (Frosch and Kaplan, 1999).
2) *All twenty-three sub-themes* of the proposed DI-SDM framework of the study are achieved and observed together in one single implant consultation.
3) If one or more of the above-mentioned criteria has not been achieved, then no consultation can be considered as an example of ideal shared decision-making (ISDM) (see Figure 9, Page 103).

3.2.2.4. Conclusions

In conclusion three types of shared decision-making model were observed within the consultations. These were: the marginal (MSDM), the typical (TSDM) and the ideal (ISDM) shared decision-making. The MSDM was the most common model that could be observed throughout all consultations. Absences of significant aspects of the DI-SDM framework resulted in failure to reach the ISDM and implementation of the TSDM and MSDM within the consultations. Activating particular sub-themes of the DI-SDM framework in the TSDM and MSDM within the consultations may be required to approach a more ideal model of shared decision-making (ISDM). For example, introducing the process of the implant surgery, the side effects, the possible benefits and risks of implants to patients, and providing patients were with a choice of postponing their treatment decisions. Supportive decisional tools and more training for the dentists may also help attain interactions that are closer to the ISDM model. Supportive treatment information for patients and increasing patients' awareness of their right to participate in their treatment decisions may also be warranted. This warrant confirms other work conducted in Saudi Arabia concerning the need to provide patients with supportive information and raising their awareness about their right to participate in their treatment decisions (Frosch and Kaplan, 1999). Though as we shall see it may well be that decision making in Saudi Arabia takes this form for cultural and social reasons.

3.2.3. Models of decision making implemented within consultations

In the previous section, the degree to which there was shared decision making within consultations was analysed. However, the results of this study reveal that other kinds of decision-making were implemented within the consultations these could best be described as paternalistic and interpretative approaches. These approaches will be described in this section. Examples of each approach from the consultations will be provided where possible.

3.2.3.1. Paternalistic Decision Making and Consultations

Paternalistic decision-making model described through the role of a doctor who is the main decider in the process of decision-making. In this process there is generally not much contribution from the patient in the decision making process (Emanuel and Emanuel, 1992). This approach was uncommon in this study. Indeed only one implant consultation appeared to follow this approach. In this case, the dentist put the treatment plan that he believed suited the patient's condition and did not introduce treatment options, possible benefits, risks and side effects to his patient. The interesting fact about this interaction is that the patient was 58 years old, and seemed to not have sufficient information about the treatment even when it was considered that he had read the implant consent form. The following is an excerpt from the interaction between the dentist and the patient:

"Patient: Hi.

Dentist: Hi, how are you?

Patient: I'm good.

Dentist: How is your overall health?

Patient: I'm fine. Thanks to God. I'm just diabetic.

Dentist: Well, have you got hypertension?

Patient: No, I haven't.

Dentist: Are you sensitive to penicillin?

Patient: No.

Dentist: Do you have any medical problems?

Patient: No, I don't.

Dentist: Have you had any operations in the last five years?

Patient: No, I haven't.

Dentist: OK. Could you sit on the dental chair for a check-up?

Patient: Yes, sure. My lower teeth are missing, as you can see doctor. This really makes me sad. I can't even eat a small piece of crunchy bread! Do you get me?

Dentist: Oh dear. Yes, I really do. You will be fine. Just open your mouth for me, please. Close. Open. Close. Open again. That's good. I'd like to ask you, do you have a removable prosthesis? Do you use it?

Patient: Yes, I have one. But I really don't like it. It always falls down and moves while I'm eating. It also caused some wounds on my cheek and is difficult to clean. I stopped using it five months ago. It's really ridiculous!

Dentist: OK, I completely agree with you. But you shouldn't leave your mouth like this—I mean, without teeth. It definitely affects your oral health and your health in general. Anyway, how about this upper tooth? Does it cause any pain to you?

Patient: Yes, it does. Particularly when I'm eating something.

Dentist: OK, listen to me. I'm going to do a full treatment plan for your oral health. The first thing that we're going to do is insert lower implants to help you when you eat. You need between 6 and 8 implants in the lower jaw. This mainly depends on the bone quantity and quality during surgery. After sorting out the lower implants, in around three months we'll fit the prosthesis on the implants inserted. Do understand me?

Patient: Yes, doctor.

Dentist: Good. Then, when we complete replacing your missing lower teeth, we'll start on the upper teeth. You have some teeth that need root canal treatment, and you also have one tooth that needs replacing with an implant or bridge, which we'll decide together later. I know it is not the right time to discuss the upper while we're focussing on treating your lower teeth, but I think it's important to let you know what we'll do. Do you get me?

Patient: Yes, doctor. I really appreciate your explanation. I think this will really improve my oral health.

Dentist: Well, this is a consent form that has information about implant surgery. Please read it in full, and then sign it for me. If you have any questions, please ask me!

Patient: OK. (Patient reads the consent form.)

Dentist: Do you have any questions about implants or what we discussed earlier?

Patient: No, thanks.

Dentist: Brilliant. Take this appointment with you and register it at the appointments desk. I gave you an antibiotic to use two days before your surgery, mouthwash to improve your oral hygiene, and also a painkiller, if you need to use it after surgery. That's all, and I hope you find your consultation today useful.

Patient: Yes, it was really helpful. Thank you very much for your support and explanations.

Dentist: You're more than welcome. See you later.

Patient: Bye.

Dentist: Bye." (Patient (9), Dentist (2), 202/08/14)

The paternalistic decision making model has been criticised for not taking into account the patient's legal and ethical rights such as the patient's right to choose between accessible treatment options and also increasing the probabilities of undesired outcomes (Phil and Vincent Icheku, 2011). Clearly it is still practised within some implant consultations. As a consequence more training may be warranted (see chapter 4 under the section 4.2.3. The patient-dentist relationship and communication skills).

3.2.3.2. Interpretative Decision Making and Consultations

Interpretative decision making is similar to the paternalistic model but usually involves the medical professional taking into account the preferences and values of their patients. Nonetheless, in this approach the health professional still has the final decision and the patient does not make any contribution to the decision making process (Wirtz et al., 2006). The interpretive model was rarely practised within the consultations in this study. In one of these consultations where the interpretive decision making model was implemented, the dentist established the reason for the consultation, reviewed the patient's medical history, sought the patient's views about the treatment, and made a plan for follow-up. Yet, ultimately, the dentist made the decision. On the other hand, the patient was 60 years old, with a low level of

education, and did not want an implant and was happier with a bridge. The dentist discovered that it would not be possible to do another bridge because of the patient's clinical situation and so argued against the patient's wishes. The following example demonstrates how the interpretative model was practised:

"Patient: Good afternoon.

Dentist: Good afternoon. Have a seat please. How are you?

Patient: I'm fine. You know, when you get older, everything in your body starts complaining.

Dentist: Oh dear. You'll be fine. Don't worry. I can see on your referral form that you want implants in place of two of your lower teeth, don't you?

Patient: Yes, that's right. I also have a small issue with my upper bridge. If you could have a look at it, it would be great!

Dentist: Yes sure. I'll do so. Just sit on the dental chair, please.

Patient: OK.

Dentist: Open your mouth for me, please. Close. Open again. Close. OK, is this the bridge that you told me about?

Patient Yes, it is.

Dentist: This Bridge is moving because of the abutment that's holding it. It's really weak and decayed. So, the best option for sorting this out is removing the bridge and replacing it with implants.

Patient: Oh no. Is it possible to remove it and replace it with a new bridge?

Dentist: Sorry, it isn't possible. First of all, the bridge was held by one abutment. The dentist who did this bridge for you did it incorrectly, unfortunately. Any bridge must have two abutments working as a strong base to bear the load on the bridge. So if we remove the bridge, there will be one prepared and very decayed abutment, which needs extraction and replacing with two implants. I think the only treatment option for this bridge is implant therapy. What do you think?

Patient: If there is no other option and you recommend implants, I'll go for them. As you said, no other option is available.

Dentist: How is your overall health?

Patient: Excellent.

Dentist: Do you take any medicines?

Patient: No.

Dentist: Have you had any operations in the past five years?

Patient: No.

Dentist: Are you diabetic or suffering from hypertension?

Patient: No, I'm not.

Dentist: You did read the implant consent form, didn't you?

Patient: Yes, I did.

Dentist: Do you have any questions about the information on the form or the implant in general?

Patient: No, I don't have any.

Dentist: Good. You also have one tooth, which needs root canal treatment. I will refer you to the specialist to sort it out for you. I'll also give you an appointment with me for the surgery, which needs to be registered at the appointment desk.

Patient: Thanks a lot, doctor.

Dentist: No problem at all. You're welcome. That's all today. See you later.

Patient: See you. Bye.

Dentist: Bye." (Patient (10), Dentist (1), 21/08/14)

It is important to remember that the interpretative model was criticised for ignoring the patient's rights to choose and for health professionals deciding which treatment option to undergo without fully considering the patient's wishes. Decisions made using the interpretative model may increase the possibility of undesired results and may also increase the possibility of patient dissatisfaction (Holmes-Rovner et al., 1996). Despite these concerns this approach was practised in the consultations observed in this study.

The results of this study demonstrated that in particular older patients (above 55 years old) with lower education levels were more exposed to the implementation of the interpretative model within consultations. This may be due to the thoughts of some dentists who claimed that treating elderly patients, particularly those with lower educational levels, was a challenge. These dentists maintained that elderly patients with lower educational level might not fully grasp what had been discussed with them. They also claimed that they did not want to confuse elderly patients with a lot of information around the treatment to avoid making these patients anxious. The following response of dentist (10) in the interview after he consulted an elderly female patient aged 60 years old with lower educational level. The dentist had reviewed the patient's medical history and then had looked at her x-ray. The dentist had suggested extracting the bridge and doing implantation. However, the dentist did not provide relevant information to the patient such as possible treatment options or the implant surgery. The patient then agreed to have her bridge extracted and replaced with implant:

> *"I also have a point of view on dealing with elderly patients, which is to not confuse them with a lot of details about the treatment and risks. Because if we did so, they may worry and think a lot, which may affect their situations from a psychological aspect" (Dentist interview (10), 21/08/14)*

However, denying treatment to a patient who did not understand or fully grasp what was happening might not be an ethical either. This will be discussed in Chapter 4 under the section (4.4.5. The concept of Coercion and decisions to have dental implants). The next section will describe the patients' perspectives on decisions to have dental implants.

3.2.4. Patient perspectives on decisions to have implants

This section explores patients' perspectives on their implant decisions and provides examples, where possible, from the transcribed consultations and interviews.

During interviewing the patients who participated in this study were asked about how they would describe their overall experiences of consultations. Patients had different responses and views on their decisions to have implant therapies.

Some patients indicated that the clarity of the information provided by their dentists supported them to have excellent consultations and proper implant decisions:

> *"My consultation was excellent and very comfortable. The dentist was very clear about the information that he provided it to me." (Patient (2), 18/08/14)*

While other patients stated that the dentist's cooperation and experience were the key reasons for their satisfaction with the decision:

> *"My dentist was cooperative and decent. This obviously made me feel relaxed enough to discuss my treatment plan." (Patient (4), 20/08/2014)*

> *"The consultation was excellent. The dentist was very cooperative and dealt with me in a professional way." (Patient (17), 18/09/14)*

Other patients expressed confidence in the staff working at the medical centre in making the right decisions. They also stated that they were very happy with the information they were provided:

> *"My consultation was fantastic. I think I received enough information about the implant surgery from the dentist. I am very confident in the medical staff working at the centre." (Patient (5), 21/08/14)*

An important factor in shaping satisfaction was knowing friends and family who had also been for implants at this clinic. While other patients mentioned that they have known some of their friends who have been treated with implants and they do not have any problems. This may help those patients to go with the implant treatment. In the following example the patient (16) who was a female aged 33 years old with high school level of education, claimed that her friends who have been treated with implants at this clinic were satisfied with the outcomes and did not have any issues related to the implant therapy:

> *"The consultation was good. To be honest, I have not noticed anything abnormal. I have known a lot of friends and neighbours who have been treated with implants*

with this dentist. They do not have any problems with theirs." (Patient (16), 17/09/14)

In other cases patients reflected on previous experiences with the implant therapies citing this as key reason for their satisfaction:

"It is not the first time that I have been treated with an implant. The consultation was conducted as usual and I have been provided with the necessary information about the surgery." (Patient (1), 16/08/14)

Patients also commonly indicated that they received a respectable service during their implant interviews:

"Overall the consultation was excellent. The x-ray was taken to make sure that dental implants suit me and to check whether there is enough bone or not. My dentist was very accurate when he spoke with me in relation to the suitability of the implant treatment for my condition. My dentist also checked my medical history and asked me about diabetes and if I take other medical pills. The service and care provided to me was more than excellent." (Patient (3), 19/08/14)

An exceptional case where a patient indicated that they felt they had received a bad service because they were not given an opportunity to choose which dental treatment to undergo. In this case the patient claimed that the dentist made the decision without taking their preferred treatment options into account:

"My consultation was very bad. It is really ridiculous. I came to the clinic looking for an implant therapy. My dentist said he could preserve my tooth with root canal therapy. He will not put an implant in for me. It is my tooth and I have the right to make the decision that I want. I do not want root canal therapy and a fixed crown because I have had it before. It failed after only one year and a few months. It is really bad service and I am going to complain about it." (Patient (24), 06/10/14)

Other patients highlighted that the delay in implant appointments was the biggest problem for them. Although that they were satisfied with the service provided:

"I am very pleased with the dentist's way of dealing with me. The consultation was excellent. There may be a small issue that I want to highlight. I wanted to have the implant today, but my dentist gave me a surgery appointment for three weeks' time. Overall I am happy with the service provided." (Patient (19), 20/09/14)

Finally, several patients stated that they were more than happy to be treated with the implant therapy. They understood that implant treatment was expensive and that they were very lucky to have the implant free of charge:

> *"I thank God for giving me this chance to be treated free of any charges." (Patient (6), 22/08/14)*

> *"I am very happy to have the implant treatment done for free. I had a private consultation and it would otherwise have cost me about 6000 Saudi riyals = (£1000)." (Patient (23), 01/10/14)*

In conclusion patients had different thoughts on decisions to have implants. Patients were most commonly satisfied with the services provided and the decisions made. Aspects such as patient's confidence in the dentists' skills and experience, dentists' professional dealing with patients, clarity of the information provided in the consultations, the fact that the implant treatment was provided free of charge were all significant factors in reports documenting a good experience with the decision. On the other hand there were some conflicts and problems. Aspects such as delays in the implant appointments and dentists appearing not to consider patients preferred treatment options during the decision making process were key reasons for patients dissatisfaction over the service provided. The next section will describe the dentists' perspectives on decisions to have dental implants.

3.2.5. Dentists perspectives on decisions to have implants

This section explores the dentists' perspectives on decisions to provide implants and includes examples, where possible, from the transcribed consultations and dentists interviews. During interviewing dentists who participated in this study were asked to what extent they were satisfied with the decision they arrived at concerning each consultation. They were also asked to explain why they were satisfied or not. Dentists had different responses and views on the decisions arrived in the consultations. They were mostly satisfied with the decisions they had arrived at with their patients. Several reasons for dentists' satisfaction were identified. The first and most significant being that the implant was the only treatment that suited their patients from clinical perspective. In the next case the patient had asked his dentist for an implant therapy, the dentist then examined the patient's suitability for implant therapy by checking the tooth need to be replaced and the x-ray. The dentist asked his patient whether the tooth has been treated with root canal treatment or not, and the patient answered yes.

> *"I am strongly satisfied with the decision made. I believe that implants would be the only dental treatment option that suits the patient's clinical situation. Other treatment may not be possible for this patient." (Dentist interview (1), 12/08/14)*

Another important factor in these decisions was that the patient case was straightforward because the patient had enough bone and space for inserting the implant. In the following example the dentist had looked at patient and introduced the dental implant to the patient as the best available treatment option. The dentist had suggested the implant and the patient accepted to receive it.

> *"I am strongly satisfied with the implant for this patient. The case is straightforward and suitable for implant therapy. There is enough bone and space to insert the implant. Also, the occlusion was very good." (Dentist interview (26), 05/10/14)*

In some cases dentists believed that alternative treatment such as complete dentures are unacceptable from both a functional and aesthetic perspective:

> *"I am highly satisfied to go with implant for this patient. Because an alternative treatment such as complete dentures is unacceptable from functional and aesthetic aspects." (Dentist interview (9), 20/08/14)*

In these cases the choice to go for implants amounted to a conviction on the part of the providing dentist that implants were the superior treatment clinically and therefore, where possible, should be provided to their patients. In such cases dentures were seen to be 'old-

fashioned' and not modern. The most common reasons cited for the superiority of implant treatments were that they were functionally and aesthetically better:

> *"I am satisfied with implants for this patient. Because I believe that implant treatment is better than other alternative treatment such as fixed bridges from both functional and aesthetic aspects. I really believe that these alternatives are old-fashioned. Implants are the treatment of the century." (Dentist interview (11), 24/08/14)*

Additionally, some dentists argued that there was no need to prepare two intact teeth to fit a bridge when the implant was in fact accessible and better than the alternatives. In the subsequent example the dentist had looked at patient 13 who was a female aged 55 years old. The dentist then reviewed her medical history and checked the x-ray. The dentist believed that inserting an implant would be better than preparing two intact teeth and putting a bridge.

> *"I am really satisfied with the decision. She has one non- restorable tooth and the implant will be the best option. I don't prefer to prepare two intact teeth to fit a bridge." (Dentist interview (13), 01/09/14)*

Moreover, other dentists maintained that the patient chose implant therapy and his/her clinical situation was good for the implant. In the next case the dentist had examined a female patient aged 41 years old, and had checked her x-ray. The dentist had said to the patient there was enough bone quantity and quality for inserting the implant and that her oral hygiene was good. The dentist also had provided some of the benefits of the implant surgery such as the long survival rate and the high level of satisfaction among patients who have been treated with implants.

> *"I am satisfied with the decision made. The patient wants implant therapy and her clinical situation was suitable for the surgery." (Dentist interview (27), 05/10/14)*

Nonetheless, there were some cases where dentists highlighted that the treatment plans for some patients were not clear and as a consequence dentists preferred to postpone the implant decisions until they could discuss these plans with relevant prostodontists or orthodontists. In the following case the dentist was clearly unsure about the clinical relevance of implant treatment and decided to reserve judgement about the provision of implants until he had further discussions with his colleagues. The patient had come to the clinic with a problem with her old bridge. The dentist had told the patient that her treatment plan in the referral form was not very clear. The dentist then presented two treatment options for the patient. These were: replacing the bridge with new bridge, as the abutments of the old bridge were intact or extracting the

abutments and providing implants. The patient initially agreed to go with the new bridge until the dentist had further discussions with his colleagues about this patient's case. Both dentist and patient preferred deferring the decision for few weeks until the patient's treatment plan became clearer.

> *"I am to some extent satisfied. The treatment plan, which was made by the prosthodontist, was not very clear. This patient has some intact teeth, so it is not clear to me whether we should extract them and insert an implant or preserve them and fit a bridge. Also, this patient has a narrow bite, which may prevent us from going with an implant. I need to discuss all the options with the prosthodontist before we go with the right decision. That's why I defer the decision!" (Dentist interview (15), 10/09/14)*

It is important to remember that these dentists were working in secondary care settings and as a consequence most patients had been referred to them. In many respects therefore the decision may already have been shaped by previous encounters with primary care dentists. It was only in rare instances that a dentist would argue to preserve a patient's tooth. In the following example the dentist response during the interview about the patient (24), who was in conflict with the dentist. The patient was interested in implant therapy and the dentist believed he could preserve the patient tooth and do root canal treatment. Please see the details of this case above on page 99.

> *"I am to some extent satisfied with the decision made. This patient has a tooth that can be treated (root canal treatment) and preserved. The patient wants an extraction and implant therapy. I appreciate his treatment choice, but I believe his tooth can be preserved and I can save the implant for another patient who may really need it." (Dentist interview (24), 01/10/14).*

Lastly, there were several cases where the dentist expressed anxiety with implants for particular patients. A key reason for this was the patients' poor oral hygiene. In such cases dentists would ask patients to improve their oral hygiene if they still wanted implant therapies. In the next case the dentist had checked the suitability of implant for and 18 year old female patient. The dentist had explained to the patient that she had broken teeth and that she could not put crowns on to broken or destroyed teeth. That was why the dentist preferred an implant. The patient showed a bit care towards her front teeth colour. However, the posteriors were completely decayed, and the patient did not talk about these teeth.

> *"I am to some extent satisfied with implant for this patient because she has non-restorable teeth. The best option for her condition is implant therapy. I am a bit*

worried about her oral hygiene. It seems poor to me. I asked her to improve if she wants an implant." (Dentist interview (28), 06/01/14)

To sum up, although, dentists had different views on decisions they were more often than not satisfied with the decisions. Dentists frequently highlighted the importance of the clinical dimensions to their decisions for providing dental implants. Factors such as bone quality and quantity, the space available were usually cited as the central reasons for their satisfaction with their decisions. A key additional dimension to these findings is the crucial finding that for many of these dentists complete dentures were considered old-fashioned and had poor aesthetic and functional properties. A negative comparison with this less superior technology was frequently used by dentists to represent their satisfaction with their decisions.

3.3. Power and decision making in relation to dental implant treatment

3.3.1. Introduction

Further to the description of the shared decision making in implant consultation in the previous section, this section describes the presence of the role of power in the decision making process within the consultations. This section goes on to explore the three dimensions to power that may or may not affect the process of decision-making. These are: the one-dimensional view of power, the two-dimensional view of power, and the three-dimensional view of power (Lukes, 2005). The one-dimensional view of power defined as "A has power over B to the extent that he can get B to do something that B would not otherwise do" (Dahl, 2005, p.14). This view focuses on five aspects: "behaviour, decision making, key issues, observable overt conflict, and subjective interests seen as policy preferences revealed by political participants" (Lukes, 2005, p29). While, the two dimensional view of power has been explained as "a qualified critique of the behavioural focus of the one-dimensional view of power". This view of power emphasises several aspects that include "decision making and non-decision making, behaviour, issues and potential issues, observable overt or covert conflict, and subjective interests seen as a policy preferences or grievances". No decisions defined as "decisions that result in suppression of latent challenge to the values and interests of the decision makers" (Lukes, 2005, p21-25).The last view of power is the three dimensional view that has been described as "a critique of the behavioural focus of the two dimensional view of power". This view focuses on "decision making and control over the political agenda (not necessarily through decisions), issues and potential issues, observable (overt or covert) and latent conflict, and subjective and real interests" (Lukes, 2005, p25).

This section introduces these dimensions and then explores what was uncovered in the observations and interviews. In doing so this section draws on the proposed framework discussed in the literature review on power. Both recorded consultations and interviews are used to introduce and explore how power has operated in these consultations. This includes exploring the decision making, non-decision making, and overt and covert conflicts. Associated concepts with power such as coercion, authority, manipulation and influence will also be explored and described whenever they have been recognised. As with previous sections examples will be provided where necessary.

3.3.2. One-Dimensional Power and the decision to have dental implants

From the definition of the one-dimensional view of power "A has power over B to the extent that he can get B to do something that B would not otherwise do" (Dahl, 2005, p.14), and the focus of this concept of power on "behaviour, decision making, key issues, observable overt conflict, and subjective interests seen as policy preferences revealed by political participants"

(Lukes, 2005, p29), and with regards to the aim of this study, it could be suggested that the one-dimensional view of power is operated when there is an overt conflict with decisions to have implants between the dentist and the patient. In-order to describe the degree to which one-dimensional view of power was operated in this study, all the consultations and the interviews of both dentists and patients were evaluated. Then, the relevant consultations and interviews that involved overt conflicts over the patients' preferences, values and needs, such as the dentist preferring to go for implant but the patient want fixed crown or vice, were identified. Responses of all participants (dentists and patients) are described below.

Dentists and patients indicated that there were no conflicts over the patients' preference, needs and values. Although an exceptional case where dentist (1) stated that there was a conflict between the patient (24) and him. The patient preferred the implant therapy, however the dentist claimed that the patient's tooth could be preserved and treated with root canal treatment. Please see the following case explain this dentist response:

> *"Dentist: Yes there was a conflict, the patient wants implant therapy and his tooth can be preserved" (Dentist interview (24), 01/10/2014)*

Yet, the patient (24) felt unsatisfied with the decision made, as he could not get his preferred option, implant therapy. The patient mentioned that dentists believed that they have to decide what suit us, which is not right:

> *"Patient: Yes I want implant therapy and I can't get it because dentists can't be argued about their bad decisions. Dentists believe that they have the right to decide. However, this is completely false. We will see what happens next" (Patient interview (24), 06/10/14)*

In the consultation between dentist (1) and patient (24) the one-dimensional perspective on power could be observed operating in the clinic. As we have seen the dentist had checked the suitability of the patient (24) for implant therapy by looking at his mouth and his x-ray. The patient was a male aged 60 years old and with postgraduate educational level. Although, the patient (24) maintained that it was his right to decide which treatment to undergo and not the dentist right to make the decision. Yet, the dentist claimed that the patient's tooth could be treated with "root canal treatment" and explained to the patient that implants were limited to patients who really needed them:

> *"Dentist: Why did you come to this clinic today?*
>
> *Patient: I have one tooth, which is very decayed. I would like to have an implant if possible.*

Dentist: That's fine. I'll evaluate your condition and see which treatment suits you. Well, with regard to your decayed tooth, it doesn't need implantation. The tooth can be treated (root canal treatment) and preserved.

Patient: No, doctor. I don't want root canal treatment. I want it out and I want an implant!

Dentist: Dear brother, implant therapy is limited to some patients who really need it and have no chance of being treated with any alternative dental treatment. But in your case, the tooth is not very decayed and it could be treated and preserved. Your tooth is healthy and if we do root canal treatment, it would work perfectly.

Patient: Doctor, please, it is my tooth and I have the right to choose which treatment I want.

Dentist: I really understand what you were saying, but as I explained to you, implants are limited to patients who really need them. Please understand that. Believe me if your tooth were broken or really couldn't be preserved, I would do an implant for you without a request from you. Do you get me?

Patient Thanks for your clarification. But I still want an implant and don't want root canal treatment.

Dentist: OK. I'm sorry. I can't do the implant. If you want root canal treatment, I could refer you to the specialist now. If you don't want it, you can fill in a complaint form and make a complaint to the centre's manager. He should be able to sort out your treatment.

Patient: That's really strange. It's my tooth and I have the right to make the decision that I want and not you!

Dentist: Anyway, I told you what I could do for you. If you still want the implant, just make a complaint. Sorry for any inconvenience.

Patient: Yes, I do. I'll make a complaint to the manager, and I'll even take this matter to the minister if I need to. You provide a really bad service. The implants are paid for by the government and not from your account!

Dentist: not a problem at all." (Patient (24), Dentist (1), 01/10/14)

The previous consultation clearly showed how clinical judgements used to override the patient's choice. This will be discussed in Chapter 4 under the section (4.4.1. Clinical judgements and patient choice 'overt conflict').

Nevertheless, some patients rarely indicated that there were conflicts around their implant decisions as they mentioned that the dentists could not meet their preferred treatment options due to their clinical conditions:

> *"Patient: Yes there was a conflict. I want to have a bridge but the dentist told me that I must have some teeth in the posterior that he can fit the bridge on. Unfortunately I did not have these teeth and I have to go with the implant" (Patient interview (6), 22/08/14)*

The next section describes the two-dimensional view of power and the decision to have dental implants.

3.3.3. Two-Dimensional Power and the decision to have dental implants

There are two key differences between the one-dimensional view of power and the two-dimensional view of power: firstly, the one-dimensional view of power mainly focuses on 'overt' conflicts. However, the two-dimensional view of power focuses on 'covert' conflicts beside the 'overt' conflicts. It also focuses on the hidden decisions and the 'interests' of the decision makers. Secondly, the one-dimensional view of power fails to take into consideration that power may be operated to confine decisions to quite safe issues. For example, employing the one-dimensional view of power would not enable an evaluation of whether the dentist made the decision to go for other dental treatment to avoid the complications and costs associated with implants. Yet, the two-dimensional view of power may have the potential to evaluate this situation because it simply focuses on the hidden decisions and the covert conflicts in the decision making process (Bachrach and Baratz, 1970, Lukes, 2005, p21-25).

The complexity of the two-dimensional view of power is centred on the fact that observing 'hidden decisions' and 'covert' conflicts may be much more difficult than just observing 'overt' conflicts in the one-dimensional view of power. Another complexity of the two-dimensional view of power that it is dependent on observable conflict, and thus it ignores manipulation and authority (Lukes, 2005). For example, a dentist can exercise power over the patient by shaping his/her interests, without the patient knowing. These additional concepts will be explored in this section.

The key aspect that the two-dimensional view of power focuses on are 'non-decision making', 'overt and covert conflicts', and associated 'key issues' (Lukes, 2005, p21-25). 'Non-decision

making' or 'hidden decisions' defined as "decisions that result in suppression of latent challenge to the values and interests of the decision makers" (Lukes, 2005, p. 21). The main aim of analysing hidden decisions is to evaluate if there is evidence that hidden decisions were being made against the decision maker's best interests.

Covert key issues associated with the two-dimensional view of power include aspects that may significantly affect decisions made about implants including lack of knowledge about the treatment, lack of supportive information and the patient thinking that he/she has no power to contradict the dentist. The concept of manipulation is described as "a sub-concept of force whereby compliance happens even though complier does not recognise the nature of what has been demanded of him or her" (Lukes, 2005, p. 21). For instance, the patient complies with the dentist's decision to go for a dental implant even though the patient does not understand the nature of what is being asked of him or her, maybe because of a lack of knowledge or lack of supporting information. This lack of knowledge is a 'covert' key issue related to the two-dimensional view of power. In this respect, the concept of manipulation may be considered as one of the forms of the two-dimensional view of power. The concept of coercion is defined as "A secures B's compliance through deprivation when there is a conflict over values or a specific action" (Lukes, 2005, p21-22). For example, a dentist may secure their patient's compliance to go along with implant treatment when the patient, in fact, is not interested in going for implant therapy but he/she complies because he/she has no power to contradict the dentist's decision and this may be because of a lack of knowledge about the treatment. Though, the concept of influence described as "A makes B change their action without reverting to any form of overt implicit threat" (Lukes, 2005, p. 23). For instance, a dentist may make the patient change his/her decision to go along with implant therapy without an overt threat, such as convincing the patient to go for an implant because of the high success rate of the therapy and several advantages of implants without indicating the disadvantages of implants, such as the aesthetic disadvantage. The concept of authority on the other hand is explained as "B complies because he believes that A's idea is reasonable in relation to his/her own value or because its content is legitimate or reasonable or arrived at through legitimate means" (Alford and Friedland, 1985). For instance, the patient complies with going for implant therapy because he/she believes that the dentist's suggestion of going for an implant is the best available treatment option, or the dentist has mentioned several advantages of implants and the patient's does not recognise that the dentist has not introduced the disadvantages of implant treatment.

In-order to describe the degree to which two-dimensional view of power operated in this study, all consultations and the interviews of both dentists and patients were evaluated. Then, the relevant consultations and interviews that involved hidden decisions and covert conflicts over

the patients' preferences, values and needs were identified. Similarly, all consultations and interviews that included practising the concepts of manipulation, coercion, influence and authority were analysed. In what follows each of these instances will be described under the relevant section.

This section covers five sub-sections associated with the two-dimensional view of power. It starts by describing the 'hidden' decision in relation to the two-dimensional view of power. It moves then to explain the concept of manipulation and the two-dimensional view of power. After this, demonstrating the concept of coercion associated with the two-dimensional view of power. Finally, going on to describe how the two-dimensional view of power operated through the concept of influence and authority.

3.3.3.1. Two-dimensional view of power and non-decisions or 'hidden decisions'

In this section I aim to evaluate if there is evidence that there were hidden decisions being made against patients' best interests. This section involves discussing two key sub-themes that may be related to decisions. These were: describing the process of the implant surgery and introducing the side effects of the implant treatment (See Appendix 8). In such instances we might argue that we have 'hidden decisions' associated with the two-dimensional view of power. They are considered such because patients may not recognise that the dentists have not provided sufficient information around the implant therapy by failing to describe the process of the surgery, including the side effects. Providing patients with this information is regarded as valuable to the patients' wellbeing and health (Edwards and Elwyn, 2009).

1) **Describing the process of the implant surgery:**

Dentists infrequently recalled that they described the process of the surgery to the patients. For instance,

> *"Dentist: I explained to the patient that I would extract three teeth and then insert one implant (immediate implementation). I explained to the patient the process of the implant surgery, which involves two stages (inserting the implant and fitting the crown)" (Dentist interview (3), 13/08/14)*

Although these instances were relatively rare, dentists either argued that the patient has been treated previously with implants and so there was no need to explain the process or the process of the surgery was introduced to the patients in the consent form provided:

> *"Dentist: This patient has been previously treated with an implant. I did his surgery and I know that he knows exactly what will happen. He knows the process of surgery and there is no need to explain it again to him" (Dentist interview (23), 30/0914)*

"Dentist: The process of surgery is described on the patient's consent form, and the patient read and signed the consent form to undergo implant treatment" (Dentist interview (25), 02/10/14)

For some patients this was a problem. In such instances patients argued that the consent forms did not include any information about the process of the surgery:

"Patient: No, my dentist did not explain this to me. He gave me a consent form, which I think does not contain clear information that the patient needs about the surgery" (Patient interview (1), 16/08/14)

"Patient: No, My dentist did not explain the process to me. She told me that I need an implant and I consented to have it" (Patient interview (28), 07/10/14)

In these cases patients had recognised that their dentists did not introduce the process of the implant surgery. In this respect the decision to have the implant represented elements of a 'hidden decision'. Although, it might be difficult to decide what is the patient's 'best interests' as this required the dentist to assess several aspects related to the patient's suitability for the implant therapy such as clinical, biological, psychological, and social aspects. Not only these aspects but also other aspects such as the patient's preferences, values and needs seem to be importantly considered. It ought not to be the dentist's personal opinion and thus may highlight the complex nature of the 'best interests'. However, the situation is further complicated by the fact that in the second example, patient 28 who was an 18year old female stated:

"Honestly, I am a bit scared of the surgery because I really don't know much about it. I agreed to have it because I want to replace my missing teeth" (Patient interview (28), 07/10/14).

Then she was asked whether or not she had thought about any alternative dental treatment and whether or not her dentist had discussed this with her (such as fixed crowns). The patient said,

"I had a bridge before and I have no problem with it. My dentist did not offer me any alternative treatment. She told me that the implant would the best for my case and I consented to have it" (Patient interview (28), 07/10/14).

This patient response may highlight how the dentist's 'hidden decision' and 'best interest' to go for implant influenced the patient to comply with the decision. Even though the patient was frightened about the implications of having an implant and indicated that she would have been happy with another fixed bridge. However the patient complied with the dentist's decision to go

for an implant. This 'hidden decision' to the dentist interest was considered as a form of how two-dimensional view of power was operated in the implant consultation.

An additional point worth making here is how much information is relevant? The information provided appeared to vary between patients. Some patients explained that their dentist described the process of the surgery in more detail by discussing with them the problem of having enough bone that would be suitable for the implant:

> *"Patient: Yes he did. He described the association of the bone with the suitability of the implant and how he will insert it. He told me I should wait for about three months until the bone has integrated with the implant" (Patient interview (3), 19/08/14)*

2) <u>Introducing possible side effects of implant treatment:</u>

In the majority cases dentists did not describe the possible side effects of the treatment to patients. Dentists maintained that the side effects of implant therapy was provided in the patient consent forms and as a consequence they did believed that there was no need to explain these side effects again:

> *"Dentist: This information is available on the consent form so there is no need to describe it again to the patient. Also, as you may have seen, we tried to improve the patient's oral hygiene by highlighting the significance of oral hygiene in relation to implant success" (Dentist interview (6), 17/08/14)*

Obviously this situation is quite complex. Dentists indicated that they were concerned that they did not want to alarm patients concerning the possible side effects:

> *"Dentist: Because dental implants have a high survival rate. Besides, the patient read the consent form including the failure rate and the advantages of the treatment. Additionally, the patient has enough bone, which will assist in the implant's success when it is integrating with the bone. From my point of view, I think it is better not to scare the patient out of the treatment by indicating the side effects of the implant" (Dentist interview (2), 12/08/14)*

In other cases dentists indicated that they firmly believed that there were no real complications from undertaking implant treatment:

> *"Dentist: I do not think there is a real complication from undergoing implant treatment. I think the pain associated with the implant therapy is not comparable to the pain associated with a decayed tooth or a broken tooth!" (Dentist interview (18), 14/09/14)*

In some instances patients supported this conclusions agreeing that the side effects of the treatment was accessible in the consent forms:

> *"Patient: My dentist did not explained this to me. But I read some information about the side effects of the treatment on the consent form such as swelling and bleeding" (Patient interview (32), 09/10/14)*

While, other patients maintained that their dentist did not introduce these effects:

> *"Patient: No my dentist did not described the side effects of the implants, but I read some information about the implant's side effects on the consent form, such as numbness and bleeding" (Patient interview (8), 25/08/14)*

Interestingly, some patients stated that the dentists introduce the side effects of the fixed crown but they did not describe the implant's side effects. These patients also maintained that the dentists described that the implants are the best treatment that suite them:

> *"Patient: The dentist explained the side effects of the fixed dentures to me but he did not explain the side effects of the implant. He told me the implant would be the best treatment option for me" (Patient interview (11), 29/08/14)*

In the previous example, it was very obvious that the dentists did influence the patients' decisions to go for implants through not only hiding the side effects of the implants and describing the side effects of the fixed crown. But also by hiding the disadvantages of implants such association of smoking and implant's failure and they highlighting the superiority of the implant therapy. These were 'hidden decisions' to the dentist's interest that was the implant therapy. They were considered as 'hidden decisions' because the patients did not recognise these issues during the consultations. However, when these patients were interviewed and asked about the side effects of the implants they highlighted these issues. This was one of the forms of how two-dimensional view of power was operated through the 'hidden decision' within the consultations.

Nonetheless, some patients occasionally indicated that the dentists described the implant's side effects such as the pain associated with the surgery:

> *"Patient: Yes, my dentist did. Such as the pain associated with surgery and then use of antibiotics" (Patient interview (9), 28/08/14)*

In the subsequent consultation between dentist (2) and patient (5), the two-dimensional perspective on power could be observed operating in the clinic as a consequence of employing 'hidden decisions' in the dentist's interest. This consultation involved ignoring significant

aspects of the decision making that may affect the decision made such as not describing the process of the implant surgery and not introducing the side effects of the implant treatment. It was obvious form the following conversation that the dentist was interested in the implant therapy and tried to convince the patient to go with implant:

"Patient: Good morning.

Dentist: Good morning. Have a seat. What's up?

Patient: I have two missing teeth and I would like to have implants.

Dentist: OK. I can see this on your referral form. How is your overall health?

Patient: I am fine.

Dentist: Are you diabetic? Have you got hypertension?

Patient: Neither.

Dentist: Are you sensitive to penicillin?

Patient: No.

Dentist: Do you have any medical problems?

Patient: No, I don't.

Dentist: Have you had any operations in the last five years?

Patient: No, I haven't.

Dentist: Well. Can you sit on the dental chair so I can check your mouth?

Patient: Yes, sure. No problem.

Dentist: Open your mouth for me, please. Close. Open. Close. Open again. OK. Thank you. Well, honestly the best option for your condition is implant therapy. You also have another choice, which is a fixed bridge. I will explain each treatment option for you now if you want me to.

Patient: Yes, please.

Dentist: Well. The implant therapy has superior advantages over the other dental treatment such as durability, stability, aesthetics and loading. But it has a small disadvantage—it needs surgery to do it and for unknown reasons an implant may

not integrate with the bone and then fail. But even if it fails, it can simply be removed. The fixed bridge has some limitations. Two intact adjacent teeth must be prepared so they can be used as a base for the bridge. It is also difficult to clean and food may get underneath the bridge and cause decay. The decision is completely up to you, and if you have any questions, I am here to answer them. Think about it and let me know. Patient: Um. It's a really difficult question. What do you recommend, doctor?

Dentist: Well, if I were you, I would go for the implant because it is the preferred option here in our centre. Except if there are any conflicts from the patient's perspective, such as fear of surgery, or clinical reasons that prevent implantation such as bone quantity and quality. Again, it is your decision.

Patient: Honestly, I came here and I'm interested in implants and you also recommended them to me, so I will go for them.

Dentist: OK. That's absolutely fine. Have you read the patient's consent form?

Patient: Yes, I read it. Actually, I have been waiting for this implant for more than six months. Just, please, if you can speed up the appointments, it would be really good.

Dentist: We are trying our best with the appointments. We have a long waiting list and we deal with all patients equally. Anyway, do you have any questions about the consent form or implant surgery?

Patient: No, doctor. Thank you very much.

Dentist: Good. I prescribed an antibiotic for you to use two days before your surgery appointment and a painkiller to use after your surgery if you have pain. Take this to the appointment desk and register your appointment and I will see you later.

Patient: Thanks for the advice. See you later.

Dentist: You're more than welcome. Bye" (Patient (5), Dentist (2), 14/08/14)

3.3.3.2. Two-dimensional view of power and the concept of manipulation

The section aims to describe how the two-dimensional view of power was operated in the consultations and interviews through evaluating the presence of the concept of manipulation. As mentioned previously, the manipulation concept identified according to (Lukes, 2005, p. 21) as "perhaps a sub-concept of force whereby compliance happens even though complier does not recognise the nature of what has been demanded of him or her". The theme of manipulation in the power proposed framework of the study aims to examine aspects such as whether the dentist

described the benefits, risks and related information to the patient or not (see Appendix 8). For example, the dentist did not provide sufficient information about the risks of implants such as injury of the lower alveolar nerve. However, the advantages of implants were clearly introduced. Introducing the benefits of implants by the dentists and hiding the risks of the implant may significantly affect the patients' decisions to whether to go for implant or not. Another example, if smoker patients know that the failure of the implant is strongly associated with smoking, they may probably choose other possible dental treatment such as fixed crowns or removable dentures. Therefore, this is a 'covert' key issue in the decision making process to the patients and it was for this reason that the concept of manipulation was considered as a form of the two-dimensional view of power.

Dentists significantly indicated that they did not describe the benefits, risks, and the relevant information of the implant therapy to the patients. Those dentists provided several reasons for not describing this information to the patients. For example, some of the dentists claimed that this information has been mentioned in the patients' consent forms or the patients did not ask them about the benefits and risks of the implants. Please see the following two responses of the dentists supporting this claim:

> *"Dentist: No, I did not explain this to the patient because I provided the patient with the consent form which describes the benefits and the risks of the implant" (Dentist interview (3), 13/08/14)*

> *"Dentist: No, I did not describe this to the patient because the patient did not ask me about this information" (Dentist interview (26), 05/10/14)*

It could be emphasised that the patients' consent forms did include clear information about the surgical complications (side effects) of the implants such as swelling, bleeding, numbness, inflammations, and delay in the wound healing. Similarly, some of the advantages of the implants such as high success rate and long survival rate were clearly introduced in the consent forms. However, the risks or disadvantages of the implants such as the aesthetical disadvantages of implants, possibility of injuring posterior alveolar nerve, association of implant's failure with smoking and poor oral hygiene were not introduced in the consent forms (for more details about the disadvantages of implants, please see Chapter one under the section 1.3.2. The Disadvantages of dental implants). However, a really small statement in the consent forms indicated, "it is difficult to predict the bone's ability to integrate with the implant because of the individual differences. Therefore, the implant may not integrate and then it may need removal or replacement with other implant after taking my consent" was introduced (See Appendix 9). This may clearly highlight the presence of the concept of manipulation through hiding important

information from the patient. That was the disadvantages of implant treatment. If we take into account that the implants' disadvantages were introduced to the patients, they may not go for implants and may choose from other possible alternatives such as fixed crowns or removable dentures. Therefore, it could be concluded that hiding the disadvantages of the implants was a key 'covert' issue associated with the two- dimensional power, which may significantly affect the implant decisions made. This is one of the forms of how two-dimensional view of power was operated in the consultations. Nonetheless, hiding treatment information may really associate with ethics. This will be discussed in Chapter 4 under the section (4.5. Ethical consequences associated with power and decision making).

On the other hand, the majority of the patients indicated that their dentists did not describe the benefits and risks of the implants. These patients did not provide any justifications about why their dentists did not explain the implant's benefits and risks. Although, some patients maintained that the dentists provided them with the benefits and risks of the implants. Yet, these patients described the benefits but they did not mention the risks of the implants. They claimed that either they did not remember the risks described by the dentists or they mentioned the side effects of the implants such as the pain associated with the surgery, but not the risks of the implants. While in fact, these risks of implants were not introduced in the consultations and thus these patients claimed they could not remember them. The following case illustrated the response of the patient (20), who was male and 57 years old. During the patient interview, the patient was asked whether if he remember any of the benefits and risks of an implant therapy that his/her dentist had discussed with him. The patient's response was as following:

> *"Patient: Advantage: it lasts for a long time, and I have now two, which were inserted about two years ago. I have had no problem at all with them. Disadvantages: No, I did not remember any" (Patient interview (20), 25/09/14)*

In the following consultation between dentist (1) and patient (20), the two-dimensional perspective on power could be observed operating in the implant clinic as a consequence of employing the concept of manipulation. This consultation involved a clear the compliance from the patient (20) with the dentist's decision to go for a dental implant even though the patient did not understand the nature of what is being asked of her, maybe because of a lack of knowledge or lack of supported information. Although in this consultation, the dentist (1) presented other dental treatment to the patient such as fixed bridges, yet the risks of undergoing implants were not described. Hiding risks or disadvantages of dental implants may be considered as a significant aspect that could affect the decision made.

> *"Patient: Good morning. How are you?*

Dentist: Good morning. I'm very good, thanks for asking.

Patient: It's been a long time since I've seen you. How are you doing?

Dentist: Not bad, I'm working hard. Anyway, how is your overall health?

Patient: I'm good.

Dentist: Was this X-ray taken today?

Patient: Yes, it was.

Dentist: Do you take any medicines?

Patient: Yes, for diabetes.

Dentist: We did an implant for you about 10 months ago, didn't we?

Patient: Yes. I like it. It works perfectly.

Dentist: Good to hear. So why did you come to the dental clinic today?

Patient: I have one missing and one very decayed tooth. My previous dentist referred me to you to extract it and replace both teeth.

Dentist: That's OK. Can you just sit on the dental chair for me to see what's going on?

Patient: Yes, sure.

Dentist: Open your mouth for me, please. Close now. Well done. Open again. Yeah. Bite. That's it. Actually, the decayed tooth needs extraction because we really can't preserve it. It's very decayed and the caries reaches the root. You had post and core treatment before, and I am really sorry, we can't preserve it. So, are you looking for specific dental treatment?

Patient: Well, I don't know much about dental treatment. But I believe that implant therapy would be good. You did it for me last time, and I really like it. But you may see something that I can't see. Do you get me?

Dentist: Well, I totally agree. Implantation is the best dental treatment. But you could have fixed bridges to replace these two teeth if you want. What do you think?

Patient: Actually, no. I am happy to go with the implant.

Dentist: That's fine. Any questions?

Patient: No, thank you.

Dentist: These are your surgery and hygiene appointments. I also prescribed a mouthwash and an antibiotic that you should use two days before your surgery and painkillers for after surgery if you have pain. Lastly, have you read and signed the implant consent form?

Patient: Yes.

Dentist: Do you have any questions about the information on the consent form?

Patient: No, thanks.

Dentist: You are welcome. That's all. See you later.

Patient: See you later. Bye.

Dentist: Bye." (Patient (20), Dentist (1), 20/09/14)

3.3.3.3. Two-dimensional view of power and the concept of coercion

Further to the description of how two-dimensional view of power was operated thorough observing the presence of the concept of manipulation in the previous section, this section aims to describe how two-dimensional view of power was operated in the consultations and interviews through evaluating the presence of the concept of coercion. The theme of coercion in the power proposed framework of the study aims to examine two key sub-themes that may affect the implant decisions. These were: was shared decision made and were possible dental treatment discussed (Appendix 8). Evaluating whether shard decision-making was made or not may provides an indication that the patients' preferences, values and needs were not evaluated during the decision making process. For example, if patient (x) claimed he did not reach shared decision with the dentist, this may means that the patient may coerced to the decision that he may not be his best treatment option. This could be for several 'covert' key issues associated with the concept of coercion such the patient's lack of knowledge or the patient's thought that he/she has no power to contradict the dentist's decision. Similarly, if possible dental treatment were not discussed, this may provides a signal that the dentist may coerced the patient to go for example for the implant, while the patient in fact prefers fixed crowns, which may significantly affected the decision made as the patient may go with any alternatives if they were introduced. Therefore, these are 'covert' key issues to the patients' decisions. It was for this reason that the concept of coercion was considered as a form of the two-dimensional view of power.

1) **Was Shared decision made?**

Dentists tended to believe that they had reached shared decisions with their patients. Some of these dentists did not justify the reasons of their thoughts for reaching joint decisions. While, other dentists provided several reasons for reaching shared decisions such as patients were looking for implants, the dentists achieved the patients preferred treatment options, and lastly other dental treatment were not possible. Please see the following case form the dentists interviews explained this thought:

> *"Dentist: It was 100% a shared decision. The patient was looking for an implant and her clinical situation was suitable. So we both decided on the treatment option together" (Dentist interview (4), 13/08/14)*

Nonetheless in some cases dentists emphasised that they made the decisions without considering the patients preferences. In these cases dentists indicated that they had made the decision because patients were careless and had failed to either improve their oral health or because the clinical situation of the patients did not warrant certain treatments. This indicates that in some instances those dentists may have secured their patients compliance to go along with implant treatment when in fact the patients were not interested in going for the treatment. In such instances the patients had complied because they had no power to contradict the dentists' decisions. In other words, these patients may be coerced to go with implant treatment. Please see the following example illustrating this claim:

> *"Dentist: I made the decision. To be honest, the patient has not shown any responsibility towards her teeth. I do not know why" (Dentist interview (28), 06/10/14)*

In contrast patients indicated that they had reached shared decisions with the dentists. Patients tended to believe that the dentists knew more than them and as a consequence they deferred the decision to the dentist. They maintained that they were happy with the decisions made. In such cases the decision may have been secured in situations where they may not have received sufficient information about the treatment. Providing more information may have significantly influenced such decisions. However, the lack of knowledge about the implant treatment among those patients may be the key 'covert' reason concerning why they went for the treatment that was recommended. The next two examples from the patients' interviews explain this claim:

> *"Thank God, everything is all right. My dentist knows more than me in his field and he has enough experience to do his job" (Patient interview (6), 17/08/14)*

"I think my dentist knows better than me about what suits my case and what does not" (Patient interview (7), 18/08/14)

2) <u>Were alternative dental treatment discussed?</u>

Discussing alternative dental treatment may significantly affect decisions on whether to go with implants or not. Patients may go with any alternatives if they were introduced. This appears to confirm that there is a degree of coercion in relation to the consultations.

The majority of the dentists indicated that they did not discuss possible dental treatment such as removable partial dentures or fixed crowns with their patients. These dentists stated various justifications for not discussing alternative treatment options. For example, dentists claimed that implants would be the best or the only treatment for the patients, or the patients want implants and did not ask them about the alternatives. Another reason why this might have happened is that patients often feel a lack of power to challenge dentists' decisions or they may lack knowledge concerning other possible treatment options. These two aspects are 'covert' key issues that may affect decisions. This is one of the forms of the two-dimensional view of power. The subsequent cases illustrate these thoughts of dentists:

"Dentist: No I did not introduce alternative treatment with the patient, because the patient's teeth are non-restorable and the implant will be the best treatment for this patient" (Dentist interview (2), 12/08/14)

"Dentist: No, I did not discuss this, because there are no other alternative treatment—only implant therapy suits his clinical situation" (Dentist interview (5), 14/08/14)

The next consultation is a good example of how coercion can be seen to operate in the consultations. This consultation involved securing the patient's compliance to go along with implant treatment when the patient, in fact, may not be interested in going for implant therapy but he complies because he has no power to contradict the dentist's decision:

"Dentist: Hello, have a seat. How are you?

Patient: Hello. I'm fine.

Dentist: How old are you?

Patient: 51.

Dentist: How is your overall health?

Patient: I'm fine.

Dentist: Are you diabetic?

Patient: Yes, I am diabetic.

Dentist: Are you sensitive to penicillin?

Patient: No.

Dentist: Have you had any operations in the last five years?

Patient: No, I haven't.

Dentist: Do you have any medical issues?

Patient: No.

Dentist: Why did you come here today?

Patient: I have one tooth that cause a lot of pain and I also have some missing teeth. I want to be treated. I'm really fed up with my oral health.

Dentist: OK. That's fine. We'll sort it out. Don't worry.

Patient: Thank you.

Dentist: No problem. Can you open your mouth for me, please?

Patient: Yeah.

Dentist: Close. Open again. Close. Good. Open once more. Close. OK. I can see on your referral form here that your dentist put a treatment plan in place for six teeth. Five missing teeth and one tooth needs extraction and replacement, is this right?

Patient: Yes it is.

Dentist: OK. No problem. You are suitable for implants. So, we'll do six implants for you. Five of these will be inserted in the missing gaps and one tooth will be extracted and also replaced with an implant. What do you think?

Patient: I really don't mind and just want to be treated. But do implants affect my diabetes?

Dentist: Actually, no, if you have control over your diabetes and are taking your diabetes medicine on a regular basis. I think there won't be a problem at all. I have done a lot of implants for many diabetic patients who have control over their diabetic level.

Patient: OK. I actually have good control over my diabetic level.

Dentist: You don't like implants, do you?

Patient: I like them, but I'm scared that it may affect my diabetes and cause some problems that I can avoid. Do you get me?

Dentist: Yes, sure. But implants won't affect you if you have control over your diabetes and also take your diabetic tablets on a regular basis. Implant therapy is the best treatment option that suits your condition. Do you understand what I'm saying?

Patient: Yes. I am happy to go with implants if they don't cause me any problems.

Dentist: That's good. I think you'll be happy after the treatment because implants will improve your oral health, especially from a functional aspect.

Patient: I hope so. Anyway, thanks a lot for your explanation.

Dentist: You are welcome. Another important thing—you must improve your oral hygiene by brushing your teeth three times daily. I will also give you a mouthwash to use twice a day. This is really important because an implant's success is associated with good oral hygiene. OK?

Patient: OK. Thank you.

Dentist: No problem at all. Take this prescription with you. It includes an antibiotic and painkiller. Please use the antibiotic two days prior to your surgery appointment and the painkiller after the surgery if you have pain.

Patient: OK. I was wondering, doctor, what is an implant? And will you do all these implants in my next surgery appointment?

Dentist: Well, all your implants will be done in one day. The implant is made from a titanium base, which we'll insert into your bone. After insertion, we'll leave the implant for about three to six months for integration with the bone. After this, we'll fit the crowns on to these implants. Is that clear?

Patient: Yes, it is clear. One more question, are there any complications after implant surgery?

Dentist: No, there aren't. The bad thing that may happen is that the implant, for unknown reasons, does not integrate with the bone. If this happens, it can simply be removed. Do you have any other questions?

Patient: No. Thanks a lot for the advice and explanation.

Dentist: You're more than welcome. See you later.

Patient: See you. Bye." (Patient (6), Dentist (1), 17/08/14)

3.3.3.4. Two-dimensional view of power and the concept of influence

As mentioned previously, the concept of influence described as "A makes B change their action without reverting to any form of overt implicit threat" (Lukes, 2005, p. 21). The theme of influence in the power proposed framework of the study aims to examine to which degree both dentist and patient think that one of them influences the other to go with implant therapy (see Appendix 8). For instance, a dentist may make the patient change his/her decision to go along with implant therapy without an overt threat, such as convincing the patient to go for an implant because of the high success rate of the therapy and several advantages of implants without indicating the disadvantages of implants. Convincing the patient to go with implants by introducing some information and hiding other information such as in the example we have just seen is also a good example of the 'covert' use of power and influence.

Despite the obvious use of coercion and influence in these consultations dentists honestly believed that they did not influence the patients to go with implant therapy. In such instances dentists explained that there were several things that may influence the patients' decisions to go with implants. For example, some dentists indicated that patients had asked clearly for the implant therapy at the start of the consultations and as such claimed that the patients made the decisions before they had come to the clinic. While, some of these dentists also believed that most patients were happy to go with implants particularly if the treatment was free. Please see the subsequent responses of dentists, while they were asked in their interviews about to extent to which they may have influenced patients' decisions:

"Dentist: I did not influence this patient to go with implant therapy. She asked me for implant treatment before I examined her oral situation. I think she was convinced about the treatment before she came here" (Dentist interview (7), 18/08/14)

"Dentist: I think most patients are happy to be treated with implant therapy because the treatment is expensive and excellent, and most significantly, provided for free. So, for example, this patient asked me for an implant before I talked to her about anything. The patient is ready for implantation and there is no need to influence her decision" (Dentist interview (27), 05/10/14)

In the following case, the dentist claimed that she explained to the patient that she has broken teeth and dentists could not put crowns on broken or destroyed teeth. The dentist maintained that was the key reason why she chose an implant for this patient. In this case then the dentist was trying to convince the patient to go with the implant. Although the dentist did introduce information (not putting crowns on to broken teeth), she also failed to reveal important information about alternative treatment. Hiding this information is a 'covert' issue that may significantly influence the decision. This may clearly highlight how the two-dimensional view of power was operated through the presence of the concept of influence. The startling thing in some respects about this encounter was the response of the dentist when asked about her role in the treatment decision:

"Dentist: I did not influence the patient's decision. I made the decision and she agreed to be treated with implants" (Dentist interview (28), 06/10/14)

In other cases dentists were aware that they might have had a big influence on the patient's decision. In the following case, the dentist claimed that the patient came to the clinic and was suffering from his complete dentures, which were sliding around. The dentist maintained that an implant treatment was the only treatment for this patient. In this case the dentist failed to introduce other possible treatments such as over-dentures. This example may underline that the dentist tried to convince the patient and influence him to go with implants without an implicit threat. Yet, this is a 'covert' key issue that may clearly describe how the two-dimensional view of power operated through influence:

"Dentist: I think the patient clearly wants implant treatment. I may have slightly influenced the patient's decision to go for implant therapy through the implant information that I introduced to him" (Dentist (9), 20/08/14)

Patients however recognise the influence of their dentists. They recognised some key factors that influenced them to undertake implant therapy. Factors included dentists said implants are the best options; dentists described the process of the surgery, and the advantages of implants:

"Patient: 100% the dentist influenced me to go with implant. He told me that it would be the best for me and then described the process of the surgery" (Patient interview (2), 18/08/14)

It should be made clear that in the previous example, although the dentist provided the information about the advantages and the process of the implant surgery, the dentist did not introduce the risks or disadvantages of implants. Yet in this case the patient had indicated that he had no idea about dental treatment. The dentist did not introduce alternative treatment such as fixed or partial dentures. Hiding important information such as the disadvantages of implants and the possible alternative treatment is a 'covert' issue that may significantly influence decisions about whether to go with implants or not. This obviously may highlight how the power operated in the consultation through the concept of the influence.

Nevertheless, there were some patients who believed that the dentists did not influence them to undergo implant therapy. These patients indicated that their previous positive experiences with implant surgeries were the key reason behind their decisions to go with implant therapy:

"Patient: I read a lot about implants and had two successful experiences with them. So my dentist did not influence me to go with an implant; I made the decision" (Patient interview (13), 10/09/14)

3.3.3.5. Two-dimensional view of power and the concept of authority

As indicated previously, the concept of authority refers to situations where "B complies because he believes that A's idea is reasonable in relation to his/her own value or because its content is legitimate or reasonable or arrived at through legitimate means" (Alford and Friedland, 1985). For instance, the patient complies with going for implant therapy because he/she believes that the dentist's suggestion of going for an implant is the best available treatment option. The theme of authority aims to examine two key sub-themes that may affect decisions. These were: 1) the reason behind the patient's compliance with decision made by the dentist, and 2) to which degree patients and dentists think that patients were happy to go with implant therapy (Appendix 8). These two aspects are 'covert' issues associated with the two-dimensional view of power and will be explored in this section.

1) **<u>The reason behind the patient's compliance with decision made by the dentist:</u>**

Dentists indicated that the patients need to replace their missing teeth for both aesthetic and functional reasons. These dentists were asked during their interviews about what do they think influence the patients to go with implants. They answered as following:

"Dentist: The patient needs to restore the missing teeth for both aesthetic and functional aspects" (Dentist interview (10), 21/08/14)

However, it should be highlighted that these dentists did not describe other aspects related to the implant decisions such as the disadvantages of implants or possible treatment options. For example, in the previous case, the patient (10) who was a female age 60 years old, asked her dentist to have fixed bridge. The dentist then checked her suitability for a bridge and highlighted that the patient's tooth could not be preserved. The dentist claimed that the only available treatment option was the implant therapy. The patient said,

"*If there is no other option and you recommend implants, I'll go for them. As you said, no other option is available*" *(Patient (10), Dentist (1), 21/08/14).*

In this case, it was obvious that the dentist had shaped the patient's preferred treatment option. Not only this, but the dentist also failed to discuss the potential disadvantages of implants such as the possibility of injuring the inferior alveolar nerve and did not introduce other treatment options such as removable dentures. Hiding these important aspects were 'covert' issues associated with the authority of the dentist and may significantly affect decisions. The patient may have complied with the decision because she believed the dentist (there was no other options available) was reasonable or arrived at legitimate means and may also had a lack of knowledge around other possible treatment such as removable dentures.

Other dentists maintained that they did not know what affected patients' decisions to go with implants. They claimed that the patients might be able to answer what influence them to go with implants:

"Dentist: You can ask the patient about this. I have no idea" (Dentist interview (7), 18/08/14)

On the other hand, patients most commonly believed that dentists' ideas to go with implants are reasonable. These patients relied on either sufficient experiences of the dentists with implants or knowledge and skills of the dentists in the implant therapy. Please see the following responses of the patients supported this claim:

"Patient: The dentist knows more than me. He is a specialist in his field and has great experience with implants" (Patient interview (10), 28/08/14)

"Patient: Yes. Because the dentist is well known and my husband and daughter, who have been treated here, told me he has a very light hand" (Patient interview (7), 24/08/14)

However, other patients indicated that they believed that implants were better than alternative treatments such as fixed crowns or bridges. These patients relied mainly on the several advantages and minor disadvantages of implants that were described by their dentists. In the following example, although the patient claimed that implants have 'minor' disadvantages, he clearly described the advantages of implants. This may be because the dentist used his authority to shape decisions by indicating that implants only have 'minor' limitations such as the association of smoking and poor oral hygiene with the failure of implants. However, interestingly, the patient did not describe the 'minor' disadvantages of implants such as association of smoking or poor oral hygiene with failure of implant care, while he described one of the side effects of the implants such as 'the use of painkillers after surgery'. Whilst, in the following example, another patient maintained that the dentist did not explain anything to him about the therapy. These two examples illustrate how some dentists shaped decisions using authority. While patients believed that the dentists idea to go with implants was reasonable due to the patients' lack of sufficient information around the possible treatment options. Therefore, this could confirm the presence of the dentists' authority in this study and provide an explanation about how the two-dimensional view of power operated through the concept of authority in the consultations.

> *"Patient: I think the dentist made the decision based on the following reasons: firstly, minor disadvantages of the implant treatment, such as using painkillers after the surgery. Secondly, the long survival rate of the implant is its main advantage" (Patient interview (5), 21/08/14)*

> *"Patient: I can't say it is really reasonable. She did not explain anything about the implant. She just said that an implant would be the best for me!" (Patient interview (28), 07/10/14)*

2) <u>To which degree patients and dentists think that patients were happy to go with implant therapy:</u>

Dentists highlighted that they could not say if patients were happy to go with implants or not. However, these dentists maintained that they could only evaluate whether the patients were happy to go with implants or not after the implant treatment was completed.

Other dentists stated that they thought that their patients were happy to undertake implant therapy. The reasons given for this assertion were that implants would improve the patients' oral health in an aesthetic and functional way:

"Dentist: I think she will be happy. She will not have more pain or a bad smell from the decayed tooth, as it will be extracted and replaced with an implant. I think she will definitely notice a huge difference after the implantation" (Dentist interview (32), 09/10/14)

In explaining the superior qualities of implant treatment dentists relied heavily on the failure of alternative treatments such as fixed bridges, in addition they frequently claimed that implants would improve the oral health of patients. These dentists rarely discussed the failure of implants. In this respect dentists were using their clinical authority to shape the decision to go for implants:

"Dentist: I think she will be happy because she will not have a moving fixed bridge like she has now. She will have stronger teeth (implants) that have the ability to carry a heavier load" (Dentist interview (12), 28/08/14)

On the other hand, some patients indicated that either the dentists convinced them to undertake the implant therapy or they were confident in the dentists' skills and experiences:

"Because my dentist convinced me to go with an implant I believe that he has enough knowledge and experience to make the right decision" (Patient interview (4), 20/08/14)

The subsequent consultation illustrates how clinical authority was used in a typical consultation. In this consultation the patient demonstrated clear compliance with the decision suggested to them by the dentist. During the interview, the patient indicated that he complied to go with implant because: *"Because I am really confident in the dentist's skills and experience" (Patient interview (22), 01/10/14)*. The patient was not aware that some information had not been discussed. These aspects act as 'covert' indicators associated with concept of authority and illustrate how the two-dimensional view of power can be seen to be relevant to clinical consultations.

"Patient: Hello.

Dentist: Hello. Have a seat, please. How are you?

Patient: I'm fine.

Dentist: OK, why did you come here today?

Patient: I have this lower tooth. It's broken and causes a lot of pain. Also, I have another decayed tooth in the upper jaw. I'm fed up and can't bear it any more.

Dentist: I'll check them soon. How is your overall health?

Patient: Actually, I am not too bad. If these teeth are treated, I am sure I'll be very well.

Dentist: They will be treated. Don't worry. Do you take any medicines?

Patient: No.

Dentist: Have you had any operations in the past five years?

Patient: No.

Dentist: Are you diabetic?

Patient: No, I'm not.

Dentist: Brilliant. Could you please sit on the dental chair and I'll have a look at your teeth?

Patient: Sure.

Dentist: Open your mouth, please. Oh, I can see why you're suffering, you have these two teeth, they're really decayed and broken. They can't be preserved. Bite for me, please. Open again. That's it. Would you like me to extract these decayed teeth and fit you with implants?

Patient: I don't mind. I just want to stop the pain. How many appointments do I need to get the implants fitted?

Dentist: Well, the extraction and the implant insertion will be done in one appointment. Then we'll leave the implants for three to six months for integration. When they integrate with the bone, we'll sort out the crowns.

Patient: OK. Sounds fantastic.

Dentist: Did you read and sign the implant consent form?

Patient: Yes, I did.

Dentist: That's good. Have you got any questions about the information on the consent form or implants in general?

Patient: No.

Dentist: Brilliant. I will see you next week, to do the extraction and the implants. Take this prescription with you. Please use the antibiotic two days before surgery. Any questions?

Patient: No, thanks. See you later.

Dentist: See you. Bye." (Patient (22), Dentist (1), 29/09/14)

The next section describes the three-dimensional view of power and the decision to have dental implants.

3.3.4. Three-Dimensional Power and the decision to have dental implants

As mentioned previously, the three-dimensional power described as "a critique of the behavioural focus of the two dimensional view of power", focuses on "decision making and control over the political agenda (not necessarily through decisions), issues and potential issues, observable (overt or covert) and latent conflict, and subjective and real interests" (Lukes, 2005, P25). This may highlight the key difference between the three-dimensional power and the two-dimensional. To explain this more, the two-dimensional view of power has considered power as an approach that can operate in covert ways and can be noticed through collective directions over which no definite person has control or through the actions and selectivity of an organisation where no definite person has a whole oversight but nonetheless presents bias (Crenson, 1971). In other words, power can operate where we are excluded from the political process. For example, within consultations, patients may notice the power of the dentist in convincing them to go for implants, and, as such, they may recognise that they have no control over changing the decision or because they believe that the dentist's idea is reasonable in relation to his/her own value and interest. Thus, this is the key criticism around the two-dimensional view of power. In contrary, the three-dimensional power can operate where we are included in the political process. This is one of the complexities of the three-dimensional power that it is really challenging due to the difficulty to determine where power is operating.

The second complexity of the three-dimensional power is that it depends on establishing a counter factual, which can be challenging (Lukes, 2005). For example, how do we establish that the dentist has managed to get the patient to do something that is against their real interests? This is really hard to show especially in these data. These challenges made it difficult to describe how this concept of power may have been operating in this study.

Please see Table 8 below which describes and summarises the findings of this study.

Table 8 Summary of the findings of this study

Parameter	Description	Frequency of occurrence	Findings of the current study
Decision making models used within the implant consultations			
Paternalistic decision making model	Dentist is the main decider and no contribution from the patient in the decision-making process.	Paternalistic model was occurred (only observed in one consultation).	Elderly patients 'above 55 years 'who had lower educational levels tended to experience greater levels of paternalistic and interpretative decision making.
Interpretative decision making model	Dentist considers the preferences and values of their patients. However, the dentist still has the final decision.	This model was rarely implemented in the implant consultations.	
Informed decision making model	Patients are the main deciders, but only after they have received all of the necessary information about the benefits, risks and other alternatives.	NA	NA
Marginal shared decision making (MSDM)	**Less than 50%** of the twenty-three sub-themes of the proposed DI-SDM framework of the study are achieved and observed together in one single consultation.	The MSDM model was most commonly employed in the consultations.	In the marginal model, the patient and dentist made joint decisions. However, various aspects of the DI-SDM framework were absent. These include: not introducing and appraising research evidence, not asking the patients about the quantity of information they needed, the dentist did not inquire about the patient decision making preferences and expectations from implants, the side effects, the benefits and risks of implants were not presented to patients, patients were not given the choice of postponing their treatment decisions, patients' views were not considered, and lastly the process of implant surgery was not described.
Typical shared decision making (TSDM)	**More than 50%** of the twenty-three sub-themes of the proposed DI-SDM framework of the study are achieved and observed together in one single	The TSDM was rarely implemented in the consultations. Only two consultations were	Patient and dentist shared information about possible treatments and both agreed to go with the implant therapy. In this model, the following sub-themes of the DI-SDM framework were observed in the consultations: Providing a definition of what an implant is? Reviewing patient medical history, no interruptions in the consultations, some

	consultation.	grouped under this model.	discussion of research evidence and discussion of research relevant to the patient, checking the patient's understanding and seeking the views of the patient, exploring patient's ability to understand the dentist's instructions, presenting multiple treatment options, describing the process of the surgery, exploring the patient's preferences, values, and introducing a plan for follow up.
Ideal (or perfect) shared decision making (ISDM)	**All** the twenty-three sub-themes of the proposed DI-SDM framework of the study are achieved and observed together in one single consultation.	This model neither occurred nor was observed in this study.	No implant consultations grouped under the ISDM. This was because no implant consultation achieved the ISDM criteria and not all the DI-SDM themes and sub-themes occurred in any implant consultation. This model is an ideal (perfect) type of communication and therefore it would be unlikely to find it in empirical reality.
The role of power in the decision making process about implant therapy			
The one dimensional view of power	This view of power focuses only on overt conflicts.	This view of power only exceptionally occurred as it was only observed in one implant consultation.	An overt conflict over patient choice and the dentist's clinical judgment was observed in this study. The dentist had checked the suitability of the patient for implant therapy by looking at their mouth and his x-ray. The patient was a male aged 60 years old and with a postgraduate level educational. Although the patient maintained that it was their right to decide which treatment to undergo and not the dentist right to make the decision, the dentist claimed that the patient's tooth could be treated with a "root canal treatment" and explained to the patient that implants were limited to patients who really needed them (See page 99).
The two dimensional view of power	This view of power focuses on overt conflicts, covert conflicts and hidden decisions to the decision maker best interest.	This view of power was frequently operated in several consultations observed.	The two dimensional view of power operated and observed in different forms within the consultations observed. Forms include coercion, manipulation, authority and influence. These forms are described in the following rows of this table.
The concept of coercion	A secures B's compliance through deprivation when there is a conflict over values or a specific action.	Coercion was seldom used among this specific group of patients.	The concept of coercion was practiced in several consultations particularly among elderly patients who had lower educational levels. This may be because of lack of knowledge and lack of supportive treatment information (see example in page 143).

The concept of influence	A makes B change their action without reverting to any form of overt implicit threat.	The influence of dentists on patient decisions to go with dental implants was frequently observed in several consultations.	The concept of influence was usually operated in different consultations through not introducing possible treatment options or not providing sufficient treatment information (please see example in page 147).
The concept of manipulation	Perhaps a sub-concept of force whereby compliance happens even though compliers do not recognise the nature of what has been demanded of them.	The manipulation was often used in different implant consultations.	Patients comply with the dentist's decision to go for implants even though they do not recognise that the dentists (consciously or unconsciously) did not only rely on several advantages of implant, but also they did hide important treatment information such as risks of the implant failure (please see example in page 139).
The concept of authority	B complies because he believes that A's idea is reasonable in relation to his/her own value or because its content is legitimate or reasonable or arrived at through legitimate means.	The authority of some dentist was commonly observed in various consultations.	The authority of the dentists was usually operated when the patients comply with going for implants because they believe that the dentist's suggestion of going for an implant is the best available treatment option (please see example in page 151).
The three dimensional view of power	This view of power operates where we are included in the political process.	This view of power neither occurred nor observed in this study.	The three dimensional view of power depends on establishing a counter factual, which can be challenging. For example, how do we establish that the dentist has managed to get the patient to do something that is against their real interests? This is really hard to show.

Chapter (4)

Discussions

Chapter Four: Discussions

4.1. Introduction

This chapter discusses the findings of this study in relation to the existing knowledge and medical literature on decision making. It consists of six key sections. The first section discusses the limits of shared decision making during implant consultations by considering eight factors: 1) raising patient awareness of their rights to participate in treatment decisions; 2) cultural influences and the low levels of participation in decision making, 3) the patient-dentist relationship and communication skills; 4) providing patients with relevant information; 5) introducing multiple treatment choices; 6) confirming a patient's comprehension and evaluating their expectations; 7) considering patient preferences, values and needs during the decision making process; and 8) clarity of the information presented on the consent forms.

The second section covers the impact of patients' previous experience and lay referrals with respect to their decisions. After this, the third section deals with power dynamics in relation to implant decisions. Ethical consequences associated with the decision to have implants are then the focus of the fourth section. This is followed up with considerations about the "puzzle" of the patient satisfaction regarding dental implants in the fifth section. The final section describes the strengths and limitations of the current study.

4.2. The limits of shared decision making

4.2.1. Raising patient awareness for their participation in treatment decisions

If we wish to facilitate better use of shared decision making during implant consultations, the results of the current study suggest the need to increase patient awareness of the right to participate in their decisions. Why is this important? The literature on decision making has shown that patient contributions to decision making correspond to enhanced patient satisfaction, increased knowledge, and better health outcomes (Edwards and Elwyn, 2009, Wirtz et al., 2006). This is in agreement with other work conducted in Saudi Arabia. Farida and Al-Siber (2013) conducted a cross sectional survey assessing patient awareness and rights to participate in treatment decisions. In-depth interviews were employed to collect data from a sample of six hundred and twenty-five participants. Results demonstrated that the majority of participants (87%) did not recognize their rights to participate in treatment decisions. In fact, they felt that they did not have the right to know their doctor's name, claiming that they usually obtained their treatment information from nurses. Indeed it was shown that they had no communication with any physicians. Half of the sample did not even think that they had the right to defer their treatment decisions (Farida and Al-Siber, 2013). These findings suggest that there is a lack of

knowledge in Saudi patients regarding their rights to participate in treatment decisions, and this seems to be a key issue that should require further investigation. Additionally, active involvement by Saudi patients in their treatment decisions may also be recommended. However, it might well be argued that the low levels of participation in decision making are as a consequence of 'cultural influences'. This will be explained next.

4.2.2. Cultural influences and low levels of participation in decision making

There is evidence that indicates 'cultural influences' may play a significant role in the decision making process (Briley et al., 2000). Impacts of these 'cultural influences' might be seen in how the decision making process develops. This includes considering aspects such as who is involved in treatment decisions, their behaviours, thoughts, religion, and expectations (Charles et al., 2006). In the current study, cultural influences were identified in several dental consultations. This could be observed in greetings and interactions between patients and dentists (See page 104 in Chapter Three). There is often a cultural reason for these kinds of interactions, especially where authority is concerned. It has been pointed out that Muslim patients believe that the patient-dentist interaction and treatment decisions are associated with the will of God, "Allah", and his control of actions on earth. They therefore believe that doctors are instruments of God who have an influence on healing in minds and hands of the doctors (Moazam, 2000). However in contrast to this, Muslim doctors believe that not only can the official health system audit their work, but they also strongly feel that God audits their work at all times. As a consequence of this, they must do their work perfectly and honestly (Sajoo, 2008, p.116). These beliefs are quite similar to other religions like Catholicism. Latinos feel that patience and strength are obtained from a God who is with them every day (Sajoo, 2008, p.116). In contrast, ultra orthodox Jewish society holds the view that God will offer them the essential power needed to handle any condition they may face in life (Skinner et al., 2001).

Taken together, it could be suggested that these differences in cultural influences may impact treatment decisions. Therefore, the results of this study may suggest that considering these influences when proposing to raise patient awareness of their rights to participate in treatment decisions would be important. For example, if a decision aid was developed to improve patient awareness of their rights to be involved in implant decisions, it would be critical to consider the cultural influence of the setting being examined by specifically including information that is sensitive to patients' thoughts and religion.

4.2.3. The patient-dentist relationship and communication skills

Patient-dentist interactions and building mutual rapport have been shown to be relevant to patient participation in their treatment decisions (Loh et al., 2007). Establishing interactions that involve detailed discussions of all elements of the decision at hand along with building a

congenial rapport with patients minimises patient misunderstandings, improves identification of patient preferences, needs, perceptions, and increases their satisfaction (Vahdat et al., 2014, Ha and Longnecker, 2010). However, the present study revealed that dentists often did not attempt to initiate detailed interaction and build rapport with their patients. When this did happen it was characteristically brief. This is similar to other published research. In the United Kingdom, AnbuSelvan et al. (2013) conducted a qualitative study looking at misinteractions between patients and clinicians regarding treatment decisions. It was found that clinicians often did not establish detailed communication or rapport. As a consequence they concluded that mis-interactions had occurred and that these had several qualities, including a failure to introduce relevant treatment details and occasionally providing contradictory treatment information to patients. Although several obstacles to proper interactions in the dentist-patient relationship have been underscored in the literature, including patient anxiety and fear of verbal or physical abuse (Fentiman, 2007), these difficulties have led researchers to establish strategies to improve this interaction. Strategies include focusing on fostering interaction skills and developing decision aids (Ha and Longnecker, 2010).

Developing interaction skills has been found to increase the chance of achieving optimal patient-dentist interactions by minimising patient anxiety, fear and increasing their satisfaction (Harms et al., 2004). Additionally, the development and use of decision aids have been demonstrated to enable more detailed evaluative interactions. This is because decision aids have been shown to provide patients with the relevant treatment information and to facilitate patients' involvement in their treatment decisions (Abbott et al., 2006). Therefore, if we hope to improve the patient-dentist interaction, increase patients' participations in their treatment decisions and employ shared decision making, the results of the current study suggest improving the dentists interaction skills with the patients and perhaps the need to develop a specific dental implant decision aid.

4.2.4. Providing patients with relevant treatment information

Providing patients with relevant treatment information is an important aspect of shared decision making. It is evident that this guides the final diagnosis and supports making the right decision (Britten et al., 2000). In cancer settings, it has been found that patient's anxiety increased when patients received comprehensive information about their treatment compared to those patients who were offered typical information. However, a few weeks after, the anxiety of both groups as lower and similar (Simes et al., 1986). Taking into account the differences of the decisions made between cancer and dental implant patients, it may be difficult to prove this claim in all group of patients. Nonetheless, while providing patients with multiple treatment options has been found to increase patient satisfaction and improve their well-being. It is an unavoidable

part of shared decision making (Singh et al., 2010, Britten et al., 2000). Therefore it is important to define what exactly is meant by 'relevant treatment information'. In the present study, 'relevant treatment information' would involve describing the relevant side effects, process of surgery, and possible benefits and risks of implant therapy. Ensuring that patients have sufficient treatment information is critical for delivering high quality and safe health services (Edwards and Elwyn, 2009). The establishment of the Patient Advice and Liaison Services (PALS) by the National Health Service (NHS) in England reflects a change towards involving patients in their treatment decisions and supplying them with relevant treatment information. PALS' mission is to offer more accountability to clients and patients. It is also designed to ensure efficient handling of patient concerns and resolving patient complaints (Carlsson et al., 2006).

Despite the fact that the patients who participated in this study most commonly believed that the dentists' idea to go with implants was reasonable, a number of patients emphasised that they wanted information but this information was not provided to them (see patient '28' response on page 150 in Chapter Three).

There are few, if any studies, in the dental literature looking at appropriate levels of information provision for patients. Nonetheless the findings of this study are comparable to work conducted in various cancer settings in the United Kingdom and Belgium (Jenkins et al., 2001, Brundage et al., 2001, Pardon et al., 2009). It is also consistent with other findings from cancer settings in Saudi Arabia. A qualitative study with a sample of 114 Saudi participants concluded that the mainstream of Saudi patients wished to receive all relevant treatment information (Al-Amri, 2009). Regardless of the differences between dental implant and cancer settings, it is apparent that patients cannot be actively involved in making shared decisions unless they are given the necessary information. However, several challenges in providing relevant information have been reported, including clinicians commonly undervaluing patients' desire to receive the information, clinicians' lack of knowledge about possible treatment choices, and the minimal duration of consultations (Leydon et al., 2000, Jenkins et al., 2001). These challenges may be come through the development of effective decision aids that centre on improving patients and clinicians knowledge, ensuring patients have access to relevant information and motivating patients to be more active in their treatment decisions (O'Connor et al., 1999).

Evidence suggests that introducing the benefits, side effects and the process of surgery to the patients increases patient satisfaction and reduced unwelcomed outcomes (Makoul, 2001). However, the findings of the present study demonstrate that these aspects of the consultation were not continually provided to the patients. Further evidence demonstrates that patients desire all information available regarding treatment risks. Among 1500 participants in a randomised

control trial, it has found that patients who had obtained sufficient information about treatment risks had greater satisfaction with the service provided and more trust in their clinicians (Mazor et al., 2004, Tongue et al., 2005). This is contrary to what was seen in the present study; describing any risks related to the implants was exceptional throughout all the consultations observed. This suggests that perhaps developing a decision aid specific to decisions to have implants would help to improve patients knowledge and provide patients with relevant information.

4.2.5. Introducing multiple treatment options to patients

This study showed that dentists rarely introduced two treatment options to their patients. These were either implants or fixed bridges. These findings are similar to other implant research conducted in Austria that assessed patients' needs with respect to dental implant information. It was found that not only did the majority of patients receive insufficient information about the implant therapy, but also other dental alternatives were poorly presented (Tepper et al., 2003). Nevertheless, offering patients multiple treatment choices and providing them with relevant information can improve patients' well-being, and increase their satisfaction (O'Connor et al., 1999).

During consultations, treatment decisions may involve introducing multiple treatment options including dental implants, fixed crowns and removable or complete dentures; however assessing patient suitability for implant therapy can be more challenging. This is due to the need to assess several functional, biological, social and aesthetic factors before decisions are made (see sections in Chapter one 1.3.1. The Advantages of dental implants, and 1.3.2. The Disadvantages of dental implants). If decisions are made in favour of implants, it may be a substantial decision and the impact of this could have a significant impact on the patient's oral health quality of life. These impacts may be either positive or negative. Positive impacts include improving patients' satisfaction and patients' oral health related quality of life. While negative impacts may be related to injuring inferior alveolar nerve (IAN) or other issues, and increasing the patient's dissatisfaction (Renton, 2010, Narby et al., 2012). It is important to engage with patients in their treatment decisions. This engagement should include sharing relevant information and introducing possible treatment options as this may; for example, moderate the blame between patient and dentist if the treatment received is unsuccessful.

4.2.6. Confirming patients understanding and evaluating their expectations

Patients who participated in this study often understood what was discussed with the dentists and their understanding was frequently confirmed. This is consistent with the evidence suggested that confirming patients' understanding is significant in shared decision making. It also demonstrates better adherence to treatment plans, increasing patients' satisfaction, and

reducing undesirable outcomes (Thornton et al., 2003, Crawford et al., 2002). However, the results of this study also demonstrated that explorations of patients' expectations about implant therapy seldom happened. As we have seen, evaluating patients' expectations during consultations has been shown to increase patient satisfaction, improve care and treatment compliance (Crawford et al., 2002, Platt and Keating, 2007). Implant therapy can improve the phonetics and aesthetics of patients, though evaluating the level of patients' expectations before making a final decision may be critical (Sugerman and Barber, 2002). If patient expectations in relation to implant treatment are impractical, the chance of patient dissatisfaction may appear. Thus, possible difficulties related to the implant therapy including risk of failure and the fact that implants require maintenance should be clearly underlined to the patients (Allen et al., 1999). The results of this study suggest that it may be valuable to increase Saudi dentists' awareness and skills in evaluating patient expectations of implant therapy.

4.2.7. Evaluating the patients preferences, values and needs

Dentists who participated in this study rarely asked patients for their preferred treatment options. Indeed, in some examples, dentists did not always take patients preferences and values into account. Contrary to other findings from two dental settings in the United Kingdom, it has been found that sharing responsibility, shared decisional roles and preferences between dentist and patients were commonly observed (Chapple et al., 2003). It may be true that not all patents want active participations in their treatment decisions (Chewning et al., 2012). Though it is evident that the majority of patients preferred considering their preferences, values, needs and making shared decisions with their doctors (Ford et al., 2003, Edwards and Elwyn, 2009, Chewning et al., 2012). Aspects relating to the patients' preferences, values and needs including fear from clinicians' and competing possible treatment choices can significantly influence treatment decisions (Diette and Rand, 2007, Platt and Keating, 2007). Consequently assessing the patients' preferences, values and needs during dental consultations is important.

The current study revealed that patients' lack of knowledge and an over reliance on dentists' skills might be key reasons in reducing the levels of patient participations in their dental decisions (See patient '2' response on page 92 in Chapter Three). These findings are similar to other research that concludes that the lack of patients' knowledge about dental treatments and trust in clinicians led to inactive roles of patients in highlighting preferences and making proper decisions (Chapple et al., 2003). Therefore, in-order to facilitate employing shared decision making in implant consultations, these data suggest that Saudi dentists require more efforts to consider patients' preferences, values and needs.

4.2.8. Clarity of information provided in consent forms

This study found that all patients read and signed consent forms, however some patients argued that consent forms did not include any information about the process of implant surgery. These patients did not seem to have sufficient information about the therapy even when it was considered that they had read the consent form (See patient '1' and patient '28' responses on page 133 in Chapter Three). Although readability of consent forms have been widely explored in the medical literature, this area has been rarely reported in dentistry (Ghafurian, 2009). Accordingly, it was difficult to find comparable dental literature assessing the clarity and appropriateness of consent forms.

It should be noted that in this study it was found that consent forms did include clear information about surgical complications (side effects) and benefits of the implant therapy. On the other hand the risks of implant therapy including the aesthetic disadvantages, the possibility of injuring the posterior alveolar nerve, association of implant's failure with smoking were not introduced in the consent forms (see Appendix 9). Nevertheless, evidence does suggest that it is important to simplify and produce clarity of information in consent forms, particularly when there is a possibility of low literacy skills (Campbell et al., 2004). This fits with the results of the present study where elderly patients 'above 55 years' who have lower education levels tended to experience greater levels of paternalistic and interpretative decision making. This may be because the patients' lack of knowledge about implant therapy and the lack of supportive information in consent forms. Moreover, there is also evidence that suggests that improving patients understanding and providing them with sufficient information could facilitate active involvement of patients in the treatment decisions (Stanley et al., 1998). Consequently, reviewing and developing the current consent forms to include clear information about the risks and the process of the implant surgery may be warranted. This would enable the activation of the patients' role to engage more actively in their decisions to have implants.

4.3. Patients previous experiences and lay referrals in relation to the implants decisions

4.3.1. Patients previous experiences in relation to decisions to have implants

This study showed that the patients' previous experiences and thoughts of implant therapy might have reduced the need for detailed discussions. For example, some patients described their expectations of implant therapy by reflecting on their previous experience of implant surgery (See page 90 in Chapter Three). This may imply that these patients have made their implant decisions before they came to the consultations. They appeared to trust their current thoughts and previous experiences of the implant therapy (See page 148 in Chapter Three).

However, it may be the dentist's responsibility to support these patients to unpack and comprehend their dental preferences and values. Dentists may challenge these thoughts with the evidence-based dentistry and clinical proficiency. Nonetheless, it might be questioned whether these patients' thoughts are based on their knowledge of possible benefits, risks and side effects of implant therapy and other alternatives. Or is it a matter of different values? Would these patients accept the dentists' views if they were 'well' informed about the implant therapy and other possible treatments?

It may well be argued that these patients' thoughts are based on their knowledge of implant therapy and other alternatives. The results of this study demonstrated that most patients had not received sufficient treatment information, but nonetheless believed in the dentists' skills and experience (See page 149 in Chapter Three). Indeed alternative treatments and risks were rarely introduced to these patients. It might be suggested that there is a possibility that patients' preferences to go for implants may have been shaped by the dentists' power and authority. For instance, some of these patients mainly relied on the several advantages and minor disadvantages of implants described by their dentists (See page 150 in Chapter Three). Accordingly in such cases the implant therapy was considered to be better than any other alternatives from both a functional and aesthetic perspective. While the disadvantages of implants such as the possibility of implant failures and injuring the inferior alveolar nerve were not introduced to these patients. Thus, these patients' thoughts and preferences might have changed if they were 'better' informed about implants and other alternatives. The evidence suggests that dentists should confirm their patients' understandings about possible dental choices before making decisions. Ensuring accessibility to all treatment information including the benefits of the treatment such as longevity and possible risks and side effects, is a fundamental requirement for the patients' consents (Espelid et al., 2006, Davis et al., 1998). Therefore, it might be claimed that the patients' previous experiences with implant therapy do not necessarily reflect that those patients have enough knowledge. The dentists authority and power in the decision making process might have affected the patients decisions to undergo the therapy. Nevertheless, evidence based dentistry and shared decision making emphasis on the significance of providing patients with sufficient information including the benefits, risks and side effects of the treatment, clarity of the consent forms and providing patients with multiple treatment options (Edwards and Elwyn, 2009, Stanley et al., 1998, Singh et al., 2010).

4.3.2. Help seeking and lay referral in relation to decisions to have implants

How patients seek help and make choices concerning treatment decisions is a key aspect of the decision making process. Three sociological approaches have discussed help seeking and lay referral in relation to treatment decisions. These are: 1) individual determinants of help seeking,

2) socio-cultural determinants of help seeking, and 3) social processes that affect help seeking (Wellman, 1995).

The individual determinants of help seeking approach: emphasises how combined characteristics including socio-demographic aspects of people are associated with seeking help toward their illness. This approach focuses on how individual behaviours are influenced by supporting and predisposing factors (Wellman, 1995). Supporting factors include costs, income, and transportation. While predisposing factors involve age, social positions, knowledge and beliefs (Suchman, 1965, Portes et al., 1992). Although it is true that the current study did not evaluate supporting factors in relation to implant therapy such as costs and income because all patients received their implants free of charge. However some patients reflected on the cost of the therapy as a factor that influenced them to go for implants (See page 122 in Chapter Three). Nevertheless, predisposing factors such as age and social position were assessed and analysed in the present study. For example, it was found that elderly patients with lower educational level were more exposed to paternalistic and interpretative models of decision making.

The socio-cultural determinants of help seeking: emphasise 'cultural influences' among people who are on early conditions of symptom perception and assessment. It centres on how values and norms influence perceptions of illness and seeking help (Angel and Thoits, 1987, Wellman, 1995). The best example of this approach is the specific-cultural greetings between patient and dentist discussed previously (See section 4.2.2. Cultural influences and low levels of participation in decision making, and example on page 104).

Social processes that affect help seeking: focus on assessing the consequences of culture for people in relation to their illness behaviours with consideration to how people seek help to make the treatment decisions. Analysing social network has regarded as a key aspect for examining influences of friend, family member and lay others on the decision making process (Pescosolido, 1986, Wellman, 1995). Additionally, evidence suggests that individuals do not live exclusively in a community but are also partners of structural and interpersonal networks. These networks are their social shared capital that offers them proper resources to manage extraordinary conditions by connecting individuals to others who may be able to support them (Coleman, 1988). Hence, this may highlight the importance of discussing 'lay referral' as a factor in the decisions to have an implant therapy.

The concept of the 'lay referral' defined as "*The decision to act upon symptoms is not necessarily taken exclusively by the sufferer, but is often the result of discussions with range of people – either immediate members of individual's family, friends or colleagues. This network*

of colleagues, relatives and friends is regarded as 'lay referral system'" (Taylor et al., 2004, p58, Freidson, 1960). This can be seen in the findings of this study. Some patients refer to experiences of their families, neighbours, or friends with implants. They maintained that their families, neighbours, or friends had good experiences and were satisfied (See page 90 in Chapter Three). This may be the key reason that has influenced patients to go for implants. This is particularly so when we take into account that patients selected implant therapy as a preferred treatment option at the start of the consultation (See pages 99 chapter three). Consequently, it may be implied that patients might have made their decision to go for implants before they came to the dentists.

Although the concept of 'lay referral' is consistent with the emphasis of the World Health Organisation (WHO) on community contributions in health care planning and distribution (World Health Organisation, 1986), it might be argued that lay referral should not guide final treatment decisions. Final treatment decisions must be evidence based and shaped according to sufficient treatment information, with emphasis on patients' preferences, values and needs (Richards and Lawrence, 1998, Stanley et al., 1998, Espelid et al., 2006, Chewning et al., 2012). 'Lay referral' therefore may be regarded as an important element of the decision making process, but this in turn may not be the whole part.

4.4. Power and decision making in relation to dental implants

Further to the discussions in the previous sections about the limit of the shard decision making, this section aims to contribute to a better understanding concerning some of the underlying factors that lead to the decision to have implants. This can be explained by discussing the role of power in the decision making process in relation to dental implants. The present study uncovered evidence that power and related concepts including authority, manipulation, coercion, and influence appeared to be operating in several dental consultations. This will be discussed in the following sub-sections.

4.4.1. Clinical judgements and patient choice 'overt conflict'

In this study there was one example of observable 'overt' conflict between a dentist and their patient. The patient was interested in implant therapy, but the dentist refused to provide the implant. The dentist claimed that the patient's tooth could be treated with a "root canal treatment" and explained to the patient that implants were limited to patients who really needed them (See page 99 in Chapter Three). In other words the dentist believed that if he made the decision to provide the implant, it would reduce the rare implant materials required by other

patients who had greater needs. This begs the question: should clinical judgements override patient choice when there is a much less expensive option available to the patient?

At the heart of this conflict is the autonomy of both patient and dentist. The patient requested implant therapy and the dentist deemed it to be unjustified. This consultation demonstrated not only poor interaction, but also that both the dentist and the patient were both failing to respect each other's autonomy. While the dentist did not provide the implant and the patient made a complaint, the case indicates that both the dentist and the patient did not trust each other and both might fail to respect the preference of the other. This clearly contradicts the current evidence which suggests that the best dentist-patient interaction articulates a silent agreement of trust between patient and dentist. Accordingly if the preferences of both patient and dentist are expressed they might be both respected (Stirrat and Gill, 2005). The data in this study suggest that both the patient and the dentist must trust and respect the autonomy of the other. Also establishing effective patient-dentist communications during the dental consultations may also be highlighted.

Another significant aspect of this conflict is the social costs of implant therapy. This study was conducted in a governmental dental setting where all treatment was provided free of charge. However, the evidence suggests that the costs of implants and the patients' expenditures on themselves and other family members were significant factors in the process of decision making before undergoing implant therapy (Narby et al., 2012, Exley et al., 2012). There is also evidence that suggests that individuals' socioeconomic status (SES) and their personal appearance, can influence dentists' decisions to go with implants (See page 9 in Chapter One) (Mardinger et al., 2008). If the patient was paying for their implants, this conflict perhaps would not have occurred. The patient might have had to pay for the treatment elsewhere if they did not get the implant therapy free at this clinic. Also it might well have been that the patient had negotiated entry to the clinic specifically because implants were being provided free of charge. In other words the patient may have been attempting to manipulate the dentist rather than the other way around. This illustrates the complexity of attempts to analyse how power operates in clinical situations. Both the dentist and the patient may have been using their power to influence the decision making process in their best interests. The patient was attempting to force the dentist by emphasising his right to have implants. He claimed that the treatment was funded by the Saudi government and hence he had the right to choose which dental treatment to undertake.

The dentist on the other hand was clearly able to operate his power and authority as the gatekeeper to the treatment through the use of his experience, knowledge and skill to justify that the patient's tooth could be treated with a "root canal treatment". In doing so he was arguing that implant treatments ought to be limited to patients who really needed them. The use of

'overt' power on the part of both patient and dentist explains why there was an eventual decision to not go with dental implants. Nonetheless, it is evident that making a 'free-conflict' shared decision about preferred treatment option requires achieving three key factors. First the patients must have sufficient treatment information. Second the patient must then understand this information. Finally, the patient must be provided sufficient time to consider the possible options (Stirrat and Gill, 2005, Edwards and Elwyn, 2009, Thornton et al., 2003). Each of these three factors appear not to have been achieved in the case discussed (See page 99 in Chapter Three). This is because the dentist did not provide the patient with relevant information and did not confirm his understanding. The dentist also did not take time to justify the 'clinical' suitability of the patient for implants, for example by discussing in detail the fact that the patient had poor bone quality or quantity.

To sum up, even truly clinical judgements of dentists may occasionally be seen as 'paternalism', but it may also be argued that dentists are also able to emphasise and enforce their autonomy more or less at will. Although patients have the right and autonomy to decide which treatment to undergo, to defer treatment decisions, and to decline any suggested treatment that they may see unsuited them (Fox, 1990, Stirrat and Gill, 2005). These patients often do not interfere with the dentist's trust, autonomy and respect (Coggon and Miola, 2011). Finally, the social costs of implants may be regarded as an important factor that could influence decisions to have implant therapy. This conflict reiterates the significance of shared decision making including providing multiple treatment options, introducing relevant treatment information, offering options to defer treatment decisions and confirming patients understanding. Therefore, if we hope to avoid such a conflict, it may be worth considering these aspects of shared decision making during the consultations.

4.4.2. The concept of authority and decisions to have dental implants

This study demonstrated that dentists did rely heavily on the failure of alternative treatments such as fixed bridges. They frequently claimed that implants would improve the oral health of patients, although dentists rarely discussed the failure of implants (see page 151 in Chapter Three). Even though several functional and aesthetic disadvantages are related to dental implants (see Chapter one under the section 1.3.2. The Disadvantages of dental implants), however dentists in this study not only believed that implant therapy was the best treatment option, but they also often failed to evaluate patients' preferences and values. This then led to discussions with patients were implant treatment was presented as the best option for them. In this respect dentists were using their authority to shape the decision to go for implants. However, evidence suggests that dentists who believe merely on their own views about the best treatment choices may be disappointed by patients' satisfaction and acceptance of their

treatment. The high levels of patient satisfaction was also observed when the dentists evaluated patients' views as a significant guide in making dental treatment decisions (Lefer et al., 1962). Accordingly, these data suggest that better patient-dentist communications may be achieved during consultations if greater emphasis on evaluating patients' views, preferences, needs and values was given. This may be achieved by focussing training on dentists' and patient's communication skills as well as improving the clarity of the information in consent forms (Stanley et al., 1998, Vahdat et al., 2014).

On the other hand, patients who participated in this study also commonly believed that dentists' ideas to go with implants were reasonable. These patients relied on an assumption that their dentist was the expert and that they had sufficient experience in placing implants and/or sufficient knowledge and skills in general (See page 149 in Chapter Three). Many patients appeared to believe in their dentists' authority to make the best decisions. This is consistent with the evidence and suggests that patients frequently demonstrated a tendency to defer to their dentist's authority. Such deference is of course entirely reasonable, after all the dentist is in the position of being an expert (Peräkylä, 2002). However it might also be that patients' thoughts concerning the authority of the dentist may be because of a lack of sufficient information around possible treatment options. It might be the case that if these patients were provided with the possible dental choices and supportive treatment information including benefits, risks, and side effects of implant treatments; they might not so easily defer to the dentists' authority. Indeed they would be better able to negotiate their treatment preferences and needs (Lukes, 2005, p16-21, Førde and Vandvik, 2005). Evidence has demonstrated that providing patients with better and sufficient treatment information could enable active involvement of patients in the treatment decisions (Stanley et al., 1998). This involvement of patients has shown to increase the patients' satisfaction, improve their well-being and support making the right decision (Britten et al., 2000, Vahdat et al., 2014). Careful consideration needs to be given to the role of the dentist's authority and power in dental consultations. In some instances it is important to preserve this authority in others this authority should be carefully managed. These data suggest that there is a need to improve patients awareness of their rights to participate in treatment decisions and at the same time to advance our understanding of Saudi dentists' skills to share all of the relevant treatment information with their patients (Ha and Longnecker, 2010).

4.4.3. The concept of manipulation and decisions to have dental implants

Patients cannot make treatment choices unless they are provided with multiple treatment choices and sufficient treatment information including detailed descriptions of benefits, risks, and side effects of the treatment (Coulter et al., 1999, Coulter et al., 2011, Edwards and Elwyn, 2009). Though, the current study indicated that dentists frequently failed to describe the benefits, risks, and the relevant information of the implant therapy to patients. Dentists often claimed that either

this information had been stated in the patients' consent forms or the patients did not ask them about it (See page 133 in Chapter Three). However, it should be emphasised that the risks of providing implants (aesthetical disadvantages of implants, possibility of injuring posterior alveolar nerve, association of implant's failure with smoking and poor oral hygiene) were not introduced in the consent forms. Though, a really small statement in the consent forms indicated, "*it is difficult to predict the bone's ability to integrate with the implant because of the individual differences. Therefore, the implant may not integrate and then it may need removal or replacement with other implant after taking my consent*" was introduced (see Appendix 9). In other words the information provided to patients was not balanced. Dentists frequently stated that the information sheet covered all relevant details and as a consequence dentists may have been unconsciously involved in a process that was manipulating patients in favour of decisions to have implants. Manipulating patients by withholding or presenting minimal information about the risks of the implants fits in disagreement with the evidence that emphases on the importance of providing sufficient treatment information to the patients (Førde and Vandvik, 2005). Improving the provision of such information would enhance patients' rights to participate and enable greater respect for the patients' autonomy (Stirrat and Gill, 2005, Varelius, 2006, Souchek et al., 2000, Buchanan and Brock, 1989).

Manipulating patients may also result in an increase in patients' dissatisfaction (Narby et al., 2012). Identifying the possible occurrence of manipulation in the consultations results in establishing 'hidden decisions' in consultations. Nonetheless, several important issues may override this issue. These include: first, increasing patients' awareness of their rights to participate in treatment decisions (Souchek et al., 2000). Second, emphasising the clarity of the information included in patients' consent forms (Souchek et al., 2000). Third, introducing multiple treatment choices besides providing patients with relevant treatment information including the benefits, risks, and the side effects of treatments (O'Connor et al., 1999, Britten et al., 2000, Edwards and Elwyn, 2009). Finally, improving dentists' awareness and communication skills may also reduce the possible occurrence of manipulation in consultations (Stanley et al., 1998, Campbell et al., 2004).

4.4.4. The concept of influence and decisions to have dental implants

This study also demonstrated that some dentists overtly sought to convince patients to go with implants. It is important to indicate here that in all instances where this happened there wasn't any implicit threat. Dentists maintained that implant therapy was the only option for these patients and failed to introduce possible alternatives (see page 147 in Chapter Three). Similar findings have been uncovered in relation to the provision of implants treatments in Holland. Previous research has demonstrated that Dutch patients did not commonly receive information

about risks or possible alternative treatments (Schouten and Friele, 2001). Although there are obvious cultural differences between Saudi Arabia and Holland it is certainly not desirable to influence the patients into having treatments that they might not be truly delighted with (Reid, 2009). This is in keeping with debates about the ethical basis for appropriate decision making in clinical practice.

Beauchamp and Childress (2001) maintained that a good decision making process involves establishing a discussion by describing the patient's issue and then expressing the suggested treatment plan including providing possible treatment choices. They argued that medical professionals should respect the patient's autonomy and confirm the patient's understanding of the treatment information provided. Dentists should therefore offer to respond to patient's questions with an emphasis on actively supporting the patient to make shared decisions (Beauchamp and Childress, 2001). Thus, an important principal involves dentists undertaking the chance that the patients may not accept the proposed decision or treatment plan. In such cases, dentists should not attempt to improperly influence the patients, especially towards to the best interests of the dentist. Such an attempt may result in the possibility of violating their boundaries with their patients. Conversely, dentists must respect patients' autonomy, the patient's rights to participate in the treatment decisions. Dentists must also clarify any misunderstandings or missing information, and finally take evidence based decisions (Beauchamp and Childress, 2001, Reid et al., 2007, Reid, 2009).

This study has shown that patients were reliant on dentists' experiences and skills to make treatment decisions. This indicates that these patients may believe that they have no power to contradict dentists or to refuse treatment. They may also not be willing to take the responsibility of their treatment decisions (Lukes, 2005, p26). These two possibilities of influencing patients' decisions imply that patients desired information in consultations, however they did not want to undertake the responsibility to make the clinical decisions (Beisecker and Beisecker, 1990). Although these possibilities are 'covert' and may be difficult to prove, the low levels of patient participation and patients' lack of knowledge about implant therapy and other alternatives indicate that there is some support for this conclusion.

The findings of this study also reveal that some dentists did not only hide important information such as the risk of the implant, but also failed to introduce alternative treatments. In some respects it might be argued that this is 'authoritarian' behaviour since dentists are making treatment decisions in behalf of patients by hiding 'covert issues' associated with patients' health care (Buchanan and Brock, 1989). The influence of patients' decisions and the ignorance of their autonomy may result in several complications if the treatment received is unsuccessful. These include: increasing patients' dissatisfaction, rising anxiety and reducing their oral health

related quality of life (Harms et al., 2004, Martin et al., 2005, Renton, 2010, Narby et al., 2012). Patients articulated a strong desire for treatment information from dentists (Beisecker and Beisecker, 1990). It has been argued that patient satisfaction increases when patients' autonomy is considered central when deciding on the aesthetics of dentures (Lefer et al., 1962). These data reiterate that it is important to engage patients in effective communication during the dental consultations that include descriptions of the process of the surgery, the benefits, risks and side effects of dental treatments. Such effective patient-dentist communications have been shown to improve identification of the patients' preferences, needs, perceptions, and increases their satisfaction (Vahdat et al., 2014, Ha and Longnecker, 2010).

To sum up, if the desire is to facilitate the shared decision making and moderate the dentist's power and influence in consultations, several suggestions may be useful. These include: firstly, improving the dentists' awareness and interaction skills around ethical and legal issues (Stanley et al., 1998, Campbell et al., 2004). Secondly, the information included either in patients' consent forms or provided by dentists should involve a simple, clear and detailed description about dental therapy (Souchek et al., 2000). Thirdly, improving the patients awareness of their rights to contribute in the decision making process concerning their dental therapy. Finally, and if required, perhaps these findings also indicate that a specific dental implant decision aid ought to be developed focussing on improving dentist-patient interactions (Ha and Longnecker, 2010, O'Connor et al., 1999).

4.4.5. The concept of Coercion and decisions to have dental implants

This study showed the thoughts of some dentists that elderly patients with lower educational level might not fully grasp what has been discussed with them in their consultations. These dentists argued against the patient's wishes and made implant decisions even though these patients did not want an implant and would have been happier with a new bridge. These dentists claimed that they did not want to confuse elderly patients with a lot of information around the treatment to avoid making these patients worried around their health (See page 117 in Chapter Three). This is consistent with the evidence suggesting that understanding treatment information can be moderated among people who have lower educational levels (Nichita and Buckley, 2007). Yet there is reasonable evidence to advocate that elimination of health inequalities must be achieved by eradicating the impact of social inequalities including social classes, educational levels, employments, and socioeconomic status on decision making with health professionals (Hofrichter, 2003, p12, Marmot et al., 1997). Accordingly these findings suggest not making treatment decisions based on the patients' social classes, educational levels, employments and socioeconomic status.

This consultation in (Chapter three, page 117) also reveals that the patient may be coerced and deceived through hiding relevant treatment information and refusing her the best option which might have been a new bridge. In other words, the dentist in this consultation appeared to prefer making 'paternalistic' treatment decisions resulting in the coercion of the patient. However the key purpose of patient consent is to assure that the patients are "*neither deceived nor coerced*" (O'Neill, 2003). Evidence has demonstrated that denying dental treatments based on patients' educational levels could be a direct health inequality (Hjern et al., 2001, Eikemo et al., 2008, Slade et al., 1996). Nonetheless, it may well be argued that denying dental treatments to the patient in the case discussed (page 117) because she does not understand what is happening to her seems to be an ethical issue associated with the dentist paternalism and the patient autonomy. This will be explained next.

Paternalism defined as "*the interference with a person's liberty of action justified by reason referring exclusively to the welfare of the person being coerced*" (Dworkin, 1988, p121). Paternalism in health care has been shown to have significant limitations such as neglecting legal and ethical rights of patients' to participate in their treatment decisions (Phil and Vincent Icheku, 2011). Paternalism is also associated with the dentist's power in the decision making process through ignoring the patients' autonomy and rights to participate in the treatment decisions (Buchanan, 2008). On the other hand, autonomy defined as a moral and ethical principle represents the right of 'self-determination' (Chewning et al., 2012). Brock and Wartman (1990) maintained that shared decision making respects "*the patient's right of self-determination but does not require that the patient's preferences be simply accepted when they seem irrational*". However, the authors indicated that deciding whether the patient's preferred choice is rational or irrational can be really difficult. They concluded that achieving the patient's preferred option requires *shared participation of both patient and dentist in the decision making process*. Thus, the dentists take their clinical knowledge, training, experience and skill. While patients take their knowledge, needs, preferences and values (Brock and Wartman, 1990). Even though an irrational treatment option may be insufficient to determine and justify the patient's incompetence, yet the patient has still the legal right and the final decision to decline any treatments (Brock and Wartman, 1990, Stirrat and Gill, 2005). It may therefore be argued that individuals' autonomy must always be appreciated without any exceptions. However, individuals' autonomy must be accompanied with the 'harm principle' beside an emphasis on making evidence based dental decisions (Richards and Lawrence, 1998, Ford et al., 2003, Edwards and Elwyn, 2009). Accordingly, it is frequently defensible to prevent or restrict the actions of individuals who are interfering and harming or threatening harm to themselves or others (Ozar and Sokol, 2002, p53-57, Buchanan, 2008). For example, from a public health perspective, controlling and restricting several causes of morbidity and mortality such as

smoking and alcohol consumption is challengeable. Though a rigorous ethical justification was established for interventions intended to change these unhealthy 'harm or threatening to harm' behaviours (McGinnis and Foege, 1993). Consequently, in-order to restrict the use of the paternalistic decisions and the concept of coercion in dental consultations due to its limitations (Phil and Vincent Icheku, 2011), the clinical-ethical maxim suggests respecting the patients autonomy, considering patients as competent and having the right to participate in their treatment decisions unless those patients may harm or threaten to harm themselves or others (May, 1998, Nichita and Buckley, 2007, Buchanan, 2008). Additionally, raising the patients awareness of their rights to participate in treatment decisions, introducing possible dental alternatives, and relevant information to the patients including the process of the surgery, the benefits, risks and side effects of the implant therapy may also be important (Edwards and Elwyn, 2009, Coulter et al., 1999).

Taking into account the previous evidences about the dentist paternalism and the patient autonomy, and with respect to the consultation discussed in (page 117), it could be concluded that the dentist's evaluation of the patient's suitability for implants may be irrational for the following reasons. First, the patient clearly would not want to 'harm or threaten to harm herself' or other'. Second, the patient has the right to make her preferable treatment choice and this choice must be attained unless it challenges the evidence-base. In other words, the dentist neglects the autonomy of the patient. Third, in the literature it is generally assumed that a patient is competent till proven incompetent (May, 1998, Nichita and Buckley, 2007). Finally, the consultation also involves hiding relevant treatment information and the final decision that was made was based on the patient's age and her low educational level. There is therefore a risk that the decision that was made had unethical elements to it and also reflected some degree of health inequality. This suggests that denying dental treatments should be based on several factors:

- Providing multiple treatment options.
- Providing patients with relevant treatment information including the benefits, risks and side effects of treatment.
- Confirming the patients' understanding about the information provided.
- Always keeping in mind that the patients are competent until proven incompetent.
- Respecting patients autonomy and their rights to participate in the decision making process unless they may harm or threaten to harm themselves or others.

Noticeably, all these previous factors are key aspects of shared decision making (Edwards and Elwyn, 2009, Thornton et al., 2003, Singh et al., 2010). Nevertheless, "*The decision of a competent patient is not necessarily a good decision (and, hence, may have to be overridden*

after all); and the decision of an incompetent is not necessarily a bad decision (and, hence, may have to be realized after all)" (Nichita and Buckley, 2007).

4.5. Ethical consequences associated with power and decision making

Ignoring the role of power in clinical decision making has several important consequences. These include: firstly, disregarding the patients' autonomy and competency. Secondly deactivating the patients' engagement concerning their treatment preferences and decisions. Lastly increasing the chances of conflicts between dentists and patients, which may impact on increasing the patients' dissatisfaction and reducing their oral health related quality of life. This section aims to discuss these ethical consequences associated with the role of power in clinical decision making.

The first ethical consequence associated with power and decision making is disregarding the patients autonomy and competency. There is ample evidence suggests that "*Patients have not only the right to choose, but also the right not to choose or even to defer their treatment decisions*" (Ritter and Hoffman, 2011, p 151). Researchers of medical ethics have emphasised individual autonomy this includes the right to participate in and, where they choose, to defer their treatment decisions (Stirrat and Gill, 2005, Fox, 1990). This is particularly important when we take into account the limitations of paternalistic decision making (Phil and Vincent Icheku, 2011). None of the patients who participated in this study were allowed the option to postpone their decisions and take more time to think. This may indicate that the patients' autonomy and competency to be involved in their treatment decisions was not considered. Accordingly, patients autonomy, competency and rights to participate or defer treatment decisions were key components of shared decision making (Edwards and Elwyn, 2009, Coulter et al., 2011). Consequently, these data suggest the need to focus on developing the Saudi dentists interaction skills and raising the patients awareness of their rights and autonomy to participate or defer their treatment decisions (Harms et al., 2004).

The second ethical consequence associated with power and decision making is deactivating the patients' engagement concerning their treatment preferences and decisions. This is important because patients' engagement in their treatment decision has revealed several advantages such as increasing both patient and clinician satisfaction, improving the patients knowledge about their treatments, and better health outcomes (Edwards and Elwyn, 2009, Wirtz et al., 2006). Accordingly, if the patients' engagement is deactivated due to the use of power during dental consultations, these advantages may not be achieved.

Lastly, the current study did uncover some evidence that dentists were hiding treatment information and providing insufficient or poor treatment information either by themselves or

through consent forms. These findings were quite similar to other dental works conducted in Italy and Brazil (Conti et al., 2013, Petruzzi et al., 2013). These aspects may have ethical and clinical complications on the patients' healthcare such as increasing the patients dissatisfaction if the treatment received is unsuccessful, increasing the chances of conflicts between dentists and patients, and reducing the patient oral health quality of life (Allen et al., 1999, Renton, 2010, Narby et al., 2012, Sharma et al., 2011, Lal, 2003). Thus, these data may reiterate the emphasis on providing relevant treatment information to the patients and activate their roles to participate in the decision making process.

To sum up, disregarding the patients autonomy, competency, and deactivating their roles in the decision making process are key ethical consequences of the use of power in the decision making process. However, such ethical consequences may be overridden by focusing on developing the Saudi dentists communication skills, activating the patients involvement in their treatment by raising their awareness of their rights and autonomy to participate in and/or to defer their treatment decisions. Finally revising current consent forms to provide clear and sufficient treatment information including descriptions of benefits, risks, side effects and other possible alternatives would significantly act to resolve these problems (Harms et al., 2004, Brands, 2006, Sondell et al., 2001, Sondell and Söderfeldt, 1997, Edwards and Elwyn, 2009).

4.6. The "puzzle" of patient satisfaction in relation to implant decisions

Although it was not the aim of this study to evaluate patient satisfaction about the implant decisions. There are some comments on the patients' satisfaction that may be interesting to discuss. Patients who participated in this study were, with the exception of one patient, satisfied with the services they received. Aspects including patient's confidence in the dentists' skills and experience, dentists' professional dealing with patients, and the fact that the implant therapy was provided free of charge were all significant factors in reports documenting a high level of patient satisfaction. Nonetheless there was no ideal shared decision implemented in any of the consultations observed. Indeed, marginal shared decision making alongside paternalistic and interpretative models, particularly among elderly patients who had lower educational levels were the most common. It could be argued that Saudi patients may in fact prefer paternalistic, interpretative and marginal shared decisions. This is possibly because the patients who participated in this study had an obvious lack of knowledge concerning implant therapy and its alternatives. They also commonly did not recognise that dentists used their power and authority to shape treatment decisions without considering the patients autonomy and their right to participate in the treatment decisions. This clearly implies that these patients could make limited contributions to the decision making process. Insufficient treatment information and not introducing possible alternatives may have significantly affected the level of patient satisfaction

with the decisions. It may be the case that if Saudi patients were provided with sufficient treatment information including the process of the surgery, benefits, risks, and side effects of the implant therapy besides receiving multiple treatment choices, they would be able to actively involve in the decision making process and thus be able to decide which treatment they prefer. This means that the patients may not always have consented to have implants and may choose from other possible choices. If this is true, the levels of patient satisfaction with the decisions may have changed.

This study also revealed that there were some issues relating to patient dissatisfaction over the service provided. These included delays in the implant appointments and dentists appearing not to consider their preferred treatment. These findings are quite similar to other work in dentistry that confirm long waiting time and delays in the appointments were key causes of patients' dissatisfaction (Gürdal et al., 2000, Turris, 2005). However, it is advocated that establishing proper and respectful dentist-patient interaction and providing sufficient treatment information may launch satisfying dental services (Vahdat et al., 2014, Britten et al., 2000). In this respect, it might be argued that if the patients were clearly offered the reason of delay in the appointments such as highlighting that implants require a period of three to six months for integrating with the bone, such reason would be logical and may limit the patients dissatisfaction. It is for this reason that the shard decision making emphasises on providing sufficient treatment information and confirming patients' understandings (Thornton et al., 2003). The next section describes the strengths and limitations of this study.

Please see Table 9 below, which provides a summary of discussions on the power and decision making approaches.

Table 9 Summary of discussions on decision making and power approaches

Parameter	Outcomes/findings	How this could be improved
The limits of shared decision making (SDM)		
Increasing the patient awareness to participate in their treatment decisions.	Low levels of Saudi patients' participation were commonly recognised in the consultation.	This seems to be a key issue that should require further investigation through enabling better communication and discussion between patient and dentist.
Cultural influences and low level of participations.	Cultural influences were identified in several dental consultations. This could be observed in greetings and interactions between patients and dentists.	Considering cultural influences when proposing to raise patient awareness to participate in treatment decisions would be important. For example, if a decision aid was developed to improve patient awareness of their rights to be involved in implant decisions, it would be critical to consider the cultural influence of the setting being examined by specifically including information that is sensitive to patients' thoughts and religion.
The patient-dentist relationship and communication skills.	Dentists often did not attempt to initiate detailed interaction and build rapport with their patients. When this did happen it was characteristically brief.	Establishing interactions that involve detailed discussions of all elements of the decision at hand along with building a congenial rapport with patients minimises patient misunderstandings, improves identification of patient preferences, needs, perceptions, and increases their satisfaction. This may be achieved by focussing training on the dentists interaction skills and perhaps developing decision aid to support patients engagement in their treatment decisions.
Providing patients with treatment information.	Possible benefits, side effects and the process of the implant surgery were not continually provided to the patients. Additionally, describing any risks related to the implants was exceptional throughout all the consultations observed.	Providing patients with relevant treatment information guides the final diagnosis and supports making the right decision. Evidence also suggests that introducing the benefits, side effects and the process of surgery to the patients increases patient satisfaction and reduced unwelcomed outcomes. This suggests that perhaps developing a specific implant decision aid would help to improve patients knowledge and provide patients with relevant information.
Enabling discussions on possible	Dentists rarely introduced two treatment options to their patients. These were either	It is important to engage with patients in their treatment decisions. This engagement should include sharing relevant information and introducing possible

dental treatments.	implants or fixed bridges.	treatment options as this may; for example, moderate the blame between patient and dentist if the treatment received is unsuccessful.
Confirming patients understandings	Patients often understood what was discussed with the dentists and their understanding was frequently confirmed.	Confirming patients' understanding is significant in shared decision making because it demonstrates better adherence to treatment plans, increasing patients' satisfaction, and reducing undesirable outcomes.
Evaluating the patients expectations	Explorations of patients' expectations about implant therapy seldom happened.	Evaluating patients' expectations during consultations has been shown to increase patient satisfaction, improve care and treatment compliance. If patient expectations in relation to implant treatment are impractical, the chance of patient dissatisfaction may appear. Thus, possible difficulties related to the implant therapy including risk of failure and the fact that implants require maintenance should be clearly underlined to the patients. It may be valuable to increase Saudi dentists' awareness and skills in evaluating patient expectations of implant care.
Clarity of information provided in the consent forms.	Some patients argued that consent forms did not include any information about the process of implant surgery. These patients did not seem to have sufficient information about the therapy even when it was considered that they had read the consent forms.	Reviewing and developing the current consent forms to include clear information about the risks and the process of the implant surgery may be warranted. This would enable the activation of the patients' role to engage more actively in their decisions to have implants.
Patients' previous experiences and lay referrals in relation to the implant decisions		
Patients' previous experiences with implant therapy.	This study showed that the patients' previous experiences and thoughts of implant therapy might have reduced the need for detailed discussions.	Evidence based dentistry and shared decision making emphasis on the significance of providing patients with sufficient information including the benefits, risks and side effects of the treatment, clarity of the consent forms and providing patients with multiple treatment options. All these aspect may improve the decision making process and hence impact positively on the final outcomes.
Patients lay referrals in relation	Some patients refer to experiences of their families, neighbours, or friends with implants.	It might be argued that lay referral should not guide final treatment decisions. Final treatment decisions must be evidence based and shaped according to

to implants.	They maintained that their families, neighbours, or friends had good experiences and were satisfied	sufficient treatment information, with emphasis on patients' preferences, values and needs. 'Lay referral' therefore may be regarded as an important element of the decision making process, but this in turn may not be the whole part.
Power and decision making in relation to dental implants		
Clinical judgments and patients choice 'overt conflict'	An overt conflict was operated through the dentist clinical judgment over the patient best choice (see page 99). The patient wants an implant but the dentist believes that the patient's tooth could be treated with "root canal treatment".	Even truly clinical judgements of dentists may occasionally be seen as 'paternalism', but it may also be argued that dentists are also able to emphasise and enforce their autonomy more or less at will. This conflict reiterates the significance of shared decision making including providing multiple treatment options, introducing relevant treatment information, offering options to defer treatment decisions and confirming patients understanding. Therefore, if we hope to avoid such a conflict, it may be worth considering these aspects of shared decision making during the consultations.
The concept of authority and decisions to have implants	Some dentists did rely heavily on the failure of alternative treatments such as fixed bridges. They frequently claimed that implants would improve the oral health of patients, although dentists rarely discussed the failure of implants (see page 151).	Careful consideration needs to be given to the role of the dentist's authority and power in dental consultations. In some instances it is important to preserve this authority in others this authority should be carefully managed. There is a need to improve patients awareness of their rights to participate in treatment decisions and at the same time to advance our understanding of Saudi dentists' skills to share all of the relevant treatment information with their patients.
The concept of manipulation and decisions to have implants	Some dentists frequently failed to describe the benefits, risks, and the relevant information of the implant therapy to patients (see page 133). Possible risks of providing implants (aesthetical disadvantages of implants, possibility of injuring posterior alveolar nerve, association of implant's failure with smoking and poor oral hygiene) were also not introduced in the consent forms.	Patients cannot make treatment choices unless they are provided with multiple treatment choices and sufficient treatment information including detailed descriptions of benefits, risks, and side effects of the treatment. Manipulating patients may also result in an increase in patients' dissatisfaction. However, several important suggestions may override this issue including increasing patients' awareness of their rights to participate in treatment decisions, emphasising the clarity of the information included in patients' consent forms, introducing multiple treatment choices besides providing patients with relevant treatment information including the benefits, risks, and the side effects of treatments, and lastly improving dentists' awareness and communication skills

		may also reduce the possible occurrence of manipulation in consultations.
The concept of influence and decisions to have implants	Some dentists overtly sought to convince patients to go with implants. It is important to indicate here that in all instances where this happened there wasn't any implicit threat. Dentists maintained that implant therapy was the only option for these patients and failed to introduce possible alternatives (see page 147).	If the desire is to facilitate the shared decision making and moderate the dentist's power and influence in consultations, several suggestions may be useful. These include: improving the dentists' awareness and interaction skills around ethical and legal issues, the information included either in patients' consent forms or provided by dentists should involve a simple, clear and detailed description about dental therapy, and finally, perhaps these findings also indicate that a specific dental implant decision aid ought to be developed focussing on improving dentist-patient interactions.
The concept of coercion and decisions to have implants	Some dentists believed that elderly patients with lower educational level might not fully grasp what has been discussed with them in their consultations. These dentists argued against the patient's wishes and made implant decisions even though these patients did not want an implant and would have been happier with a new bridge (see page 117).	In order to reduce the misuse of power and the coercion in the implant consultations, several aspect of the these consultations may be developed by: Providing multiple treatment options, providing patients with relevant treatment information including the benefits, risks and side effects of treatment, confirming the patients' understanding about the information provided, always keeping in mind that the patients are competent until proven incompetent, and lastly respecting patients autonomy and their rights to participate in the decision making process unless they may harm or threaten to harm themselves or others.

4.7. Strengths and limitations of this study

This study is the first detailed study of its kind exploring the decision making process in relation to the provision of implant therapies. There are a number of strengths and weaknesses of the current study.

4.7.1. Strengths of the study

Existing coding systems for examining shared decision making in consultations have been developed in cancer settings and focused either on clinicians' or patients' behaviours. The present study develops a specific framework for examining shared decision making in dental consultations based on combining the Singh et al (2010) and the DEEP-SDM frameworks (Singh et al., 2010, Clayman et al., 2012) (see Chapter one under the section 1.5.4. Examining the shared decision making model (SDM) and Appendix 1). This coding framework is the first of its kind and is designed to cover both dentists' and patients' contributions to the decision making process. In addition to this, another framework, specifically for the evaluation of dental implants has also been developed. This framework enables an examination of the role of power and related concepts such as authority, manipulation, coercion and influence in such consultations (see Appendix 8).

It is evident that employing two ethnographic research methods (participant observation and interviews) as a part of the research strategy not only provided entry into this new social arena, but also produced rich detail in explanations and descriptions (Hammersley and Atkinson, 2007, p14). The use of naturalistic methods in some respects increases the validity of the results because it provides detailed information about what actually is happening in the consultations. On the other hand interviewing patients and dentists whilst exploring their perspectives around the decisions being taken enables the evaluation of their perspectives during the decision making process during dental consultations (Fetterman, 2010, p10-12). The combination of both methods through combining the observation of everyday life alongside interviews enabled this study to examine the differences between what individuals claim they do and what they really do (Agar, 1996). This, for example, can be seen in the present study where some dentists claimed that they did not influence their patients. Nonetheless the observations demonstrated that dentists were using their influence to shape their patients' decision making process by not introducing sufficient treatment information and other possible alternatives. Identifying such difference in participant's thoughts may be regarded as one of the strengths of this study.

There is evidence that looking at particular phenomenon in dissimilar techniques may strongly increase confidence in the obtained results (Patton, 2014, p316-318). To some extent it could be argued that this is the case with the present study which involved a degree of triangulation in

data analysis. This includes: the Ritchie and Spencer technique of analysing qualitative data (Ritchie and Lewis, 2003), the inductive thematic analysis (Elo and Kyngäs, 2008), and the typology strategy of qualitative data analysis (Berg and Lune, 2014). What this means is that data form the consultations and interviews was categorised using the coding frameworks developed for this study by employing the Richie and Spencer technique of identifying patterns in qualitative research. Then the indicative thematic framework analysis, where data moves from the specific to the broad so that specific cases are detected and subsequently merged into a broad report, is employed (Cavanagh, 1997, Elo and Kyngäs, 2008, St. Pierre and Jackson, 2014). Lastly the typology strategy of qualitative research is used to group similar consultations (objects), decision making models (events), dentist- patient interactions (actions), implant settings (places), and patients and dentists (individuals) (Berg and Lune, 2014). Employing this triangulation technique in the data analysis enabled the study to explore the decision making process in the dental consultations, to examine to which degree there has been shared decision making, and to examine the role of power and related concepts in the decision making process about the dental consultations. Therefore, this triangulation technique of analysing the data may improve and strength the confidence of the findings of this study (see Chapter two under the section 2.9. Data Analysis).

4.7.2. Limitations of the study

The first limitation of this study may be the fact that both patients and dentists are from a particular area in Saudi Arabia and consequently the results of this study cannot be generalised to other dental settings. Additionally, the implant therapy was being provided free of charge. This would mean that the findings of this study might not be applicable to other instances where payments are being demanded for implant therapy. In addition it was difficult to observe the third dimensional view of power in this study. This study seeks to provide a description of culture and context, thick descriptions and explanations of the results, and detailed information associated with data collection, management and analysis (Graneheim and Lundman, 2004). Although it is the readers' decision if the results are transferable to another context or not (Polit and Beck, 2010). An attempt has however been made to provide enough detail for readers to 'make sense' of the studied phenomena and let readers assess the degree to which results may be applicable to new settings (Firestone, 1993).

The translation of the contributions of both patients and dentists in the consultations and interviews from Arabic to English may be another limitation of this study. Although it may not be possible to find a third party to verify the translation and confirm its accuracy, however this study employs the Regmi et al. (2010) translation technique that may improve the accuracy of

the context translated. This translation technique was utilised in this study to improve the translation of the content of the consultations and ensure accuracy (see the section 2.3. Possibilities and challenges in Chapter two).

This study records only the verbal interactions between patient and dentist and neglects completely recording non-verbal interactions. This may mean that some of the meaning has been lost between patients and dentists. The study also did not use a video recording technique due to the nature of Saudi individuals, particularly females, would disallow them from agreeing to be video recorded because of cultural and religious reasons that would interfere with video recording.

The possible impacts of the researcher's reflexivity on the data collection and analysis may be a further limitation of the present study. It was evident that this bias is non-avoidable part of any research project because it is difficult for the researcher to remain separate from the subject area being examined (Parahoo, 2006, p326, Allen, 2004). An effort has however been made to minimise possible bias associated with the process of the data collection and analysis (see the section 2.9.4. Reflexivity and qualitative research in Chapter two).

Patients who participated in this study were telephone interviewed a week after the consultations. However, the use of telephone interviews a week after the consultations may highlight an issue of recall timing, as those patients may not be able to recall and fully reflect on specific details of their implant experiences (Lapan et al., 2011, p 82-83). Nevertheless, it could be highlighted that an attempt has been made to interview some of the patients immediately after their consultations.

Chapter (5)

Conclusions and Recommendations

Chapter Five: Conclusions and Recommendations

5.1. Conclusions

This study explores the decision making process associated with providing patients with dental implants. The objectives are to describe the patient and dentist contributions to the decision making process involved in implant therapy. Specifically the study explores the degree to which shared decision making was employed, and to examine the role of power in the consultations about dental implants. Three types of shared decision-making are recognised. These are: ideal, typical and marginal shared decision making. No implant consultation involved ideal shared decision-making. Key aspects of shared decision-making were either absent or marginally achieved. These includes: patients frequently not being aware of possible dental choices, not being supported with sufficient treatment information. In addition patients' understanding of dental implants were frequently never confirmed. Patients' preferences, values, needs, and expectations for implant therapy were not commonly evaluated. This is despite the fact that these aspects of the decision making process have been shown to develop the patients' self-esteem, improve the quality of healthcare, increase the satisfaction of both dentists and patients, increase the patients confidence, reduce the patients' anxiety and develop the patients' abilities to deliberate about their health problems in more positive interactions with their dentists (Souchek et al., 2000, Wirtz et al., 2006, Edwards and Elwyn, 2009, Singh et al., 2010, Clayman et al., 2012).

The consultations observed were more about evaluating dentists' perspectives of the patients' suitability for implant therapy rather than sharing relevant treatment information and making joint decisions. Although, there was no literature that had examined the decision making process in consultations, however the results of the current study are quite similar to previous medical research that shows present practices do not support shared decision making (Elwyn et al., 2003, Singh et al., 2010).

The findings of this study demonstrate evidence that low levels of participation are common in the decision making process in this part of Saudi Arabia. In addition it considers that several additional factors may be behind lowering the level of the patient participation in dental consultations including: the 'cultural influences'; the lack of knowledge in Saudi patients regarding their competency, autonomy and rights to participate or defer their treatment decisions.

In addition the study found that the concept of 'lay referral' was a recognised dimension of various different consultations. Some patients referred to discussions about the experiences of their families, neighbours, or friends with implants. They maintained that their families,

neighbours, or friends have good experiences and are satisfied with implant therapy. However, final treatment decisions must be evidence based and shaped according to sufficient treatment information, with emphasis on patients' preferences, values and needs (Richards and Lawrence, 1998, Stanley et al., 1998, Espelid et al., 2006, Chewning et al., 2012). 'Lay referral' may therefore be regarded as an important new element of the decision making process that requires further exploration. This in turn may in fact not be the whole picture.

The findings of the current study show that power and associated concepts including authority, influence, manipulation, coercion and hidden decisions operate either through 'overt' or 'covert' forms in several dental consultations. This study illustrates 'overt' conflict regarding patient autonomy and the dentist's paternalism. Such conflicts appear to first, develop when patients and dentists fail to appreciate each other's autonomy. Second, there was evidence of poor dentist-patient communication and poor provision of treatment information. Lastly the social costs of the implant therapy were never really considered in detail.

The results of the study reveal that some dentists use their clinical authority to shape the decision to go for implants. These dentists rely deeply on the failure of alternative treatments such as fixed bridges. However, there was evidence that some patients would in fact have preferred a fixed bridge but those patients were not allowed to go for that treatment. A consequence of this might be an increased possibility of patient dissatisfaction (Lefer et al., 1962). On the other hand, some patients commonly believe in the dentists' authority to make treatment decisions for them. They rely on either the sufficient experience of dentists or dentists' knowledge and skills with respect to implant therapy.

This study that several dentists manipulate the patients' decisions to go for the implant therapy through hiding important information such as the risks and the process of the implant surgery. While those patients who had been manipulated did not recognise the use of manipulation by their dentists.

The present study recognises the use of the concept of influence without an implicit threat in several dental consultations. The dentists who use this concept not only fail to introduce sufficient treatment information and other possible alternatives such as over-dentures, but they also neglect respecting the patients' autonomy and rights to participate or defer the treatment decisions (Beauchamp and Childress, 2001, Reid et al., 2007, Reid, 2009). On the other hand, some patients recognise this influence of their dentists, while other patients do not identify that the disadvantages, side effects of the implants and other possible alternatives are not introduced.

The findings of this study reveal that some dentists perhaps prefer making 'paternalistic' treatment decisions and 'coerce' the patients to the dentists' best interests. This can be clearly

seen among elderly patients 'above 55 years' who have lower education levels. Such consultations, where paternalistic and coercion are used, seem to first, develop when patients may not willing to take the responsibility of their treatment decisions. Second the dentists' may have strong thoughts on their power to coerce the patients without considering their autonomy and rights to participate in the treatment decisions. Lastly, the dentists may have robust thoughts that patients are incompetent to make treatment choices or decisions.

5.2. Implications of the study

The empirical nature of this study not only shows that key features of the dental consultations may be improved namely:

- Confirming patients understanding and evaluating their preferences, values, needs, expectations
- Providing patients with multiple dental choices which will enable better shared decision making.

Other implications include:

- Paying closer attention to the interaction between dentists and patients including building a better rapport with patients might be facilitated with greater attention to communication skills.
- Considering the cultural influences in the decision making process including aspects such as who is involved in treatment decisions, their behaviours, thoughts, religion, and expectations (Charles et al., 2006).
- This demonstrates that patients may not be aware about their rights and autonomy to engage in the decision making process.
- Power and related concepts including authority, influence, manipulation, coercion and hidden decisions operate in dental consultations.
- The consequences of power may result in increasing dissatisfaction and reductions in patients' oral health quality of life.
- There is therefore a need to pay close attention to the use of power within the Saudi context.

5.3. Recommendations for future research

- This study highlights the rarity or could be a complete absence of the dental literature that have examined the shared decision making and the role of power in the dental

consultations. Accordingly, future research possibly needs explore this relatively new territory.

- This study explores the decision making process in relation to implant therapy at one phase that is the baseline therapy. There may be a need to evaluate the decision making to the implant consultations in different phases. For example, when the patients are starting the second line implant therapy (doing the surgery) and when the patients completely receive the implant therapy (having the crowns fitted). This may be important because it is uncertain whether decisions to have implants are very similar at these three phases or if the decisions are determined by the participants experiences. This may or may not also have impacts on both patients and dentists satisfactions with the implant decisions made.
- Upcoming research may also evaluate the social cost of the implant therapy as a factor that may influence the decision making process when other cheaper alternatives are possible.
- Future research perhaps involve developing a specific dental implant decision aid that aims to increase the patients' awareness of their rights to participate in the dental decisions. This decision aid may also be trialled and assessed.
- Employing video-recording technique to capture both verbal and non-verbal communications between dentists and patients during the decision making process concerning the implant therapy may be warranted. This may not only enable a study of unspoken meaning in clinics and body language of the participants, but also may increase the validity and creditability of the study findings (Haidet et al., 2009).

5.4. Recommendations for policy

- The findings of this study may suggest an alteration to the local dental practices through supporting the patients' autonomy and rights to participate or defer their treatments decisions.
- Adopting the dental public health perspective and describing the rational of the need to more engagement of patients in their treatment decisions may be practical if the local desire is achieving the shared decision making in dental clinics (Edwards and Elwyn, 2009, Wirtz et al., 2006).
- The results of this study suggests the need to focus dentists training on interaction skills in-order to increase the chance of achieving optimal patient-dentist interactions, increasing patients' satisfaction and increasing the possibility of employing more shared decision making in dental consultations (Harms et al., 2004, Vahdat et al., 2014, van Staveren, 2011).

- Underlining the importance of presenting multiple treatment choices, the process of the dental surgery, possible benefits, risks and side effects of the implant therapy to the patients by dentists may also be highlighted.
- Reviewing the current consent forms and emphasising on the clarity, quantity, and quality of the information included in these forms may also be recommended (Ghafurian, 2009, Stanley et al., 1998).

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Appendices

Appendices

Appendix 1 Dental Implants Coding System for Examining Shared Decision Making (DI-SDM)

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

	Code	Source of the code	Description	Example
Theme 1: Establishing a problem				
1	Definition of dental implant	DEEP-SDM & Singh and colleagues	Dentist provides a description of implant treatment and procedure	"I understand that [dentist name] has sent you to me to discuss your suitability for dental implants. Implant is a screw made from titanium and inserted in the bone of the jaw"
2	Medical history reviewed	Singh and colleagues	Dentist reviews the recent medical history of the patient	"How you evaluate your health", "Have you had any medical conditions such as heart disease, blood pressure, diabetes etc.", and "Do you smoke".
3	Social circumstances reviewed	Singh and colleagues	Dentist establishes the patient's social and employment circumstances.	"Are you married? Are you working?"
Theme 2: Dentist-patient relationship				
4	Interruptions	Singh and colleagues	Consultation is interrupted by one or more phone calls or called out of the clinic.	N/A

5	Rapport building	Singh and colleagues	Dentist attempts to build rapport through social exchange or empathic responses.	"That must have been quite a shock. This may feel overwhelming now, but I'll give you some booklets to take home"
Theme 3: Research evidence				
6	Research evidence presented	Singh and colleagues	Dentist presents the evidence concerning the treatment option presented.	"We know from the research conducted that a dental implant will improve your quality of life and reduce further bone resorption".
7	Quality of the evidence presented	Singh and colleagues	Dentist comments on the strength of the evidence presented	"Only one small study has shown that a fixed partial denture is better than an implant. However, improvement in the oral health quality of life and patient satisfaction with implants is shown to be high".
8	Research relevant to the patient	Singh and colleagues	Dentist individualises the evidence to the patient circumstances.	"the study showed that men who were smoking, like you, had more chance of implant failure, then if they didn't"
9	Dentist appraisal of the data	Singh and colleagues	Dentist provides a clear recommendation based on his or her own appraisal of the data.	"In my view, there is a clear benefit from undergoing implant therapy"
Theme 4: Patient perspective:				
10	Patient asked how much information they need	Singh and colleagues	Dentist offers a range of information and determines patient's preferences.	"Alright [patient name], now some people like all the small details in relation to the treatment, while others are prefer to be given the bigger picture, what sort of person are you?"
11	Patient asked for a decision-making preference.	Singh and colleagues	Dentist asks how involved the patient wants to be in the decision.	"Would you like to have a think about what I have said and let me know what you decide, or would you prefer to let me choose a treatment option based on what I know about you, or we could decide together now what we both think is the best option?"
12	Patient understanding confirmed	DEEP-SDM & Singh and	Dentist checks that the patient has understood what was discussed	"So did that all make sense? How do you see the option in front of us?"

		colleagues		
13	Patient views sought	Singh and colleagues	Dentist checks what decisional learning the patient has	"Have you heard about the pros and cons of dental implants surgery? What do you think?"
14	Patient's expectation	DEEP-SDM	Dentist asks patient about his/her expectation from the treatment.	"What do you expect from the implant surgery?"
15	Patient's self-efficacy	DEEP-SDM	Reference to or mention of patient perceived self-efficacy to adhere to the decision by either the dentist or the patient	Dentist said "Good. Did you read and sign the implant consent form?" Patient answered, "yes, I did". Dentist said "Have you got any questions about the information on the consent form or your consultation?" Patient said, "No, I'm fine. Thank you very much".
Theme 5: Decision making:				
16	Multiple dental treatment options presented	Singh and colleagues	Dentist introduces multiple dental treatment options if appropriate	"Ok, [patient name], there are several treatment options may suits your condition, we can do fixed partial denture, removable or complete denture and dental implant, what would you prefer?"
17	Process of the surgery	DEEP-SDM & Singh and colleagues	Dentist clearly describes the process of the surgery.	"Ok [patient name], I would like to introduce the process of the implant surgery to you. The surgery process will be carried out in three stages. 1) Placing the implant, 2) healing period of three months to allow bone to integrate with implant, and 3) placing crown, Did this make sense?, Have you got any question regarding the process".
18	Side effects of dental implant discussed	Singh and colleagues	Dentist clearly states the side effects of each possible dental treatments	"Ok, if you go with implant, I would like to let you know that you may experienced some side effects of the treatment such as numbness, headache, little bleeding after the first two days of implant surgery"
19	Possible benefits of dental implant discussed.	DEEP-SDM & Singh and colleagues	Dentist clearly states the benefits of dental implants	" Ok, since I introduced the risks of implants to you, I would like also to describe the benefits of this technology. Implants have high survival rates, improving OHrQoL and high satisfaction rates".
20	Possible risks of dental	DEEP-SDM	Dentist clearly states the possible	"All right [patient name], since you are smoker and looking for implant in your mandible, I would like to let you know that there are some risks

	implant discussed.		risks of implants	of implant in your case such as increasing failure rate among smokers or injuring the IAN nerve in mandible. What do you think now? Are still interested in implant treatment or would you prefer other dental treatment"
21	Patient preferences and values	DEEP-SDM & Singh and colleagues	Dentist provides his/her own preferences and values OR makes it clear that he/she would/would not regard this to be a good option. Then dentist asks the patient about the preferences/values.	"Now, I think implants would be a suitable treatment option for you [patient name], what do you think? Do you prefer implants or a fixed partial denture? Why?"
Theme 6: Time issues				
22	Patient given an option to defer the treatment decision	Singh and colleagues	Dentists clearly describes that there is time to think about the available options before making a decision	" Ok, since you seems a bit worried about which treatment to undergo, there is time for you to go home and take this booklet with you before making a decision. It will not affect the process of the treatment".
23	Plan for the follow up	DEEP-SDM	Reference to a plan for follow-up regarding the discussed treatment option. Further information needed to reach the decision may include making other decisions, scheduling consultation with other specialist	"Brilliant. I will see you next week, to do the extraction and the implants. Take this prescription with you. Please use the antibiotic two days before surgery. Any questions?"

Appendix 2 Patient Information Sheet

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

PATIENT INFORMATION SHEET

Decisions making and dental implant treatment in Saudi Arabia

You are being asked to participate in a research study.

Please take your time to go through this information before making your decision about participating in this research or not. It is significant to know why this research project is being conducted and what it will include.

What is the purpose of this study?

This study will improve our understanding of how patients are involved in decisions concerning their dental implant treatment choices. Abdullah Alzahrani, who is a PhD student at the University of Sheffield, is conducting this project in the medical centre of the King Fahd Security College in Riyadh. Your opinions regarding making dental implant treatment decisions and how you were informed and supported when making these decisions are our main interests.

Am I entitled for this research?

You can participate in this research if you are adult and seeking to have a dental implant therapy. We are looking for about 40 individuals to participate in this study.

What will happen to me if I participate in this study?

This study has a two key parts that centered on firstly, audiotaping the dental implant consultation between you and your dentist/dental surgeon to evaluate how you and your dentist have been involved in the decision to receive implants. After the consultation has been completed, the recording will be stopped. Secondly, a suitable date and time will be arranged for you to be interviewed by telephone concerning assessing the decision made and any related issues that you may have about your implant consultations. This should take no longer than an hour.

Do I have to participate in this study?

No, participation in this study is completely up to you. Your dental care would not be affected by your choice to participate or not. Also, you have the right to withdraw from the study at any time; without providing a reason.

What are the potential risks and disadvantages of participation in this study?

This study includes your conversation about your understanding and involvements in the process of the decision making about your implant therapy. We do not think there are any risks in participating in this study. You will be providing us your time, which some may see as a disadvantage.

What are the possible advantages of participation?

The information obtained from this research will help the service to understand what information individuals need to know and if more care and support are required for all individuals making dental implant treatment choices.

Will my participation in this research be kept confidential?

All dental consultations in this study will be audio tape-recorded and transcribed for analysis. Whichever details that are included that may be used to recognize you will be deleted from the transcript. This means your data will be anonymised.

What will happen to the results of the study?

The findings from the research may support inform future practice. They may also be presented at workshops, conferences and published in academic dental journals. The anonymised transcripts will be destroyed.

Who has reviewed the study?

This research has been reviewed and approved by the Prince Sultan Medical Military City, the University of Sheffield Research Ethics Committee and the Saudi Ministry of Higher Education (Saudi Embassy in London).

Consent

You will be asked to sign a consent form before you participate in the research.

What if there is a problem?

If you would like to talk in more detail about any aspect of this research, please contact your dental surgeon specialist or the researcher Abdullah Alzahrani by phone or email.

Thank you for reading this information sheet

Name of the participant	Date	Signature
Name of the person taking the consent	**Date**	**Signature**
Patient's identification Number		

Appendix 3 Patient Consent Form

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

PATIENT CONSENT FORM

Title of Project:

Decision Making and Dental Implant Treatment in Saudi Arabia

Researcher Name: **Abdullah Ali Alzahrani, BSc, MDPH, University of Sheffield.**

Please initial box

1	I have read and understood the information sheet for the above study	
2	I have had opportunity to ask questions about the study	
3	I understand that I have the right to refuse to participate in this research question.	
4	I understand that if I take part in the study I may not gain any direct personal benefits	
5	I consent to my consultation with the dentist being audio-tape recorded for the purposes of this study	
6	I give my permission for the research to interview me telephony in the data and time that we agreed.	
7	I consent to anonymised results and quotes from the study being presented and published	
8	I understand that study data and audiotapes recorded will be kept confidential and destroyed after the research has been completed.	
9	I understand that I can withdraw from this study at any time without my medical care being affected.	
10	I agree to take part in this study	

Thank you for taking time to complete this consent form

Name of the participant	**Date**	**Signature**
Name of the person taking the consent	**Date**	**Signature**
Patient identification number for the research project		

Appendix 4 Dentist Consent Form

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

DENTISIT CONSENT FORM

Title of Project

Decision Making and Dental Implant Treatment in Saudi Arabia

Researcher Name:

Abdullah Ali Alzahrani, BSc, MDPH, University of Sheffield.

Please initial box

1	I understand the purpose and objectives of the above project.	
2	I understand what is expected from me in my contribution to this research study	
3	I give my permission for my consultations with those patients who agree to the research project to be audio-taped.	
4	I understand that audiotapes of the consultations will be anonymised.	
5	I understand that study data and audiotapes recorded will be kept confidential and destroyed after the research has been completed.	
6	I understand that the tapes will only be used for the purposes of the current research.	
7	I agree to take part in this research project.	

Thank you for taking time to complete this consent form

Name of the dentist	**Date**	**Signature**
Researcher: **Abdullah Alzahrani**	**Date**	**Signature**

Appendix 5 Dental Implant Assistant Consent Form

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

DENTAL IMPLANT ASSISTANT CONSENT FORM

Title of Project

Decision Making and Dental Implant Treatment in Saudi Arabia

Researcher Name:

Abdullah Ali Alzahrani, BSc, MDPH, University of Sheffield.

Please initial box

1	I understand the purpose and objectives of the above project.	
2	I understand the target population of the research and the process of identifying, approaching and recruiting those who agree to participate in this study.	
3	I give my permission for my consultations with those patients who agree to the research project to be audio-taped.	
4	I understand that audiotapes of the consultations will be anonymised and destroyed after the study has been completed.	
5	I understand that study data will be kept confidential and destroyed after the research has been completed.	
6	I understand that the tapes will only be used for the purposes of the current research.	
7	I agree to take part in this research project.	

Thank you for taking time to complete this consent form

Name of the dental assistant	Date	Signature
Researcher: **Abdullah Alzahrani**	**Date**	**Signature**

Appendix 6 Interview Topic Guide For Patient

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

Topic Guide for Patient

Introduction

I would like to thank you for taking the time to participate in this research. My name is Abdullah Alzahrani and I would like to talk to you about your experience participating in the study "exploring decision making about dental implant treatments in Saudi Arabia". Particularly, one of the components of our project is that we will be assessing your experiences of the decision that was made concerning your implant treatments.

The interview should take less than half an hour. I will be taking some notes during this interview.

All responses will be kept confidential and anonymous. This means that we will ensure that any information we include in our report does not identify you as the respondent. Please remember that you don't have to talk about anything that you don't want to and you have the right to end this interview at any time.

Questions

1) Decision:

1. Can you tell me how you came to seek dental implants?
2. How would you describe overall your experience in the implant consultation?
3. On the scale of one to five, where one is strongly satisfied and five is strongly dissatisfied, to what extent are you satisfied with the decision made about your dental implant consultation? Can you please explain why?

2) Non-decision:

4. Did your dentist clearly describe the process of the surgery and all relevant information that you needed about the therapy? Please explain?
5. Did your dentist check that you have understood what he/she was discussed with you? Please explain?
6. Were your Consultation interrupted by one or more phone calls or called out of the clinic? If yes, do you think that affect you to make the proper treatment decision with your dentist? Please explain?
7. Did your dentist describe to you the possible side effects of your implant therapy? If, yes, can you tell me more about this please?
8. Did your dentist give you an option to defer the decision? Can you please explain this?

3) Coercion

9. To what extent do you feel you reached a joint agreement on the decision? Can you please explain why?
10. Did you think about any alternative dental treatments? Why?
11. Were there any disagreements over your preferences with your dentist? Please give more detail.

4) Influence

12. If there were any conflicts or disagreements over your values, needs and preference, why do you think this conflict happened? Please provide a justification for your response?
13. To what extent do you think that your dentist influenced you to go along with the implant treatment? Please explain why, i.e. convincing me about the benefits of the treatment?

5) Authority

14. Why do you think that the dentist's idea to go for your implant treatment is reasonable? For example: advantages of implant introduced by my dentist, no disadvantage of undergoing the therapy!
15. Why were you happy to go for the implant therapy? For example, I had enough information about the implant before I went to my dentist, my brother (or family member, friend) have had a good experience of the implant therapy, or dentist's convinced me to go for implant therapy.

6) Manipulation

16. Did you remember any of the benefits and risks of an implant therapy that your dentist had discussed with you? Please explain.

7) Conclusion

17. Is there anything more you would like to add?

Thank you for taking the time to participate in this study.

Appendix 7 Interview Topic Guide For Dentist

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

Topic Guide for Dentist

Introduction

I would like to thank you for taking the time to participate in this research. I want to talk to you about your experience participating in the "exploring decision making about dental implants treatments in Saudi Arabia". Particularly, one of the components of our project is we are assessing your experience on the decision made about the patient (identification No.).

The interview should take less than an hour. I will be audiotaping this interview and taking some notes and I would be grateful if could just be sure to speak up so that we don't miss your comments.

All responses will be kept confidential and anonymous. This means that we will ensure that any information we include in our report does not identify you as the respondent. Please remember that you don't have to talk about anything that you don't want to and you have the right to end this interview at any time. May I ask you are there any questions about what I have just explained? Are you willing to participate in the interview?

Questions

Tell us the story behind this consultation. What do you think was going on here?

1) Decision:

1. On the scale of one to five, where one is strongly satisfied and five is strongly dissatisfied, to what extent are you satisfied with the decision made about the patient's implant consultation? Can you please explain why?

2) Non-decision:

2. How did you describe the process of the implant surgery to the patient?
3. Do you think the patient understood all of the information about the treatment? Please explain?
4. Did you describe to the patient the possible side effects of the implant therapy? Please expand?
5. Did you give the patient an option to defer his/her treatment decision?

3) Coercion

6. To what extent do you feel you reached a shared agreement with the patient on the decision? Can you explain why?
7. Did you introduce any alternative dental treatments such as fixed crown or bridge, RPD before you went with implant therapy? Can you please explain why?
8. Were there any disagreements with the patient? If yes, please explain?

4) Influence

9. To what extent do you think that you influence the patient to go for the implant? Can you explain please?

5) Authority

10. What do you think influences the patient to go with the implant therapy? Can you please explain?

6) Manipulation

11. Did you describe the benefits, risks and other related information of the implant therapy to the patient? Can you tell me more about this please?

7) Conclusion

12. Is there anything more you would like to add?

Thank you for taking the time to participate in this study.

Appendix 8 Power coding scheme for analysing patients and dentists interviews

Unit of Dental Public Health
School of Clinical Dentistry
Faculty of Medicine, Dentistry and Health
19 Claremont Crescent
Sheffield
S10 2TA
Tel: 0114 271 7801

Patient interview			
	Aspect	**Description**	**Example**
1	**Decision**	Evaluating how patient came to seek dental implants, the patient's overall experience about the consultation, his/her satisfaction or dissatisfaction on the decision made and the reasons, if any, behind this satisfaction or dissatisfaction.	Patient said "I came to the clinic to have an implant because my brother recommended it to me as it works very well. I am really satisfied with decision made about my implant consultation because my dentist convinced me to go with this great technology".
2	**Non-decision**	Evaluating the hidden decision to the decision maker's interest. This included aspects that may affect the decision such as describing the process of the surgery and/or the side effects of the implant treatment.	Patient said "my dentist did not providing me with information about the side effects of the treatment but I asked him and he answered me that only some bleeding will be occurred!"
3	**Coercion**	Evaluating aspects such as: was a shared decision made? Were alternative treatments discussed, and were there any conflict over the patients values, needs and preferences.	Patient said, "I have not thought about any alternative dental treatments because simply there were not introduced to me!" or patient said, "My dentist prefer to go for implant but I want fixed crown" or vice versa.
4	**Influence**	Evaluating aspects such as whether if there were any disagreements over the patient's preferences, values, needs with explaining how and why this happened. Dentist made the patient change his/her decision to go along with implant therapy without an overt threat, such as convincing the patient to go for an implant	Patient said "I was scared from going with implant therapy because of the drilling the bone jaw as my dentist described. But, my dentist convinced me to go with implant because of the long survival rate of the treatment and maintained that I

		because of the high success rate of the therapy and without indicating the disadvantages of implants, such as the aesthetic disadvantage.	would not feel the pain of the drilling".
5	**Authority**	Examining aspects such as the reason behind the patient's compliance with decision made by the dentist. Patient indicated that dentist's idea was reasonable in relation to his knowledge. The content of the encounter was legitimate or arrived at through legitimate means such as (advantages introduced and disadvantages not). Patient's reason for undergoing implants therapy, recommended by friends, family member or the dentist.	Patient said, "my dentist mentioned several advantages of implant including high patient satisfaction and improving oral health related quality of life". However, the patient's does not recognise that the dentist has not introduced the disadvantages of implant treatment.
6	**Manipulation**	Examining aspect such as the patient compliance with the dentist's decision to go for a implant. The patient does not understand the nature of what is being asked of him or her, maybe because of a lack of knowledge or lack of supported information. The patient did not recognise the nature of what was being demanded of him/her. The dentist did not provide sufficient information about the risks of implants such as injury of the lower alveolar nerve. However, the advantages of implants were clearly introduced.	Patient said, "my dentist described the risks of implant but I really did not remember any of those described. To be honest, I did not understand these risks and I was a bit shy to ask my dentist!".
7	**Conclusion**	All other comments and issues.	All other comments and issues.
Dentist interview			
1	**Decision**	Evaluating how the dentist came to his/her implant's decision for the patient, the dentist's satisfaction or dissatisfaction on the decision made and the reasons, if any, behind this satisfaction or dissatisfaction.	Dentist said "the patient showed a great interest in implant therapy, but I am a bit worried about the success of the treatment as the patient oral hygiene condition seems to me not very well".
2	**Non-decision**	Evaluating the hidden decision to the dentist's interest. Dentist's	Dentist said "I described the process of the surgery for this

		reflection on the consultation such as: description of the process of the surgery, and the side effects of the treatment.	patient, but I did not introduced the side effects of the therapy because indeed I have not been asked to do so!"
3	**Coercion**	Examining aspects such was shared decision made, were alternative dental treatments discussed, and were there any conflict over the patients values, needs and preferences such as dentist prefer to go for implant but the patient want fixed crown or vice versa.	Dentist said, "patient preferred a fixed denture rather than an implant because he seemed to feel threatened by the procedure of the implant".
4	**Influence**	Evaluating to which degree that the dentist thought he/she influence the patient to go for implant. The reason of the conflict between dentist and patient, if any, such as: patient preferred fixed crown rather than implant or suitability of the patient for implant.	Dentist said, "the patient did not know as much as I knew about the treatment". Or "the patient lacked sufficient information about the treatment. I had more experience to decide than the patient had".
5	**Authority**	Examining aspects such as the reason influence the patient to go with the implant.	The dentist said that their idea was reasonable in relation to their knowledge. They had enough information about the implant before taking this decision? They were sure this was the most suitable treatment for the patient.
6	**Manipulation**	Examining aspect such as whether the dentist described the benefits, risks and related information to the patient or not.	Dentist said, "I described the benefits of implant such as the high survival rate about the treatment. But I did not introduced the risks of the treatment to the patient because I really do not believe that there are serious risks for going with this treatment!"
7	**Conclusion**	All other comments and issues.	All other comments and issues.

Appendix 9 The Medical Centre translated consent form

Medical Centre Logo	Medical centre (X) Dental Department Telephone: xxxxxxx

Implant Surgery Consent From (translated from Arabic to English)

I understand (patient's name), signed below, that I have read all the information in this letter and I have no objection about it. I therefore agree to undergo the dental implant's surgery with the dentist (dentist's name).

- The dentist listened to me when I described my dental problem, checked my mouth carefully, and taken the necessary x-rays. Then, the dentist described to me all possible treatment options and explained the advantages and disadvantages of each option.

- Because my desire is to go with the implant therapy, the dentist has fully explained to me the implant's surgery process, including its advantages and limitations, the duration of the surgery, the type, kind and number of the implant that will be used, and the implant's success and failure rates.

- I provided my dentist, to best of my knowledge, with accurate medical report about my overall health and I mentioned all the diseases that I had and the medicines that I have been taken or I am taking now.

- The dental implant surgery is an operational surgery. Hence, it applies to it what it is being applied to any operational surgeries. As a result, I understand that it may happen some surgical complications such as swelling, bleeding, numbness, inflammations, and delay in the wound healing.

- I totally understand that during or after the surgery, there might be an additional or replacement therapy that helps the overall surgery to success. Therefore, I agree on any changes, suggested by the dentist, on my treatment plan if this will improve my oral health.

- The dentist explained to me that the success of the surgery depends mainly on taking care of my oral health and the implant inserted according to the instructions and information that will be given and I have to notify my dentist with any changes or complications that may happen immediately.

- Based on the available evidences in the literature, I fully understand that the implant surgery is being a successful surgery and last longer. However, it is difficult to predict the bone's ability to integrate with the implant because of the individual differences. Therefore, the implant may not integrate and then it may need removal or replacement with other implant after taking my consent.

Patient's file number:
Patient's telephone number:
Date:
Patient's signature:
Dentist signature:

Appendix 10 Ethical approval from the University of Sheffield

The University Of Sheffield.

School Of Clinical Dentistry.

Mr Abdullah Alzahrani

University Research Ethics Committee (School of Clinical Dentistry)

Research Ethics Lead - Dr Lynne Bingle
Claremont Crescent
Telephone: +44 (0)114 271 7951
Fax: +44 (0)114 271 7894
Email: l.bingle@sheffield.ac.uk

27th May 2014

Full title of study: Decision making and dental implant treatments in Saudi Arabia
Reference number: 74

On behalf of the committee, I am pleased to confirm a favourable ethical opinion for the above research based on the supporting documentation. If any changes are made to these documents the Ethics Committee should be informed and their opinion requested.

With the Committee' s best wishes for the success of this project

Yours sincerely

Lynne Bingle
Research Ethics Lead

The Queen's Anniversary Prizes

CLINICAL ORAL IMPLANTS RESEARCH

177 Basic Research

Decision-making and dental implant treatments in Saudi Arabia

A. Alzahrani,[1] I. Brook,[2] B. Gibson[3]

[1]Unit of Dental Public Health, School of Clinical Dentistry, The University of Sheffield, Claremont crescent, Sheffield, UK, [2]School of Clinical Dentistry, The University of Sheffield, Claremont crescent, Sheffield, UK, [3]Head of Unit of Dental Public Health, School of Clinical Dentistry, The University of Sheffield, Claremont crescent, Sheffield, UK

Background: Decision making by dentists regarding patient's suitability for dental implant care is complex. The interplay between dentists and patients is poorly understood. Improving the quality of healthcare, developing a patient's self-esteem, increasing the satisfaction of both doctor and patient, and reducing a patient's anxiety are key aspects that should be considered during the decision making process in the dental implant consultations. Several decision-making models have been employed to examine decision making within medical consultations these include the paternalistic, interpretative, informed and shared decision-making models. There has been a tendency to implement the shared decision making model in medical practice however there are no studies in the literature that have examined how patients and dentists are involved in making shared decisions about the provision of dental implants.

Aim/Hypothesis: This study explores the decision making process associated with providing patients with dental implants in Saudi Arabia. The objectives were: firstly, to explore dentist contributions to the decision making process in the implant consultations. Secondly, to describe patient contributions to the decision making process in consultations for implants. Lastly, to evaluate if shared decision-making occurs in consultations about the provision of dental implants.

Material and methods: A cross-sectional ethnographic study employing participant observation of dental implant consultations and semi-structured interviews of both patients and dentists was developed. The study involved purposive sampling of a wide range of consultations including both males and females. Dental implant assistants identified Saudi patients who were considering undergoing implant therapies and were eligible for the study. Patients who agreed to participate were provided with a patient information sheet. Those who had read the information sheet and given consent were included. The dentist who had agreed to be involved was also asked to sign a consent form. Implant consultations were recorded on audiotape. Interviews were conducted in two stages: dentists interviews were audiotaped and transcribed. Patients telephone interviews were conducted the week following the consultation. Data were analysed using inductive thematic analysis. The data were analysed through the use of the framework method.

Results: In total, 32 patients and three dentists participated in this study. Three types of shared decision-making were recognised. These were: ideal, typical and marginal shared decision making models. No implant consultation involved shared decision-making. Key aspects of shared decision-making were absent. These included failing to discuss the process of the surgery, possible side effects, the benefits and risks of implants. It was found that the most common decision making model that was implemented was the marginal shared decision making model. The results also revealed that elderly patients 'above 55 years' who have lower education levels tended to experience greater levels of paternalistic decision making.

Conclusions and clinical implications: Reducing unwanted outcomes and improving the quality of healthcare are main advantages of shared decision-making model. Key aspects of this model were absent in the consultations observed. It is important to motivate dentists and patients to implement shared decision-making. This might be achieved by raising patients' awareness to contribute in the implant decisions, focussing training on communication skills and the need for a greater balance in shared decision-making.