

# **Household food security in Oman: The role of women consumers**

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PhD

UNIVERSITY OF YORK

ENVIRONMENT AND GEOGRAPHY

APRIL 2017

## **AKNOWLEDGMENT**

Undertaking this PhD has been a life changing experience which would not have been achieved without the support and guidance that I was blessed with from many people.

I would like to first thank my supervisor Dr. Samarthia Thankappan for all the guidance and encouragement that she gave me. I would like to thank her also for all her support and understanding during the challenging times that I went through in the last 4 years.

Many thanks also to Nilufar Matin and Dr John Forrester for their guidance in their supervisory roles.

I gratefully acknowledge the funding received towards my PhD from the government of the Sultanate of Oman.

I would also like to say a heartfelt thank you to my father for always believing in me and encouraging me to pursue my dreams.

I wish to record a very special thank you to my mother for her constant love and support, and also to Nadia, Rahma, Mayada, Dr Ali Rajab, Dr Abdulrathi, and Hamed Al Gaithi for helping me in so many ways during this challenging time of my life.

This PhD research would not have been possible without the cooperation and support of officials of the government of Oman and women in cities and villages of Muscat and Northern Batina. I am especially thankful to them for allowing me to undertake all the interviews, discussion groups and questionnaires required for this research.

## **ABSTRACT**

This research aims to investigate the extent to which Omani women can contribute towards the national food security of Oman with respect to their households by answering to the need of filling the gap in research and literature available in Oman and in countries in the Gulf region. The focus of this research was mainly on the utilisation aspect of food and the awareness of women in two regions of Oman. This was investigated using a combination of methods that included face-to-face interviews, online discussion groups and self-completion questionnaires to explore the social beliefs, practices and attitudes women adopt in relation to food purchase, storage, preparation and consumption which were considered as important parts of the food system, and to identify the range of support systems/services available to women from public/ private bodies. The findings of this research demonstrate that women play a major role in ensuring the food security of their households and that they have a high level of willingness to improve the safety and nutrition status of the food served to their families. It was observed that respondents of different age groups and income levels had similar tendencies to follow habits and customs as opposed to acquiring new knowledge or information. The findings also confirm the positive effect of women's education and empowerment on the overall improvement and sustainability of household and national food security.

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## **AUTHOR'S DECLARATION**

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as References.

# **1 Introduction**

The aim of this research is to gain a better understanding of women's participation in household food security endeavours in Oman and how this contributes to a better understanding of the role of women in Oman and similar countries in the Arabian Gulf (GCC countries) and Middle East in the area of household food security. To achieve this goal, the research explores Omani women's role, preferences, behaviours and perceptions in relation to various food issues explored in this study.

## **1.1 Background**

The Sultanate of Oman, commonly referred to as Oman, is a country located in Southwest Asia on the southeast coast of the Arabian Peninsula. The close neighbouring countries include the United Arab Emirates, Yemen, and Saudi Arabia. The northeast border of the country consists of the Gulf of Oman while the South and East coasts border the Arabian Sea (See Fig 1.1). The Sultanate of Oman contains an enclave enclosed by the United Arab Emirates known as (Madha) and another enclave separated by the Emirati territory, which is called Musandam (Porter, 1997). Oman is the oldest independent country in the Arab world and amongst the traditional nations in the Gulf region it remained most isolated until the 1970s (Joyce & Rigsbee, 1996).

### **1.1.1 History**

By the 8th century, Islam had reached the current region known as the Sultanate of Oman where a unique type of Islamic faith developed known as *Ibadi* which is still the primary sect in Oman (The Sultanate of Oman, 2017). The Portuguese invaded the region a decade after Vasco da Gama discovered the route to India and occupied it for 140 years (Porter, 1997). These Europeans fortified and built up the City to protect its sea lanes. Persia later invaded

Oman; however, Oman gained its own autonomy which enabled it to occupy various regions, particularly the coasts of Iran, Pakistan, Kenya, and Zanzibar amongst others (The Sultanate of Oman, 2017).

The Sultanate of Oman went through several phases to achieve its current political and economic status. In the 1950s, the British destabilised the rule of Oman and subdued the different tribes. However, the Sultan built a repressive regime with the use of laws that forbade many activities (Joyce & Rigsbee, 1996). In 1970, the British backed the Sultan's son Qaboos bin Said Al Said who overthrew his father; the country became independent the following year and was named the Sultanate of Oman (Al-Mashakhi & Koll, 2008). During this period, there were fewer developments regarding infrastructure, healthcare, education and welfare amongst others which meant that Oman remained under-developed (The Sultanate of Oman, 2017). However, globalisation and increasing market competitiveness led to modernisation and a seismic shift in the development of technology and skills in the Sultanate of Oman. For example, in 1970, there were only three formal schools which supported only 900 students countrywide (Oman & UNICEF, 2001). There was only a missionary medical care that had only 100 trained practitioners (The Development of Health Care, 2017).

Since the accession of Sultan Qaboos, who is acknowledged by Omanis as a benevolent absolute ruler, Oman has witnessed significant improvement socially and economically under his rule (The Sultanate of Oman, 2017). Oman generally maintains peaceful relations with its neighbours (Al-Mashakhi & Koll, 2008). The Sultanate of Oman uses its oil revenues to invest in the nation's infrastructure such as in hospitals, schools, utilities, and roads. Currently, the country is significantly developed regarding education, health care and food provision compared to five decades ago (The Sultanate of Oman, 2017).

### **1.1.2 Geographic Information**

Geographically, the Sultanate of Oman covers an area of 309,500 square kilometers (Sultanate of Oman, 2017). It shares a land border with Yemen, Saudi Arabia, United Arab Emirates and the Gulf of Oman which lies between Oman and Iran. Muscat, the capital, has a population of 3.3 million (Oman 2017). Omani nationals account for 69% of the country's population (Oman 2017). However, according to The World Factbook by the Central Intelligence Agency (2017), 45% of the population living in Oman consists of workers from Jordan, Morocco, Bangladesh, Philippines, Pakistan, and India.

The Sultanate of Oman is a tribal country made up of a range of different tribes (Oman, 2017). Oman also has migrants from other countries that were controlled by Oman in the past, for example, from parts of Africa and from Baluchistan in Pakistan (Peterson, 2004). Omani people have the freedom to continue their cultural practices as well as the large part of the population which identifies itself with various ethnic groups with their own unique cultures (Oman, 2017). Since 1970, the Omani government has been vocal in insisting on education as a way of developing national manpower and, by 1986, it established the first university, the Sultan Qaboos University in Muscat (Oman, 2017).

The literacy rate for children under 15 years in Oman is high being measured at 86.7% (NCSI, 2017). However, the literacy rate amongst the younger population of under 30 years is higher still, estimated at 97.6% (Oman, 2017). The national language of Oman is Arabic and the population has an average life expectancy of 72 years (Oman, 2017).

The Sultanate of Oman is divided into eleven governorates as shown in Figure 1-1 which include Ash Sharqiyah, NorthAsh, Sharqiyah South, Muscat, Dhofar, Musandam, Al Wusta,

AlBuraimi, Al Batinah South, Al Batinah North, Ad Dakhliyah and Ad Dhahirah (Seven New Divisions in Oman, 2011).

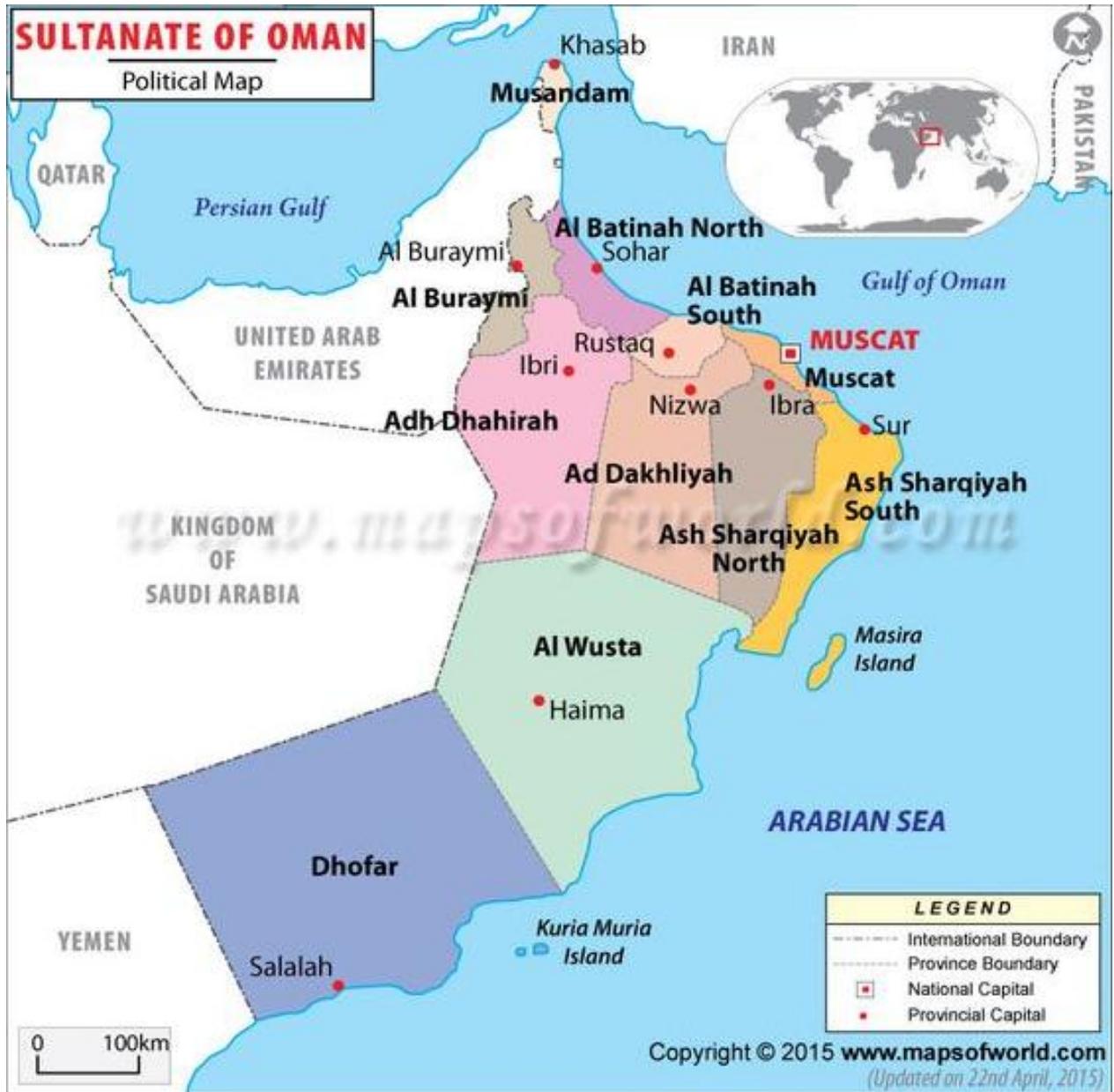


Figure 1-1 Governorates of Oman (mapsofworld, 2015)

Approximately 50% of the Omani population lives in the Batinah coastal plain and in Muscat. 200,000 people live in Dhofar, and 30,000 on the Strait of Hormuz (NCSI, 2017).

With respect to the different seasons in Oman, summer spans the period between April and October. The interior part, Ad Dakhiliyah and Ad Dhahirah governorates, experiences the highest temperatures reaching more than 50°C (Al-Mashakhi& Koll, 2008). On the plains of Al Batinah South and Al Batinah North, summer temperatures rarely exceed 46°C. However, the plains have high humidity rates that rise to 90% due to the low elevation (Sultanate of Oman, 2017). Muscat has a summer mean temperature of 33°C, but the western regions of the country experience dry winds which are responsible for the increase in temperatures of between 6°C and 10°C depending on location (Sultanate of Oman, 2017). The natural hazards that pose a threat to the country include the summer winds that create large dust storms and sandstorms in the interior, particularly during the periodical droughts. A large proportion of the country has insufficient rainfall to support significant food production and other forms of agriculture (Mbaga, 2013).

*Wadis* also experience huge floods of rainwater, and vast tracts suffer from erosion after the rains which follow the dry season (Al-Mashakhi& Koll, 2008). One of the current environmental issues includes soil salinity as natural freshwater sources such as wells, dams, rainwater, and ponds are not reliable in the provision of freshwater in the country due to the heavy freshwater demands. In addition, beaches are frequently affected by pollution from oil spills on the sea (Sultanate of Oman, 2017).

### **1.1.3 Food Security in Oman**

The Sultanate of Oman largely relies on imports foods from other countries to meet the high demand in its local markets (Taha, 2012). Oman is a member of the Gulf Cooperation Council (GCC) which is an economic organisation that facilitates trade between its members (Taha, 2012). Oman also had trading relations with other countries such as the United States. Historically, Oman has relied on food imports from other countries to offset the food

imbalances in the region (ibid., 2012). Despite the measures put in place both nationally and regionally, Oman still experiences considerable food shortages (Taha, 2012) and the Sultanate largely imports food to meet the high demand of food for its population. The region's dependence on the international market is expected to increase in order to sustain food needs of its people. Imports account for about 80-90% of its food consumption (Mbaga, 2013). The reasons behind this increase are explained by Khouri, et al. (2011) to be due to enhanced life styles, population growth and economic/ industrial development. This makes the region more vulnerable to the fluctuations of the global food market. Furthermore, agriculture is limited by poor soil, scarce water sources and high temperature (ibid.).

Many countries, particularly in unfavourable food production climates, significantly spend to ensure that they have enough food for their populations. Most of the areas in semi-arid regions do not support crop production unless irrigation schemes are enhanced (Khouri, 2011). The other Gulf region countries are also expected to spend more on food imports due to their unfavourable climate for food production. Nevertheless, Gulf countries spend less than 7% of their incomes on food imports (lowest is Qatar at 2% and highest is Oman at 6.2%) (Khouri, 2011). However, their status of macro- food security is still expected to remain stable (ibid.).

Oman actually has a higher self-sufficiency of food compared to the rest of the Gulf countries (Lehane, 2015). Self-sufficiency from agriculture accounts for about 39% on average (ibid.). This includes production of fruits and vegetables, meat, milk and poultry products (30-60% of self-sufficiency) (ibid.). In fisheries, Oman has achieved 215% self-sufficiency (ONA, 2016). However, it still imports around 60% of its overall food needs from international market (ibid.). In addition, the Public Authority of Stores and Food Reserve, established in 1980, ensures a stable food reserve which amounts to more than six months of staple food

supply, in different stores allocated throughout the country (PASFR, 2015). According to PressReader (2015), Oman is now building a new storage unit in Sohar port that should be able to store up to 700,000 tons of grain and 1.5 m tons of raw sugar per year.

According to the Global Food Security Index published by the Economist in June 2016, Oman is ranked 26th in food security against 113 countries worldwide and is in 2nd place in the Arab region (Economist, 2016).

The Global Food Security Index also indicated that Oman has no challenges in terms of food security (Economist, 2016). The relatively high percentages of self-sufficiency and the ability of the country to sustain the import of food economically is supported by the view of the majority of interviewees in this study.

On the other hand, since Oman depends mainly on oil revenues as the major income source, its purchasing power of food might be affected by any reduction in oil prices (Lehane, 2015). In addition, the status of food security in Oman, and other Gulf countries is, and will be, more affected and threatened by the political instability of major Middle Eastern food exporter countries such as Syria and Egypt (Fews Net, 2017). Given the fact that more than 81% of exported grain to Gulf countries passes through the Suez Canal, the risk of cutting the supply chain in case of any geopolitical conflict in the region is elevated (ibid.). Moreover, even if Oman has the purchasing power to overcome increasing food costs, it might be affected by export restrictions in case of a future global crisis (GRM, 2009).

#### **1.1.4 Agriculture in Oman**

The Sultanate of Oman has established food systems that stem mainly from agricultural farming and fisheries (Mbaga, 2013). The main food systems include production of fruits, dates, vegetables, field and fodder crops and livestock keeping (FAO, 2008). Agricultural production takes place on the flanks of the Hajar Mountains as there is considerable land for cultivation in the 'Wadi' beds (Agriculture in the Sultanate of Oman, 2005). These beds rely on water supplied by 'falaj' (water channel) that is a primary source of water in the region. The major products from agricultural activities in interior areas include dates in addition to vegetables and fruits. Throughout the Sultanate, 35,000 hectares of the land grow date palms while 11,000 hectares support the growth of rotation crops such as wheat and barley (Al-Mashakhi & Koll, 2008). Residents of the coastal region around Salalah in Dhofar grow coconut palms. They also grow bananas, papaya, and other fruits. The soil also supports fodder grown for feeding cattle (Agriculture in the Sultanate of Oman, 2005).

The coastal Batinah plain is a most densely populated region in Oman and supports agriculture (Agriculture in the Sultanate of Oman, 2005). Agriculture heavily relies on irrigation from fresh-water wells derived from rains that fall over the adjacent mountains. In the Batinah plain, limes are grown in large quantities and dried before exportation. This region also produces bananas, mangoes and other fruits and vegetables such as onions, tomatoes, and aubergines for local consumption. Traditionally, there were both small scale and large scale farmers on the Batinah coast (Agriculture in the Sultanate of Oman, 2005). However, due to the overdrawn of fresh water, salinity has increased rendering land cultivation more challenging (Agriculture in the Sultanate of Oman, 2005).

Date palm production contributes up to 80% of the fruit crops and constitutes 50% of the agricultural produce in the country (Al-Yahyai & Khan, 2015). In fact, Oman is the 8th

largest date producer in the world with more than 260,000 metric tonnes annually. There are more than 7 million date palms in the northern governorate of the Oman. Approximately half of the dates produced in the Sultanate of Oman are for export while the remainder is used for animal feeds since they become surplus and end up as waste (Al-Yahyai & Khan, 2015).

In most of the farms, fresh fruits are used for consumption while the remainder is sold in the local markets. Examples of commercial use of dates include the date sugar, date syrup and other date by-products (Al-Yahyai & Khan, 2015). The main issues that affect agricultural production in Oman include the availability of sufficient labour force, small farm sizes and traditional methods of cultivation, marketing and poor post-harvest handling of farm products. There is increased production of new plantlets from tissue culture with the aim of focusing on the most beneficial date cultivars (Al-Yahyai & Khan, 2015).

The Sultanate of Oman's governance is politically supportive in ensuring that there is sufficient food for the Omani population. The government provides the resources and other technical assistance that are instrumental in enhancing established food production activities such as fisheries, horticulture, poultry and meat production. It also implements policies to protect the environment or the natural resources that aid in food security and production. It issues programmes to educate farmers in the use of modern farming tools and inputs on methods to improve production.

### **1.1.5 Fisheries in Oman**

Fishing is the second most important economic activity for the Sultanate of Oman (Al-Busaidi, et al., 2016). It is one of the main natural resources that greatly contribute to the growth of the Omani economy. More than a quarter of the Omani population depend on fisheries as the main source of its living (Kotagama, et al., 2014). Fish is not only a major,

but is also a growing food commodity. For the past decade, the fishing industry has brought about great developments in food production (Al-Jabri, et al., 2002). Artisanal sector of fish production has made major improvements due to government subsidies given out by the Fishermen Encouragement Fund (Al-Jabri, et al., 2002); the programme helps to provide fishers with equipment for fishing such as boats, fish finders, depth finders, long lines, winches, communication systems and fish preservation boxes, fish handling equipment and traps (Al-Jabri, et al., 2002). The Sultanate of Oman government is instrumental in bringing about considerable developments in the fishing industry since it constructed infrastructures that aid fish production and marketing. It funded the construction of roads, ports, workshops, radio communication network, ice plants and other important fish production facilities throughout the country (ibid.).

The artisanal sector approximately exploits 80% of the fish resources while the industrial sector exploits only 20%. However, Oman is experiencing over-exploitation of fish production as evidenced by the demersal fish stocks in the Gulf (Al-Busaidi et al., 2016).

### **1.1.6 Food Processing in Oman**

Oman practices various food production activities that provide for food processing industries. Muscat has many industries and ports that deal with food processing (Agriculture in the Sultanate of Oman, 2005). The largest food processing firms in Oman are Dhofar Fisheries Industries Co. Saog, RSME Trading Co. and Southern Services (ibid.). Due to the increased food processing demands, the country is planning to construct agricultural terminals for the anticipated influx of cereal products (Agriculture in the Sultanate of Oman, 2005). It aims at attracting new investments in food processing and food industries to create a supply that can feed a growing population (Al-Mazrooei et al., 2001). Food processing firms consist of sugar

refinery and grain silos, facilities for food packaging and transportation for multinational business (ibid.).

In addition, Oman has an agency that deals with food marketing and agricultural production which is called the Public Authority for Marketing Agricultural Produce (PAMPAM) (Agriculture in the Sultanate of Oman, 2005). PAMPAM was established in 1981 and encourages farmers in Oman to increase crops, fruits, and vegetable production (Rahman, 2006). It also seeks to find markets for Omani produced farm products. PAMPAM fulfils the roles of creating markets, making agricultural products in the local markets available at reasonable prices and improving the quality and quantity of the production (Agriculture in the Sultanate of Oman, 2005).

Moreover, the agency has established a quality-control laboratory to address various issues related to fresh products after harvesting (Agriculture in the Sultanate of Oman, 2005). It carries out tests and analysis in these laboratories to determine the acceptability and safety of the processed items as well as the fresh products (Agriculture in the Sultanate of Oman, 2005). Furthermore, technical training and seminar programmes for farmers are organised by the agency in various parts of the country to encourage the use of modern methods and agricultural developments to improve productivity and quality (Rahman, 2006).

### **1.1.7 The Transition in Nutrition and its Effect on Food Utilisation**

Food security includes issues of the availability of food through either importation or production, the capacity of people to meet their needs from their earnings and the stability of the market prices. The majority of the food security concepts in Oman focus on the access and availability dimensions of food. However, not much research focuses on the utilisation of food. This thesis makes a contribution to filling that gap.

Food consumption in Oman is on the rise as the population increases. In 2016, it was estimated that the country consumed 3.1 million tonnes of food annually and this is predicted to rise to 3.9 million tonnes by 2021 (Times News Service, 2017). According to Zayed et al. (2017) the majority of the population of Oman relies on bread, cereal, rice, fruits, and vegetables. However, there is a significant percentage of the population which habitually relies on fast foods and meat for dietary purposes. Omanis are changing their eating habits (from feeding mainly on plant products) to feeding on meat, fish, and poultry (Zayed et al., 2017). Oman is slowly shifting its heavy reliance on cereals to incorporate other types of foods. There is also a notable growth in the meat food processing industry. The Sultanate of Oman is quickly adopting an American style of eating habits that largely consist of high quantities of beef and a preference for fast foods (Zayed et al., 2017).

The primary factors that significantly contribute to fast foods consumption and non-traditional diets in Oman include the proliferation of fast food restaurants and supermarkets and the liberalisation of trade of foods imported from developed regions to meet the high demand related to increased wealth and income (Zayed et al., 2017). Other factors include the creative, fast food promotion and marketing strategies, allied to inadequate knowledge on the part of consumers of the high caloric density foods and their impacts on human health (ibid.). The most common fast foods in Oman are rich in refined sugars and saturated fat.

Open trade policies and globalisation have influenced the significant changes in lifestyle over the past few decades in the Sultanate of Oman (Department of Nutrition Ministry of Health Oman, 2009). This has also contributed to changes in dietary patterns. Processed foods and high fats have become part of regular meals for many in Oman, while consumption of 'junk foods' has increased to become one of the prevalent meals for children (ibid.). Such changes are leading to the increased levels of chronic diseases and obesity in Oman which, in the past,

was an exemplar for their neighbouring countries in terms of healthy life styles (Musaiger, 1996).

The main health related food challenge for the Sultanate of Oman is to meet the energy and nutrient needs of its population in a way which prevents the nutritional-related disorders by encouraging healthy eating habits, particularly amongst children (Department of Nutrition Ministry of Health Oman, 2009). Oman has a target to create a population of healthy people and therefore puts nutrition as the central focus. The government health research centres concentrate on obesity prevention and analysis of eating habits to ensure that the majority of the population regularly eat meals in accordance to the food guide pyramids that advise on the daily and weekly healthy eating habits (ibid.). The majority of the Omani population believes that it is essential to consume a variety of foods for a nutritious and balanced diet. According to Zayed, et al, (2017), a balanced diet should consist of fewer fats, and more fruits and vegetables. Furthermore, a significant portion of the population believes that daily intake of fried foods and snacks expose a person to obesity since they are foods dense in fat and energy (ibid.). The country, however, lacks an effective framework to address the high daily intakes of calories that contribute towards people being overweight and obese (Department of Nutrition Ministry of Health Oman, 2009).

The life styles of young Omanis complicate situations since they have different food choices available to them but are dominated by the attractions of fast foods (Department of Nutrition Ministry of Health Oman, 2009). They rarely engage in physical activities because, most of the time, they are in classes and offices or in front of TV screens (Kilani, et al., 2013). Public health, in conjunction with the preventive interventions is largely becoming the cornerstone of the Omani government health strategies (Department of Nutrition Ministry of Health Oman, 2009). In response to the universal nutritional challenges, the World Health

Organisation has invited Oman to participate in a strategy known as Global Strategy on Diet, Physical Activity, and Health (ibid.). The Sultanate of Oman borrowed this strategy and its scientifically based approach to physical activity guidelines and food-based dietary guidelines designed by international health organisations.

### **1.1.8 Gender and Food Utilisation**

Strengthening women and diminishing the gender gap are two important points for the policy structuring pertaining to food security (Scanlan, 2004). The United Nations adopted a goal as a part of their Millennium Declaration in 2000 which was expressly intended to enhance gender equality and strengthen the role of women (United Nations Department of Economic and Social Affairs, 2006). These are not objectives directly related to food security in themselves; rather they have been demonstrated to add to enhanced productivity and efficiency (ibid.). For instance, “The State of Food and Agriculture: Women in Agriculture: Closing the Gender Gap for Development”, a policy document developed by Food and Agriculture Organization (2011) which stipulates that eradicating the gender discrepancy in agriculture is crucial to improving agricultural productivity, acquiring food security and eradicating hunger. Also, according to the World Development report (2012) presented by the World Bank (2011), development and gender equality reinforces the above message and recognizes the important impacts of women’s empowerment on the welfare and efficiency outcomes of policy or project interventions.

Starting in 1970, Sultan Qaboos developed many plans to improve the infrastructure, education, health and economy of the country (Allen and Rigsbee, 2014). Omani women along with men took an active role in the development both in private and public sectors (Al Talei, 2010). Oman was one of the first among Gulf Countries to grant political rights for women as they were allowed to vote for As’shura Council since 1994 (Al Talei, 2010). In

2007, 14 women were appointed to the 70 members of the State Council compared to 7 women only in 2004 (Al Talei, 2010). Furthermore, in Oman, women have achieved political participation and have also gained the right to receive equal wages with their male counterparts (Al Talei, 2010). They are granted free and equal health services and educational opportunities (ibid.). The general law of Oman perceives women as equal to men and regards them as having similar rights and responsibilities towards the development of the country (ibid.). However, Omani women still need a male guardian's permission to get a passport, marry or divorce. Only men can pass their Omani nationality to their children, unlike Omani women, who cannot pass their nationality to their children from non-Omani fathers. In social terms and within the family, a woman is considered subordinate to a man and the law usually doesn't interfere with family affairs. Despite the fact that women have equal educational and work opportunities as men, a woman must get her guardian's permission to study and/or work. Also, education as a tool to empower women is often used to further deepen gender differences as it presents women as 'educated housewives' and pictures them doing mainly household chores, while men control family affairs outside the house. Furthermore, it is believed that men are supposed to be the breadwinners for their households and allowing women to work might threaten their social image in the eyes of their community (Al Lamki, 1999). Therefore, even when a woman is allowed to work, her choice of work needs to be approved by her guardian, either her husband or father (Ruby, 2013).

Thus, in Oman and similar societies in the Middle East, women represent the honour of the family that men need to protect. As a result, men limit the exposure of women to the outside world in order to maintain the reputation of the family (Al Lamki, 1999). Haddad and Esposito (1998) argue that Arab gulf countries as oil producers are a special case in that regard because of their ability to grant a wealthy life for their citizens. As a result, women do not actually need to work in order to contribute to the wealth of the family (ibid.). In addition,

most labour market needs are mainly fulfilled by foreign labour, especially male labour, leaving fewer opportunities for women (ibid.). Furthermore, many women are not allowed a job in a gender mixed work place (Al Lamki, 1999). They are expected to work mainly in education as teachers for children and girls, and in medical specialisations (Haddad and Esposito, 1998). Additionally, by the authority given to the husband by the Islamic law, women have to ask their permission before seeking a job outside the household (ibid.), thus even if women are allowed to work in full time jobs, their participation in public life is still restricted and limited. For example, women who may be required to drive alone for long distances to attend to work places are not allowed to do so or to engage in social activities. Thus, marriage sometimes is seen as a burden to women that prevents them from fulfilling their ambitions and dreams (Ruby, 2013). In particular, there is a gap in the literature on the gender status of women in Oman and its link to household food security.

## **1.2 Research problem and questions**

The aim of this study is to investigate the role which women can play in contributing towards Oman's food security. The general research objective and specific research questions are set out below:

The general research objective is: *To explore the current role of Omani women in food security (Utilisation aspect of food security)*. The more specific questions are:

1. What is the current level of awareness regarding the issue of food security among households? (regarding food purchase, storage, preparation and consumption)
2. Who is responsible for food-related decision making in the household?
3. What sources of information/ services/ help do women receive related to food issues?

### **1.3 Thesis structure**

This thesis comprises six chapters that are structured as follows:

1. The introductory chapter includes background information about the Sultanate of Oman, its agriculture, food security and the status of gender and food utilisation.
2. The literature review chapter reviews and discusses the theoretical background and literature related to food systems, food security, the influence of culture on food habits and the role of women. The chapter also identifies the research gap and provides justification for the focus of this research.
3. The methodology chapter focuses on research design, data collection methods and data analysis used in this research.
4. The chapter on awareness and perception of food safety, nutrition, and food security among Omani women explores the means by which Omani women plan, access, purchase and provide the food for their households, how they maintain the safety and nutritional content of the food and how they handle food waste. The chapter also sheds light on their perception of different food issues.
5. Chapter 5 explores the sources of information and knowledge available to Omani women pertaining to various food issues which have been discussed in the previous data chapter (chapter four) and their awareness and access to the available educational programmes provided by the government.
6. The final chapter takes the form of a discussion and review of the main findings of the research, and locates the issues discussed within the literature. The chapter discusses the limitations and problems faced, in addition to the autobiographical reflection of the researcher. followed by conclusions and recommendations

## **2 Literature review**

### **2.1 Introduction**

This chapter discusses the literature relating to food security and the role of women and culture. It covers an array of literature works in order to obtain a more comprehensive understanding of the issue being researched. Topics that are discussed in this chapter include food and food systems, global food security and its challenges, culture and society and their impact on people's dietary choices, the role of women in food security and food utilisation aspects of food security. This chapter also justifies the choice of the Sultanate of Oman as the location of this case study.

Methods used to obtain secondary data used in this chapter are given in the following chapter (see page 86)

### **2.2 Food and food systems**

*“Food may be symbolic, but it's also officious for feeding as roofs are for shelters, as powerful for including gates and doors”*

– Mary Douglas (Douglas, 2014 – p.12)

This section defines food, its importance, food systems, food security and its challenges.

#### **2.2.1 Definition and Importance of Food**

Food can be defined as substance that is eaten or drunk, which contains beneficial nutrients for the body, as it gives the body the ability to grow properly and protects the body against diseases such as diabetes, cancer, tooth decay, stomach disorders, as well as constipation and weight gain (Nestle, 2013). In addition, food provides individuals with the energy necessary to perform the duties and tasks entrusted to them. It is difficult to separate the history of human evolution from the history of food in general, as food has been one of the most important signs of urbanisation through the ages. In fact, food is a fundamental human need that is rooted in the biology of sustaining existence (Reis, 2012). The need to prepare a meal

did not emerge with the appearance of humans, but rather preceded it. This is because food is a vital necessity shared by all living beings even before the existence of human beings. But with the advent of rational humans, the satisfaction of this necessity has caused them to invent new methods that varied with the development of community society and thus human civilisation (Nestle, 2013). It is interesting that everything that could be physically eaten on our planet, without causing harm to the eater, has been eaten by one culture or another throughout history (den Hartog et al., 2006).

The importance of food, such as meat of all kinds, grains, legumes, and vegetables and fruits, stems from the containment of nutrients necessary for the production of energy, the conduct of construction, growth, reproduction and maintenance of damaged tissues (Caspi et al., 2012). Due to the inability of the human body to manufacture these nutrients, or the inability to manufacture them in sufficient quantities, it was necessary for humans to obtain these elements through food. The nutrients needed by the human body are divided into six main groups: water, carbohydrates (carbohydrates), proteins, fats, vitamins, and minerals (Reis, 2012). With time, the relationship between human beings and their food became more sophisticated and complex that it led to what it is now known as food systems. These food systems are further explained in the following section.

### **2.2.2 Food Systems: Definition and Its Elements**

The food system is a complex and dynamic interrelation of economic, environmental, cultural, and political factors that influence how food is produced, processed, transported, and consumed (Food, 2015). The High Level Panel of Experts on Food Security (HLPE, 2016) states that a food system “consists of all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outcomes of these activities,

namely nutrition and health status, socio-economic growth and equity and environmental sustainability". Food systems consist of the following stages:

- 1- Food Production: It is also called food industry; it is a group of industrial processes that aim to provide a community with many food products. It is also known as the process of converting ready-to-eat food to food based on a range of production processes, in order to be suitable for human consumption by maintaining its stability for the longest possible time (Dobermann and Nelson, 2013).
- 2- Food Processing: agricultural processing in general and food processing, in particular, play a pivotal and essential role in agricultural and food production by maximising the use of that production through processing, preserving and presenting it to the consumer, who is either experiencing a scarcity in this production sometimes or an abundance that is not exploited at other times, as the food needs and necessities of the consumer vary globally (Food, 2015).
- 3- Food Distribution: food distribution: programmes aim at distributing foods and other nutrition assistance to children, low-income families, emergency feeding programmes and the elderly in order to strengthen the nutrition safety net (Food, 2015).
- 4- Preparation and Consumption: It represents the optimal consumption of food, balance and moderation in spending without waste, in order to preserve food and be available to all individuals. The rationalisation of food consumption through a series of conscious actions and plans, which guide the individual to the optimal way of consumption (Dobermann and Nelson, 2013).
- 5- Marketing: a successful food system will increase access of food to the largest possible segment of the population and contribute to the socio-economic welfare of everyone (National Research Council, 2015).

- 6- Waste recovery: it is the process of converting waste and damaged materials into new products with environmental and economic benefits. In order to limit global warming, prevent the accumulation of waste that lead to human health problems, preserve the environment and reduce dependence on raw materials extracted from nature to produce new materials (Food, 2015).

In general, food systems are composed of two main domains which are the supply and demand domains. Both domains need to be balanced in order to ensure an optimised function of the food system. This balance, as shown in the diagram below (Figure 2-1), can be measured and quantified by taking many factors into account including the status of food security (GFSA, 2011).

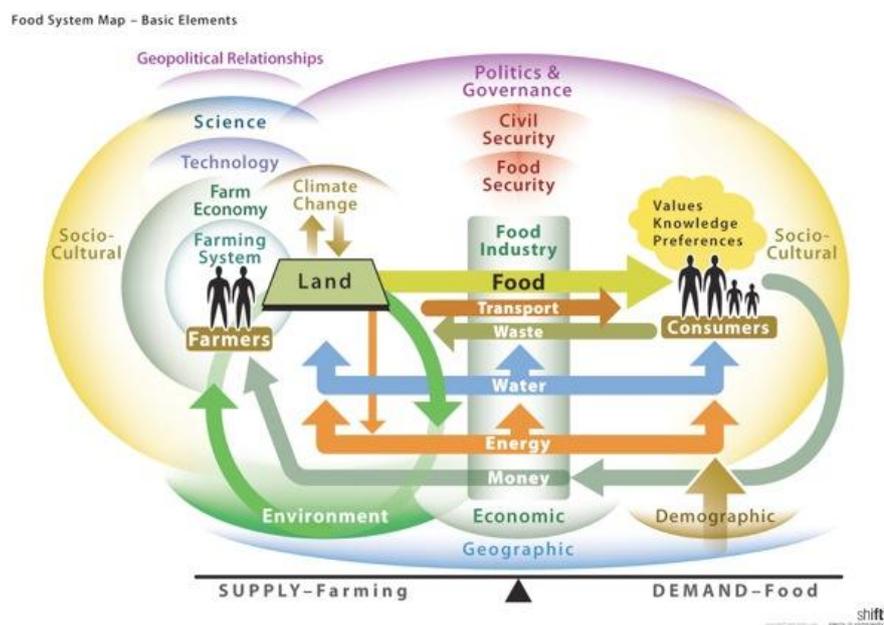


Figure 2-1 Global Food System Map (GFSA, 2011)

Accordingly, since food security is an important element of this research, the following sections will shed light on its definition, history and main challenges.

### **2.2.3 Food Security**

Food security refers to the availability of sufficient food to individuals, as it is considered to have been achieved when an individual is not afraid of hunger or is not exposed to it (Cromwell and Kyegombe, 2005). Food security is used as a standard to prevent future food shortages or interruption due to several factors considered to be serious, including drought and war, and other problems that stand in the way of food security. In addition, FAO (1996) defined food security as being that of “a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. Also, State-Council of Oman (2009) defined it as "the ability of the country to grant the staple food needs of people (e.g. rice, wheat, lentil, sugar, dates, dairy products, fish and plant or vegetable oils)".

The concept of food security was first introduced in 1974, which was intended to ensure the availability of foodstuffs at all times and maintain prices. In 1983, the FAO made efforts to ensure food access to all people as well as to create a balance between supply and demand, in 1986. The subject of poverty and hunger has received great attention, especially in situations of wars, natural disasters and economic collapse. Now, the focus is on new concepts and dimensions related to ethics and human rights (Pinstrup-Andersen, 2009). The FAO (2009) stated that food security is built on four pillars:

- 1- Food availability: Food availability relates to the supply of food through production, distribution, and exchange (Gregory et al., 2005). For a long time, food availability was seen as synonym for food security. This then led to the idea that increasing the production of food meant an improvement in food security. The World Food Programme (WFP) (2009) defines food availability as “the amount of food that is present in a country or area through all forms of domestic production, imports, food

stocks and food aid (Simon, 2012). This definition is not only applicable to regions or countries but also applies to small villages and households (ibid.).

- 2- Food access: Food access refers to the affordability and allocation of food, as well as the preferences of individuals and households (Gregory et al., 2005). WFP defines access to food as “A household’s ability to acquire adequate amount of food regularly through a combination of purchases, barter, borrowings, food assistance or gifts” (WFP, 2009; Simon, 2012). There are physical, financial and socio-economic factors that contribute to food access (ibid.). The physical factor means that “food is available where people need it” (WFP, 2009). However, it is not enough for food to be available; people need to be financially able to acquire it (Simon, 2012). This is the financial factor. In many regions of the world, some people can find food and have the ability to get it but have some social barriers that limit their accessibility to food (ibid.). People have full access to food when food is physically, financially and socially available to them (ibid.).
- 3- Food use (utilisation): food use or utilisation refers to the metabolism of food by individuals, which ensures food health, safety and suitability for human consumption. (FAO, 2013).
- 4- Food stability: Food stability refers to the ability to obtain food over time that focuses on the need to maintain food conditions, and provide the three previous dimensions with each other without any change. (FAO, 2009).

There are two main aspects of the concept of food security. The first is the amount and type of food required to achieve food security. The second is how to obtain food from both local and foreign sources and to ensure the flow of these resources (Kropff et al., 2013). A third aspect needs to be added to this definition of the concept and this relates to whether the food provided is commensurate with a healthy life. A group of those interested in the issue of food

security focuses on the first aspect but differ and disagree about the amount of food needed to achieve food security. Some of them argue that this proportion is relative to the level of income and living in society, which is expressed by ensuring the flow of the usual or objective food needs (FAO, 2013). Alternatively, some of them make it absolute, which is expressed by ensuring that everyone obtains the calories required for a healthy life according to internationally agreed standards regardless of the level of per capita income and life in society (Pahl-Wostl et al., 2013). In addition, food insecurity is linked to low intake of fruits and vegetables, missed meals and high consumption of foods and beverages that are dense in carbohydrates, sugars and fats (Fox et al., 2016).

Food security is a complex sustainable development issue, linked to health through malnutrition (Bickel et al., 2000), but also to sustainable economic development, environment, and trade (FAO, 2013). There is considerable debate around food security with some arguing that:

- There is enough food in the world to feed everyone adequately; the problem is distribution (Pinstrup-Andersen, 2009).
- Future food needs can - or cannot - be met by current levels of production (Wallace, 2000).
- National food security is paramount - or no longer necessary because of global trade (Godfray et al., 2010).
- Globalisation may - or may not - lead to the persistence of food insecurity and poverty in rural communities (Garnett et al., 2013).

#### **2.2.4 Global Food Security Challenges**

This section gives a descriptive picture of the challenges faced at the global level that are caused by or related to food insecurity. In general, these challenges are not all directly

relevant to the current research but rather important to give the reader a general idea of the issue. Moreover, the effect of these challenges on the status of food security in the Sultanate of Oman, where this research is conducted, was not clearly found in the literature.

### 2.2.4.1 World Food Price Volatility

In 2005-06, the demand for grains grew at a faster pace than production causing more than 60% increase in food commodity prices (Al Shamakhi, 2012) as seen in figure 2.2 leading to an elevation in prices of other food commodities in 2006 (World Bank, 2008). In early 2007, prices rose by more than 60%, which is commonly referred to as “global food prices crisis” (World Bank, 2008). By the second quarter of 2008, the prices of maize and wheat increased by three times and rice increased in price by five times the prices of 2003 (Schaffnit-Chatterjee et al., 2009).

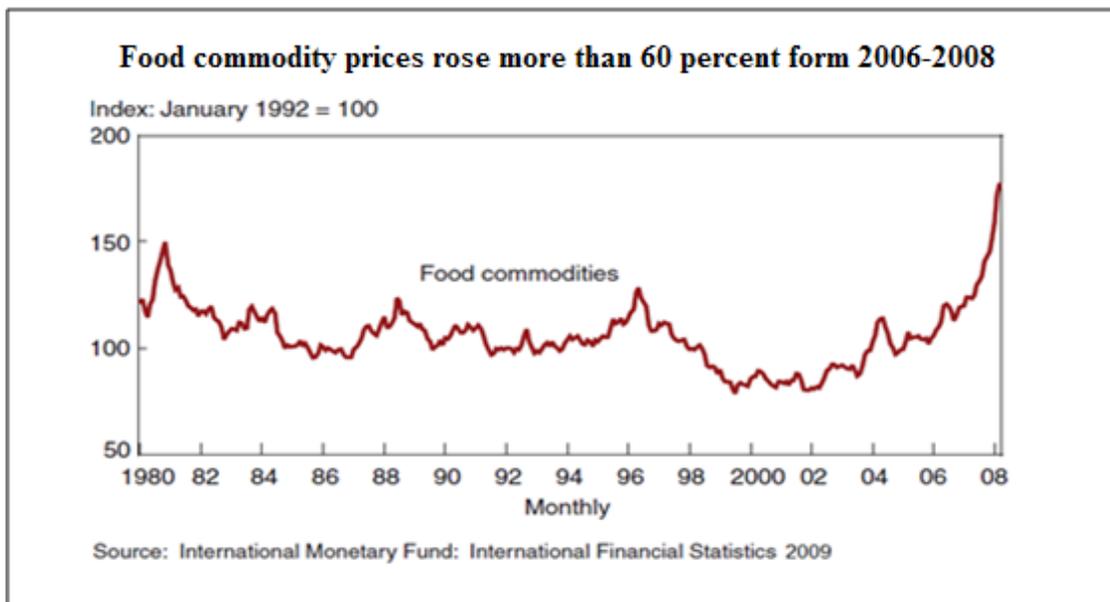


Figure 2-2 Food Commodity Price Index (Al Shamakhi, 2012)

The food crisis of 2007-08 was not the first one but was different in that it happened to almost all food products (Maye and Kirwan, 2013). Food prices in 2008 globally rose to unprecedented levels and continued to rise and remained relatively high until mid-2011. There are many factors affecting food price fluctuations, including agriculture and energy policy, commodity prices and market speculation, violent climate events if so, increasing global demand. Without an increase in agricultural production and improved food

distribution, the world is expected to face a problem feeding the population, which will grow over the next two decades, let alone eradicating hunger within the framework of the Millennium Development Goals. A report by FAO (2013) stated that price and income swings affected the food security of the poor and hungry more than other groups (FAO, 2013).

#### **2.2.4.2 Land Grabbing**

After the 2008 global financial crisis, many countries which had limited production capability tried to protect themselves from future crisis by leasing lands in poorer countries (De Schutter, 2009). Investors used these lands for energy production (biofuels), food crops and non-agricultural commodities (Messerli et al., 2013; Saturnino and Jennifer, 2012). Many of the investments led to the occupation of more than 10,000 hectares and 500,000 hectares including not only land and water but also infrastructural establishments such as roads and ports (Cuffaro and Hallam, 2011). Some of the lands were kept uncultivated or undeveloped without any investments in preparation to be available for use in any future crisis (Saturnino and Jennifer, 2012). This issue raises the question of the effect on the countries in which lands are leased. On the one hand, this process is seen as advantageous for the host regions and that local people could benefit from these investments, a practice that is often referred to as “land transaction” (Boamah, 2014); whilst on the other hand, this is seen as a “land grabbing” practice because of the negative effects it could have on food security, environment, human rights, access to resources of the host countries (Boamah, 2014; Messerli et al., 2013).

Food security and developments in the water, energy and land sectors are closely linked. The pattern of global economic development leads to a new wave of "land grabbing." Maintaining food security in countries with huge fiscal surpluses but which lack adequate farmland, some companies which are seeking to make a profit assume that buying or leasing land in poor

farming countries and extensive farm establishment will be of mutual benefit to the host country and foreign investors. It was found that the bulk of land lease deals occurred in 32 countries with "serious" or "alarming" rates on the World Hunger Index (Boamah, 2014). In those countries, most of the population relied on agriculture, but people rarely enjoyed legal rights over their lands. International land deals represent more than 10% of the total agricultural land in countries such as Cambodia, Ethiopia, Indonesia, the Philippines, Liberia and Sierra Leone. These countries have high hunger rates (Messerli et al., 2013).

#### **2.2.4.3 Climate Change**

Climate change is also seen as a challenge to food security. Most of the earth's cryosphere, frozen parts of the planet in Polar Regions and mountains, has been exhibiting significant levels of shrinkage (Rosenzweig et al., 2007). This reduction has been increasing at a rate larger than at any time during the last five thousand years and has been attributed by many scholars to global warming compounded by human activities (ibid.). Global warming and climate change have evolved in an inconsistent manner mainly because of greenhouse gas emissions (Schaffnit-Chatterjee et al., 2009). Rising temperature changes in ocean currents has led to extreme weather events such as hurricanes and floods as well as changes in rain patterns around the world (McDonald, 2010). These, in turn, have already affected agriculture and food production in both positive and negative ways. Growing seasons have been extended in some regions of the world while it has been reduced in others (ibid.). In addition, rainfall has increased in some parts and reduced in others, exacerbating issues of water security (Rosenzweig et al., 2007).

Droughts and floods can damage or destroy farming lands and high temperatures can be fatal to many food crops and livestock, representing a threat that the world may lose its ecosystem balance (Schaffnit-Chatterjee et al., 2009). Furthermore, rising sea levels and rising sea temperatures threaten biodiversity (McDonald, 2010). However, there is no evidence that

climate change has a direct impact on agriculture and food production more than or in isolation from other factors such as global trade and human activities (Schaffnit-Chatterjee et al., 2009). There is an increased concern that “large uncertainties exist as to when and where climate change will impact agricultural production and food security” (FAO, 2013).

#### **2.2.4.4 Biofuel Production**

In order to reduce the emission of greenhouse gases, increasingly there is significant focus on biofuels. This concern is driven by the fact that every year, about 15 billion litres of CO<sub>2</sub> is emitted into the atmosphere increasing global warming and influencing climate change (Koçar and Civaş, 2013). Crops and solid wastes can be converted to energy production; therefore, less carbon dioxide and improving energy stability should provide an improved economic status to many farmers around the world (Ajanovic, 2011). However, there is also an increased concern that production of biofuels can cause food prices to increase and food availability to reduce (Negash and Swinnen, 2013). For example, the use of corn to produce ethanol and fuel in 2008 was blamed for the increase in inflation during that time. Similarly, using agricultural land to produce fuel instead of food stock and competing for agricultural commodities is also seen as a threat to food availability (ibid.). Biofuels, however, are seen as enhancing the economic growth of farmers, increasing their purchasing power and thus improving their household food security. Negash and Swinnen (2013) claimed that when USA corn was used in 2008 to produce biofuels, corn for food production was improved in other countries of the world. As the energy crisis worsened, the efforts of the Gulf States, particularly in Oman, accelerated in search of alternative sources of fossil fuels. They found that in renewable energies. The most recent of these is biofuel, which has become a promising alternative because of its distinctive features and its positive environmental effects. Nevertheless, there are negative economic and environmental impacts of biofuel

production, including escalating conflict over water resources, as well as reallocation of land for energy crops at the expense of food crops.

#### **2.2.4.5 Global Water Crisis and Food Security**

Water is a key driver of agricultural production and water scarcity can cut production and adversely impact food security (Falkenmark, 2006). Water for agriculture is critical for future global food security. However, continued increase in demand for water by non-agricultural uses, such as urban and industrial uses and greater concerns for environmental quality, have put irrigation water demand under greater scrutiny and threatened food security. Water scarcity is already a critical concern in parts of the world (Fedoroff et al., 2010). Furthermore, there are growing public concerns that the footprints (i.e. negative impacts) of food security on the environment are substantial (Khan and Hanjra, 2009). Continued increase in demand for irrigation water over many years has led to changed water flows, land clearing and therefore deteriorated stream water quality. Addressing these environmental concerns and fulfilling urban and industrial water demand will require diverting water away from irrigation (Hanjra and Qureshi, 2010). This will reduce irrigated areas and their production and will impact on future food security. In addition, despite the vast natural-agricultural potential enjoyed by Oman from its arable land, Oman has not yet succeeded in satisfying the needs of its citizens from the productivity of its lands. Insufficient water resources, misuse and the tendency to move from rained to irrigated agriculture have led to a rapid increase in demand for water, especially groundwater, which has deepened the problem of food supply (Mbage, 2013).

#### **2.2.4.6 Land Degradation**

Land degradation generates impacts felt not only in the present but also in the future (Ringler, et al., 2013). It can also be felt at different scales. For example, cumulative changes in soil quality may progressively reduce a field's ability to produce crops over time, while changes in the flow of carbon between soils and the earth's atmosphere may have effects on climate that are felt both at a great distance and far into the future (Rulli et al., 2013). Figure 2.3

illustrates several potential effects of land degradation and their proximity to the farmer whose decisions influence the incidence of land degradation.

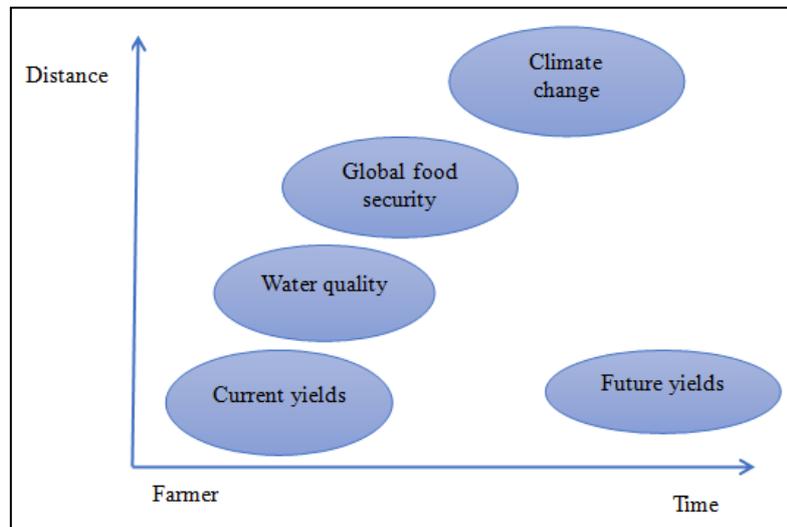


Figure 2-3 Illustration of several potential effects of land degradation and their proximity to the farmer (Wiebe, 2003).

The vertical axis represents spatial distance from the farmer, while the horizontal axis represents distance in time. Land degradation may reduce crop yields on farmers' fields both in the short run and in the future, for example, and may also affect downstream water quality in the (relatively) short run. Impacts on food security and climate may be felt only over time and at a distance (Ericksen, 2008). In Oman, land degradation affects human health through complex paths. Land is deteriorating and deserts are expanding in some areas, food production is low, water sources are drying up and people are forced to move to areas that are more likely to be destroyed. The implications include increased risk of malnutrition due to reduced food and water supplies, increased incidence of water and food-borne diseases due to poor sanitation and lack of clean water, increased respiratory diseases as a result of dust diffused in the atmosphere by wind erosion and other air pollutants, and increased infectious diseases due to population migration (Hamdy and Aly, 2015).

#### **2.2.4.7 Increasing Food Demand**

The world is now facing a new set of intersecting challenges (Evans, 2009). The global population will continue to grow, although some argue that it is likely to plateau at some 9 billion people by roughly the middle of this century (Magdoff, 2013). A major correlate of this deceleration in population growth is increased wealth, but with higher purchasing power comes higher consumption and a greater demand for processed food, meat, dairy, and fish, all of which add pressure to the food supply system (Godfray et al., 2010). So a slow-down in population growth does not necessarily imply a reduction in food demand.

At the same time, food producers are experiencing greater competition for land, water, and energy, and the need to curb the many negative effects of food production on the environment is becoming increasingly clear (Tilman et al., 2001). Agriculture, for example, is an expensive process. This is not only based on the 'cost' that agricultural activity may exhaust in terms of land, water and other resources, it also currently consumes high amounts of energy and uses chemical fertilizers that affect climate change by emitting high levels of greenhouse gas emissions (Schaffnit-Chatterjee et al., 2009); moreover, agricultural production will be under significant pressure due to the growing world population (Maisonet-Guzman, 2011). Despite the financial resources, Oman is unable to produce enough food and a large proportion of arable land is left untapped or underproductive due to poor investment and lack of funding. Consequently, it is necessary to accelerate integration to overcome the food crisis. With increasing food production shortfalls to meet the increase in consumer demand for food commodities, the food gap has been widening to the point that it is currently one of the biggest challenges to Oman's national security (Mbaga, 2013). Such impacts are exacerbated by the effect of climate change, as discussed above.

#### **2.2.4.8 Political Conflict**

Food security has been affected directly during political conflicts. These struggles often lead to destruction of the farming industry, natural resources, and also reduce the actual and potential for, economic growth in the developing countries (Messer and Cohen, 2007).

Deliberately, the disputing parties tend to affect the food security through the destruction of the food industry, such as farms and factories, and forcing sieges on food distribution which cause hunger and starvation (Befort, et al., 2012). Further, conflicts reduce farming population through fear, forced recruitment and death. Since 2011, The Syrian Arab Republic is witnessing an armed conflict which has resulted in a reduction in the cropped areas, unsafe transporting and marketing crops and a serious depletion in the livestock sector (FAO, 2013).

#### **2.2.4.9 Urbanisation**

Schaffnit-Chatterjee et al. (2009) predict that the majority of the world's population will be located in developing countries especially in cities. These cities will accommodate about 30% of people in the world by 2030. It is estimated that urban populations will grow by more than 3 billion between 2010 and 2050 and most of this increase is predicted to occur in Sub-Saharan Africa and Asia (Buhaug and Urdal, 2013). Moreover, one third of the population in developing countries will be people over 60 years old. It is not simply a matter of how many people will live on earth by 2050 that concerns the international research community but the demographic – as well as spatial – distribution of that population that will reshape the demand for food and its impact (Schaffnit-Chatterjee et al., 2009).

The majority of the people, especially in developing and poor countries, will be living in urban slums in with poor hygiene and with little access to quality education opportunities (McDonald, 2010). According to Buhaug and Urdal (2013) the growth of urban populations will happen for three reasons; high fertility rates in urban areas, conversion of rural areas into urban areas and the migration of people from rural areas to cities. Buhaug and Urdal further

claim that many farmers may lose their agricultural lands and resources because of environmental degradation and climate change which will leave them with no choice except to migrate to cities. Although cities can offer the hope for a better quality of life, increased pressure on these cities may result in opposite results (Misselhorn et al., 2012). Moreover, urban systems themselves may be overloaded because of climate change which threatens the environment by pollution and lack of sanitation (ibid.). Shifting from rural locations (including rural villages and towns) where most agricultural activities take place, can affect the status of household food security (Lynch et al., 2013). Even though urban agriculture accounts for 15-20% of world food production, it might not be enough to cover the increasing demand for food (ibid.). In Oman, city growth and rising incomes have contributed to major changes not only in the average number of calories consumed by developing country populations, but in the foods that make up their diet. As the total intake of calories increases, the proportion of calories from vegetable oils, meat, sugar and wheat also increased. This largely reflects the preferences of consumers whose increased incomes allow them to buy more expensive food items (Mbagha, 2013).

#### **2.2.4.10 Changes in Consumption Behaviour**

Food security will be affected not just by the future trends in human population, but also by how consumption is reshaping and being reshaped by consumer behaviour. Consumers' behaviour has changed with the change in economic growth in their countries (Nahman and de Lange, 2013). Developing countries are growing economically at a rate of 7% compared to 2.5% for developed countries. The improved economic situation of people of these countries has been reflected in their food choices as people shifted from vegetable based diets to meat based diets with more processed food choices (McDonald, 2010). The consumption of low priced foods such as pork, chicken, and dairy products has increased, exerting more pressure on resources, as well as being less associated with nitrogen pollution than beef.

Furthermore, almost half of the food produced globally is wasted along the food chain (Nahman and de Lange, 2013). The wastage happens at different stages of food harvesting, processing, storage, transport, preparation and consumption (ibid.) and is entirely due to human behaviour. However, the rate of wasting food differs from region to region depending on the welfare of people and other factors (ibid.). For example, according to Gustavsson et al. (2011), each consumer in Europe and North America wastes every year between 95 to 115 kg of food, while consumers in Sub Saharan Africa waste between 6 to 170 kg of food per person per year (Gustavsson et al., 2011). In developing countries, food is mainly wasted because of poor facilities of food harvesting, processing and storage (Parfitt et al., 2010). However, most food goes to waste in rich countries because consumers buy more than what they really need or consume and farmers sometimes leave the food un-harvested in fields “in response to either market force or weather/pest-related damage” (Gustavsson et al., 2011). All this amount of wasted edible food, if better managed, could have fed many undernourished people around the world (Nahman and de Lange, 2013). In addition, the inedible food waste could have been better used for energy production. Wasting food impacts on food security and climate change in a negative way because it consumes natural resources in order to be produced and emits greenhouse gases during both production and decomposition processes (Hall et al., 2009). Therefore, it can be clearly seen that consumers, along with their utilisation/consumption patterns, have an essential role in shaping demand aspect of food systems through their values, knowledge and preferences (see figure 2-1, page 29).

The following sections introduce the concept of culture and how it defines and determines people's dietary and food related customs and practices before discussing the role of women in food security. As Mary Douglas says:

*“We ought to know more about patterns of social involvement so as to understand that starvation and undernourishment are the result of social rejection more than of physical deficiency of food supplies”* (Douglas, 2014, p.12)

### **2.3 Culture**

Culture has an area of interest for multiple categories of scholars; there are over a 100 definitions of culture by scientists belonging to different disciplines, each of which highlights aspects related to its specialisation (Counihan and Van Esterik, 2012). Culture is defined as the total and complex fabric of ideas, beliefs, customs, traditions, attitudes and values, methods of thinking, action, and patterns of behaviour, as well as everything else that is built on them in terms of innovations or meanings in the life of society (Anderson, 2014). In addition, Hosking (2015) defined culture as the accumulated stock of symbols, ideas and material products associated with social systems, whether in society as a whole, family, social structure, population or the environment. According to Halloran et al. (2015), elements of culture are divided into physical and moral categories that share many characteristics and features, including:

- 1- Generalities: they are the elements that all members of society share. They are the basis of culture and represent the general characteristics of each community, such as language, clothing, customs, traditions, religion and values. These generalities relate to the connection and direction of community members and the increased spirit of community and social cohesion among them.
- 2- Specificities: those elements that are shared by a certain group of members of society, such as elements that relate to the basic skills of the profession. The

specificities are related to the social class, as the aristocratic class in society differs from the middle class.

- 3- Alternatives and variables: those elements that appear newly, and tried for the first time in the culture of society, as the choice is open to the person in adoption or leaving, such as the emergence of a new form of clothing, or a way to prepare food that previously did not exist in society.

Culture has been viewed also as a synonym for society (Spiegel, 2004). They are complementary, as there is no culture of origin without the existence of societies that adopt it. What matters to us in culture and society are the dimensions of this relationship to know the status of culture and its impact on society. One of these dimensions is the formation of a holistic view of society, considering that culture is the broadest concept that encompasses and absorbs various elements of society as well as the identification of the components of differentiation of a society at the expense of other societies (Spiegel, 2004).

### **2.3.1 Society**

Society is a group of individuals who are similar in their place of residence, living conditions, and meeting in one geographical area, with the development of life, the increase of urban manifestations, means of transportation, and others; the term society reflects the nature of the human relations which bind the members of human groups (Anton and Lawrence, 2014). According to Lynn (2009), the main components of society are the group of elements that form and govern its existence and continuity, as well as its general characteristics and the extent of its influence in other societies, as follows:

- 1- Populations: are the most important components of society, without them we cannot call buildings, houses and terrain in a given place the name of society, as individual is who constitutes this status, and maintains its survival.

- 2- Environment: All elements, physical and natural components that surround individuals and institutions within a single community. It is important that individuals interact with them and use their resources in appropriate ways.
- 3- Relationships: include indirect links between individuals and the environment to which they belong, on one hand, and between individuals themselves on the other.
- 4- Institutions: They are part of the buildings in the community, where there is a group of individuals specialised in the field to which each institution belongs.
- 5- Social system: a set of functions performed by individuals within the community, since it is linked to the idea of norms or rules governing social behaviour. The commitment of community members to these rules is linked to the idea of social sanctions, whether positive or negative. Each system has a set of characteristics such as objectives, behavioural models, symbolic aspects, physical aspects, and a set of laws. Basic systems are involved in the formation of a society's social structure. The social systems of society reveal ways to address their collective needs and their members' physical, spiritual, psychological and social needs

In the next section, the extent to which the cultural environment influences the patterns and choices of people is discussed.

### **2.3.2 Effect of Culture on People's Choices**

Within any culture, subcultures exist that allow their members to differentiate and belong in a distinctive way to a given model of choice. Subcultures are those cultures that have entered and coexisted with the culture of the original community, because of migration or temporary work and whose members have values, beliefs, and behavioural patterns that are relatively different from those of the indigenous culture (Fehr and Hoff, 2011). The total knowledge, values, beliefs, principles and ideas that prevail in a society in a period of time play a

prominent role in influencing individual choice behaviour since the early years of his/her life. The individual, through reading and observing the society in which he/she lives or acquires from other communities that visit him, brings about changes in his/her culture. There is a large number of criteria that help as a basis for the determination of a subculture (Anderson, 2014).

Customs, traditions, legends, and beliefs are an essential part of the culture of any society, and therefore represent a source of influence on the behaviour and choices of people. Some studies have shown that there are some differences between urban and rural families within the same country. For example, in rural communities, both husband and wife tend to participate in purchasing decision-making. In addition, housewives living in rural areas can be considered as difficult to compare to those living in the city (Hosking, 2015). This is also happening in different parts of the country. The individual living in the north differs in his demand for goods from the individual living in the south, due to differences in customs, traditions and climate (Halloran, et al., 2015).

It is also worthwhile, at this point, to highlight the theory of the psychology of the crowds that has been suggested by Gustave Le Bon in his book entitled *The Psychology of the crowds* (first published in 1895). According to this theory, the crowd is moved and governed by social norms that were formed by the individuals within the crowd (Le Bon, 2009). No matter what kind of individuals this crowd was made up of, or their individual or personal life styles or level of educational attainment, once they are united in a crowd, they are included in the spirit of the crowd. This spirit will make them think, feel and behave in a different way than what each individual among them would do if he/she were isolated from the crowd. Le Bon draws on an analogy based on a single cell of a living organism; different cells come together and form a whole living creature that has properties which are, in general, different than the properties of each isolated cell. Moreover, according to Le Bon, the members of the

crowd are motivated by incitement and excitement (2009). The crowd would always reflect the non-stop external stimuli. These stimuli might be of a different nature, noble or criminal, but regardless of this, they still had the same power over the members of the crowd, even to the extent that they might die for them. The stimuli grew and expanded as they transferred between the individuals. Only people with strong personalities might be able to resist these stimuli but such individuals would be small in number and most people would just drift with the flow. Le Bon asserts the influence of the collective subconscious of the crowd over the individual's conscious and reasonable values and ideas (Le Bon, 2009). In any given crowd, the emotions are more powerful than reason. Even with dissident individuals, a new idea of reason would soon fade away and would not be able to withstand the strong flow of the crowd's norms.

Dietary habits are an expression of the manifestations of repeated collective behaviour in the preparation of food. They depend on a combination of psychological and social factors and vary in terms of their prevalence. Some of them prevail in specific regions or groups, while others are common in society (Halloran et al., 2015). As every society has its dietary habits that are consistent with its values and principles in terms of good and evil, Halal and haraam, etc. Every society tries to root its identity in terms of its own culture, which is different from others and food remains one of the characteristics of the society that distinguishes it from others (Hosking, 2015). For example, Europeans eat red meat, while Asians eat insects because they are rich in protein, and despite the disgust of eating insects and reptiles, by Europeans and Westerns in general, scientists say they contain whole nutrients, since it is a staple meal in Asia and Latin America (Halloran et al., 2015). More examples on dietary habits and cultural differences will be further discussed in the next section.

### **2.3.3 Food Habits and culture**

According to den Hartog, et al. 2006 food habits are “the ways in which a community or a population groups chooses, consumes, and makes use of available food in respect to social, cultural, health, environmental and economic pressures”. In general, people tend to eat not based on the nutrient and/or energy content of food, but rather on the following four factors:

- Geographical factors
- Socio-economic developments and changes of a long and short nature
- Culture, and
- Household’s access to food (den Hartog et al., 2006)

It can be seen, from the previous section of this chapter, that culture plays a major role in steering and forming people’s choices. This also includes their food choices and habits. In fact, throughout history, food has been used to fulfill many social roles. For example, food was and still is used to: express cultural identity, as a mean of communication, to express status and power, as a mean of exchange and to express religious and magical meaning (den Hartog et al., 2006).

One of the main scholars who talked about the role of culture and society in food and eating is the British anthropologist, Mary Douglas. Douglas is of the view that by analyzing and understanding food and eating systems in different societies, one can understand how these societies perceive the world (Meigs, A., 2012). In her works, Douglas insists on how food habits reflect social relations in a specific group. According to her, “even social animals in the wild use food to create and maintain social relations”. Moreover, Douglas relates starvation and undernourishment to social rejection more than the deficiency of food provision (Douglas, M., 2014).

Inspired by the work of Douglas, a researcher, Anna Meigs, carried out an interesting investigation into how the exchange of food among Hua people are related to their social

unity and cohesion (Meigs, 2012). Hua people are a small horticultural population living in Papua New Guinea. Meigs found that Hua people adopt and strictly followed many food rules that defined their society. These rules were either absolute or relative rules. Absolute rules were the rules that represented a relationship between a person and the food in which this food was either useful or harmful. An example of an absolute rule is that young males are prevented from eating any food that is cooked in ashes unless ashes are removed from the food. This stems from their belief that properties of food, as all other substances, can be transmitted to people and vice versa. They believe that an oily skin is a symbol of a healthy body that is full with healthy fluids and fear that dry ashes might dry out the body. In contrast, relative rules represent relationships between the person, the food and the source of food. For example, their young males are prohibited from eating food that is associated with the ground. They believe that the ground is full with bodily liquids and substances which they call *nu*, which can be carried by plants and animals living close to the ground. Once this food is eaten by a person, the properties of the substances carried by the food from the ground will be taken up by the eater. In Hua, food rules are also, and strongly, used to strengthen and maintain social bonds. This is clearly stated in their rule: “No Hua person may eat food produced, prepared, or served by a person who is a stranger (That is, a person with whom she or he does not share *nu* thru co-residence or common birth)” (Meigs, 2012).

Food avoidance for social and cultural reasons are not only limited to Hua people but is widely seen around the world. Through the Holy Book of *Quran* and the sayings of Prophet Mohammed, Muslims were clearly prohibited from eating food that was prepared by non-Muslims or non-believers. This might be explained as a way to maintain unity within the new religious believers and to define the border between the “us” and “them” (David, 2010). It is also a common behaviour in many other cultures for many reasons. For example, it was observed by nutritionists in Central Africa that young children did not eat eggs. When

investigated, elder people revealed that long ago, it has been noticed that children would roam around their villages running after chickens and looking for eggs to collect. Therefore, their elders decided to save their poultry stock and keep the children away by stating that eggs were bad for their health (den Hartog et al., 2006).

This kind of food avoidance is known as temporary food avoidance. Another example, again from some African countries, is the avoidance of consuming fish by pregnant women as they thought that their babies might be born with fish-like heads if they ate fish (ibid.). However, permanent food avoidance is also prevalent for different reasons such as religion, culture and health or hygiene (den Hartog et al., 2006). A common example is the avoidance of eating pork by Jews and Muslims as they perceive pork to be unclean. Some anthropologists are of the view that, in most cases, food is considered unclean when it fails to fit into the prevalent systems of classification within the society. On the other hand, there is also the avoidance of consuming beef by the Hindus as cows are considered sacred in Hinduism. Another example of how religion shapes people's food habits is the Muslims' belief that food is a gift of God. Thus, Muslims always start eating their food by reciting the name of God and end their meals with thanks to God. In addition, Muslims will avoid wasting or discarding food in bins as this is perceived as disrespectful to the gift of God (den Hartog et al., 2006). This is also seen in grace prayer before and after meals among Christians. Also, Catholics do not eat meat on Fridays. They can eat fish or vegetables. They also fast during the 40 days of Lent, leading up to the festival of Easter (Bynum, 1988).

However, religion is not the only reason or motive behind food consumption or avoidance. People also tend to avoid eating animals that they have feelings for or emotions with. For example, Western societies won't consume dogs or cats because of their emotional relationship with them as pets. At the same time, consumption of dogs' meat is very common

in other parts of the world such as China, Vietnam and some regions of the Philippines (den Hartog et al., 2006).

Culture, social norms and beliefs were also linked to how people caused and/or handled food waste. In his book entitled “*Food Waste*”, David Evans argues that the suggested causes of household food waste by researchers (also mentioned in section 2.2.4.10 above) include the lack of a deep understanding of consumer intentions and behaviours. He also claims that these causes have led to the idea that consumers are often careless and unaware, and so they over-buy and prepare food that they don’t need and/or consume. This lack of understanding of the consumer has also led to campaigns encouraging people to the planning and proper handling of food in order to eliminate the amount of food waste. This attempt, he also sees as advantageous. However, Evans could not solve the problem in the long run. In his book, he presents various case studies of different UK households, observe their habits and thoughts of food from the planning and purchase points to the bin point. He records the journey of several food items from the shelf to refrigerator, pan, plate and eventually the bin exploring, in-depth, the mind set associated with people’s behaviour toward food and food waste. He also tries to create an understanding of the way food is seen as waste or potential waste.

According to Evans, it is a complicated process, and he advises that the issue should be seen in the light of consumers’ “household routines, shared understandings and definitions” (Evans, 2014). However, Evans was not the only party trying to understand hidden motives and behaviours causing household food waste. Scholars, in order to gain more understanding of people’s behaviour, have also discussed the environmental behaviour of consumers and the behaviour pertaining to food waste in the light of Theory of Planned Behaviour (TPB). In this theory, it is believed that behaviour is determined by intention. This means that an intention is always a motive and a basic driver of a particular behaviour. This intention can be determined by the attitude of the person holding it. In addition to attitudes, there are also

subjective norms and perceived behavioural control that help determine the intention. Subjective norms are defined as the “social pressure to engage in that particular activity”. On the other hand, perceived behavioural control refers to how people perceive their ability to behave in a specific way. Studies on (TPB) and household food waste found that both subjective norms and perceived behavioural control play a significant role in how people think and behave towards food waste. People tend to behave based on how they think other people, who they love, respect and/or value, would behave in a similar situation. It is not necessary that these thoughts reflect the actual norms/ideals of people or society as the personal perception, in this case, supersedes facts or “actualities”. Further to this theory, Russel et al., (2017) took a further step and studied the effect of habits and emotions on behaviours related to food waste. Emotions can be an important indicator of the value of a specific behaviour. In addition, positive and negative emotions can either, help or hinder, the effect of a behaviour and/or predict and cause it. Moreover, due to the frequency and “automaticity” nature of habits, there were considered an important factor that might influence behaviour related to food waste. However, the result of this study showed that consumers with negative emotions towards the issue had a strong intention to reduce food waste but, interestingly, ended up wasting more food than people with positive emotions. Ritcher and Bokelmann (2017) also conducted a study of 25 households in Germany and found that food purchase and storing habits were correlated with food waste. Similarly, in a study that surveyed 1062 Danish respondents, it was found that “perceived behavioural control” and habits were contributing to the amount of food wasted (Stancu et al., 2016).

Another interesting finding was that people from different cultures showed different attitudes towards food and food waste (Strasser, 1999 in Thyberg and Tonjes, 2016). An example of that is the difference between the relationship that people in the USA and France have with food. In the USA, people have a bad relationship with food or are giving less value to food

which results in higher rates of food waste (Bloom, 2010 in Thyberg and Tonjes, 2016). In contrast, French people have a long and deep relationship with food that makes it an important part of their culture (Rozin, 2005 in Thyberg and Tonjes, 2016). Consequently, people in France waste less food than the American people (Gatley et al., 2014 in Thyberg and Tonjes, 2016). Moreover, (Abdelradi, 2017) found that in Egypt, religion contributed positively to the awareness of people on environmental issues and thus served as a motivation to reduce household waste. However, a study by Elmenofi et al., 2015 (cited in Abdelradi, 2017) based on 181 respondents in Egypt showed that food waste was highly increased during *Ramadhan*, the fasting month in Islam, due to increased seasonal demand for food.

## **2.4 Role of women in food security**

As seen in previous sections (2.2.4.1 to 2.2.4.10), hundreds of governmental and non-governmental organizations around the world have been concerned with food security issues, as the right to food is the right to life (Pereira and Ruysenaar, 2012). Food and Agriculture Organization of the United Nations (FAO), for example, has focused its activities on combating poverty and hunger, promoting agriculture, improving nutritional levels, and enhancing food security, so as to enable the population to live healthily. This has led the organisation to adopt a long-term strategy for achieving sustainable agricultural development, as it seeks to meet the needs of both present and future generations by promoting environmentally, technically, economically and socially sustainable development measures (FAO, 2013).

In addition, FAO have focused on research that studies the conditions of the rural population aimed at developing and improving agriculture, the situation of rural women and the needs of rural women for education, training and rehabilitation and enabling them to generate income, as rural women are more affected by food shortages (FAO, 2009).

This special focus on rural women with special international and national attention stems from the fact that rural women bear most of the workload in the field and at home (Galié, 2013). Indeed, women are an essential part of the agricultural sector as they constitute an average of 43% of the agricultural workforce in developing countries. Over the past two decades, experts have observed the growth of the so-called "feminization of agriculture" process (Sraboni et al., 2014). This shift towards the feminisation of agriculture also included East and South-East Asia, as well as Latin America. For three decades, women's participation in agriculture has not changed significantly in most sub-Saharan Africa, but in fact it has exceeded 60% in countries such as Lesotho, Sierra Leone and Mozambique (Ogunlela and Mukhtar, 2009). In fact, agriculture remains the single most important source of employment in low-income countries. However, it has declined markedly in high-income countries where men and women move to jobs in industry and services (Sraboni et al., 2014).

In Oman, where this research is conducted, more than 65% of rural women are working in agriculture (MAF, 2017). Yet, in Oman, as in similar Gulf countries such as Kuwait, Qatar and the UAE, the participation of rural women is still neglected, due to the influx of a large numbers of foreign workers, which led to the neglect of women's contribution to the labour force, making them an unexploited resource (De Bel-Air, 2015).

Furthermore, Kassie et al. (2014) found that female-headed households in Kenya, for example, faced many constraints in gaining access to land and/or essential services such as health and educational services. In Sudan, they also have difficulty in getting access to transportation which limits their ability to sell or buy essential goods (Ibnouf, 2009). In addition, rural women's power has been depleted by the burden of pregnancy, childbirth and breastfeeding, along with the task of raising children, managing the house and agricultural work, and contributing to the raising of animals owned by the family (Haddad, 2011). However, women's involvement in the labour market, especially in agriculture, does not

come without obstacles in most parts of the world (Ogunlela and Mukhtar, 2009). In fact, this struggle of the female gender is deeply rooted throughout the history of the mankind as can be seen in the following section.

#### **2.4.1 Bridging the gender gap and its role in improving food security**

Based on what has been discussed in the previous sections, it can be seen that gender equality and the empowerment of women in agriculture are not only the right thing to do, but also critical to agricultural development and food security (World Health Organization (WHO), 2016). The World Development report presented by the World Bank (2011) states that development and gender equality reinforces this message and recognises the important impacts of women's empowerment on the welfare and efficiency outcomes of policy or project interventions. Therefore, strengthening the role of women and diminishing the gender gap became a major objective for policies pertaining to food security. For example, the United Nations adopted a goal as a part of their Millennium Declaration in 2000 which was expressly intended to promote gender equality and strengthen the role of women (United Nations Department of Economic, 2006). Moreover, a FAO policy document (2013) which was titled as "The State of Food and Agriculture: Women in Agriculture: Closing the Gender Gap for Development" states that eradicating the gender discrepancy in agriculture is crucial for improving agricultural productivity, acquiring food security and eradicating hunger. The following section discusses gender and female gender roles through history to gain more understanding of the role of women in household food security.

#### **2.4.2 Gender**

The word "gender" has been used since the 14th century and its use is increasing in all sectors of society (Aronson, 2011). The Centre of Arab Women Training and Research (CAWTAR) defined gender as "The different roles (rights, duties, and obligations), relationships, responsibilities, images and status of women and men, which are socially and culturally

determined through the historical development of a society and are subject to change" (Chant and Pedwell, 2008). Moreover, Zosuls et al., (2011) defined gender as the socially defined roles of both male and female, as these roles were accounted for by educational change over time and varied widely within a single culture and from one culture to another. These definitions refer to the roles and responsibilities defined by society for women and men. Gender means the image that society sees as women and men, and the way society expects people to think and act; this is due to the way society is organised, not to the biological differences between men and women (Sarsons, 2015).

Thus, the philosophy of gender asserts that everything other than pregnancy and childbirth is determined by society and is not instinctive or genetically determined. This means that the concept of gender refutes or minimises the influence of innate and biological differences in determining the roles of men and women and denies that man's idea of himself is based solely on biological and hormonal reality (Pittman, 2014).

Recognising the division of roles between women and men is the first way to show and clarify the actions and roles played by women and men in a society or in a specific context defined by the culture, traditions and customs of society, as it is based on the values, controls, and perceptions of the society for the nature of both men and women, their abilities and readiness, and what suits each of them according to the expectations of society (Sarsons, 2015). The role of women can be summarised as follows:

1. Women's productive role

This role represents the multiple productive works carried out by women in the family and outside it, which includes the work related to their family role, as well as those related to the field of agriculture such as the care of livestock and poultry, and the service of the land. It is noted that this type of work is characterised by concealment,

and this can be attributed to the lack of recognition and appreciation because it outside the accepted role of women (Sen and Mukherjee, 2014).

## 2. Women's reproductive role

Reproduction represents the main role of the vast majority of women and includes in general and simplified pregnancy, childbirth, child feeding, child-rearing and family care. Considering reproduction as the main role, implies that it is the only recognised role of women by society (Pittman, 2014).

## 3. Women's community management role

Community management refers to the provision of some collective services, including the management of environmental resources such as water, fuel and land, as well as the work done with other women and men to serve the local community. These activities vary according to the family conditions and their social and economic level (Pittman, 2014).

### **2.4.3 Women's Roles in Ancient Civilisations**

The status of women through the ages is different and sometimes contradictory, as the view of women has fluctuated from being an insignificant one to being rulers who controlled the destinies of society (Freeman, 2014). Women in ancient Egypt enjoyed full equality with men, as there is almost complete agreement among historians that Egyptian women enjoyed a legal and social status which they did not enjoy in any other ancient civilisation (Bagnall and Criore, 2015). This is verified by the fact that the ancient Egyptians left sufficient evidence in the form of legal documents and correspondence showing that men and women within each social class were equal under the law (Watterson, 2011). Women could own and sell real estate, land, and slaves, borrow money, sign contracts, seek divorce, and testify before the courts. In addition, inheritance was equally divided between men and women. In the middle kingdom period of ancient Egypt, some women held titles, all of which were related

to the supervision of royal houses, such as supervisors of kitchens and guardians of the king's chamber. Women were also assigned to the functions of supervising dancers and musicians who joined the Royal Court. Moreover, women have also worked in the medical profession, especially in the field that we now call gynaecology and obstetrics (Bagnall and Criore, 2015). The production of bread is one of the tasks that women have specialised in each stage, from grinding the grains to preparing the dough and ending with the baking of the bread in the ovens. Although the ordinary women used to store their own household needs, high-level income families employed maids to perform some household tasks. In the light of this, it is, therefore, unsurprising that the ancient Egyptians did not prohibit women from practicing any type of profession (Freeman, 2014). This is confirmed by the royal decree issued in the Second Dynasty to abolish the authority for women to occupy the position of the king, as ancient history has many examples that show the kings' keenness to consult their wives in public affairs. In turn, the queen ensured complementary and indispensable activities (Watterson, 2011).

Moving to the Greek culture, it is noticeable that Greek legislation did not recognise the equal rights of women. Women were considered to be less human than men. Aristotle stated "Nature has not provided women with any reasonable mental readiness and should therefore be confined to housework, motherhood, nursery, etc." Women, among the Greeks, were despised and humiliated; even her Highness was considered to be an abomination of the Devil's work. Moreover, women were like goods sold and bought in the markets, deprived of inheritance, and the right to dispose of money, as they were in the worst-case in terms of ethics theory, legal rights and social behaviour (Freeman, 2014). But in Sparta, women were given some civil rights related to inheritance and the ability to deal with the society in which they lived. This was not the result of legal texts. It was because of the situation in the warrior city, where men's passion to fight allowed women to get out from the isolation of their home

to buy their needs during the absence of their husbands. Therefore, women in Sparta can be considered better than women who lived in Athens and other Greek countries (Wilmer and Dillon, 2014).

Despite male dominance in Roman society as among the Greeks, the status of women was different from their position in Greece, and may have had some impact at many levels. However, they were under male control, whether this male was their father, husband or brother. In addition, the work of women outside the family was limited, as in Greece, women were excluded from any representative roles on theatre, because they were exclusive to males.

In contrast, in seventeenth-century India, women were able to travel freely, whether they were married or single, attend meetings and participate in celebrations side by side with men and could own land and money. Then the situation changed after the arrival of the Aryans, as the *Phyads* (ancient Indian books with great knowledge) forbade wives from participating in common public offerings, therefore, women's rights and privileges were over (Hallett, 2014).

With regards to the Arab world, Arab women, in the pre-Islamic period (Jahiliyah), were worse off, their rights were denied and their dignity was not respected. As the society did not recognise their humanity, Arab men were often offended when preached to by a female (El Cheikh, 2015). However, women were still prominent figures in public life, to which they made significant contributions. However, they were carriers of water, feeders cattle and weavers clothes as well as caring for the home. Most of them travelled to meet guests, talk to them and circumcise their husbands. Women in Jahiliyya, the pre-Islamic period, also followed men in wars, supported them and treated patients, carried water to the soldiers and fought if necessary (Webb, 2014). With the advent of Islam, women enjoyed their human rights and were able to have a prominent place in society. Islam equated males and females as human beings in rights and duties. Women in Islam had a leading role in reforming their

husband and children. If children and husbands are reconciled, society was seen as automatically being reformed, because men and children represent society, that is, women had an indirect but effective role in community reform (Wadud, 2013).

However, over time, women started to lose the status given to them by the original laws of Islam and thus were more governed by pre-Islamic gender rules that retained their power. Nowadays, despite all the efforts made to achieve equal opportunities between women and men, gender gaps remain large in various areas, as women in many Arab countries still have a long way to go to achieve their rights. Women form 70% of the world's poor, as well as the number of illiterate women in the world exceeds the number of men by two to one. Furthermore, girls account for 60% of children who lack access to basic education and often work longer hours than men without appreciating or acknowledging their work. The threat of violence in many forms hampers women's lives in many societies (Kelly and Breslin, 2010).

#### **2.4.4 Women's Roles in Modern Societies**

In modern societies, the issue of women's empowerment has received increased attention, as women have the opportunity to exercise their role effectively, equally as men, and contribute to decision-making in various spheres of cultural, social, political and economic life (Giuliano, 2015). Many organisations, agencies and countries have paid attention to this area through the establishment of a series of conferences and symposia. These events have pointed to the importance of empowering women and giving them the full right to work in all fields (Whyte, 2015).

Although women in modern times began to show their role in European societies for decades, it is a relatively recent role. Before the European Renaissance (which could be considered as the beginning of the sixteenth century), women did not have a social role, but society was controlled by Biblical thought, which carries a great deal of abuse and underestimation of women themselves (Hufton, 2011). In the 1990s, women began to regain their status. Some

associations, organisations and some jurists appeared to advocate women's rights after all the long years that deprived women of their basic rights. Today we see women as teachers, doctors, engineers and even ministers. In addition, they were able to impose a strong presence in the fields of work and prove efficiency and success in various fields (Giuliano, 2015).

In the modern Middle East, the role of women has witnessed a quantum leap since the early part of the twentieth century (Keddie, 2012). Many women have emerged in the fields of leadership and control as voters, directors and decision-makers. They have also emerged in the field of agriculture and rural development. In addition, they have participated in the cultivation, harvesting and marketing of crops. However, the role of uneducated women cannot be neglected, as they also have a prominent role in moving the wheel of development and prosperity in society. They do some work such as sewing, embroidery and handicrafts that benefit different groups. However, the entry of women to work has had negative effects on their families, as they can no longer provide adequate care for their children. Many women have relied on maids to manage the house and take care of their children, which led to the mixing of their knowledge and culture (Moghadam, 2015). In conclusion, women now have an active role in society in the same way as men, as they have become involved in social, cultural, educational and political activities which enable them to stand by men in order to build civilisation. However, in some Arab societies women are still restricted by certain customs and traditions that restrict their role within society (Keddie, 2012).

In Oman, women are playing an important role in the society at all levels. Omani women can be seen participating in all jobs and enjoying all legal work rights equal to their male colleagues. However, there are still many obstacles, social and religious, that Omani women face in their everyday life.

#### **2.4.5 Role of women in Household food security**

Apart from their role in the area of agriculture, women have also played a crucial role in household food security, food diversity, and child health. Household food security is defined as “The ability of the household to secure, either from its own production or through purchases, adequate food for meeting the dietary needs of all members of the household” (FAO, 2010).

Research on household food security in Kenya highlighted the fact that little empirical interest has been given to household food security in Africa. They claim that most of the literature focuses on the relationship between gender and agriculture (Kassie et al., 2014). At the household level, power is usually determined by how much each spouse brings in the marriage (Van den Bold et al., 2013). Since women usually bring fewer properties; consequently they have less power in decision making (ibid.). In addition, gender inequalities, in terms of control of livelihood assets, limit women's production of food. Studies conducted in Ghana found that the lack of secure access to land and natural resources drove women to practice shorter periods of rest in comparison with men, thus reducing their income and food availability for their families (FAO, 2009).

To fully understand the significance of the role of women in areas pertaining to food utilisation as a crucial part of household food security, one has first to gain insight into the effect which food utilisation has on one's life and the food system in general. Therefore, the following sections on the various effects of food utilisation do not necessarily reflect the focus of the research but rather explain its importance.

##### **2.4.5.1 Food insecurity (utilisation) and health**

Whether a person is able to access and sufficiently utilise adequate and safe food or not can have a significant impact on their health. Campbell (1991) summarised the effects of food

insecurity including health consequences in her conceptual framework presented in Figure 2-4:

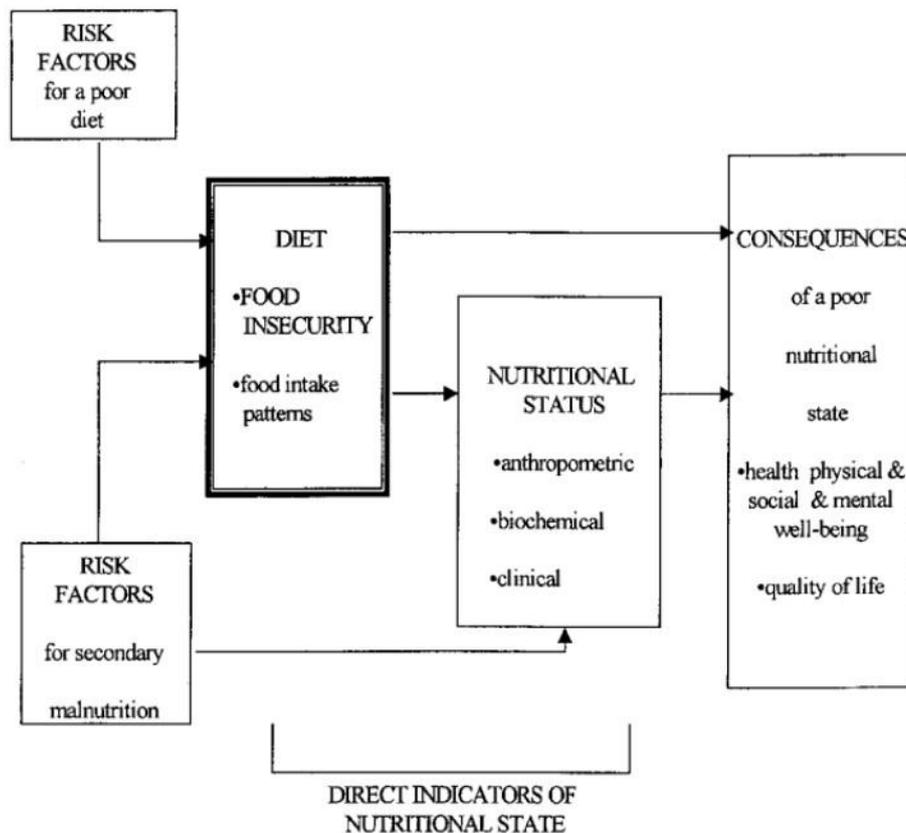


Figure 2-4 Campbell's conceptual framework for food insecurity, the risk factors, and consequences (Campbell, 1991)

The framework explains that food insecurity and poor nutritional intake along with different social and clinical factors can eventually lead to poor health and thus to a deteriorated quality of life. In a number of other studies, household food insecurity was again linked to several physical and mental health issues.

In Canada, Vozoris and Tarasuk (2003) found that about 4% of Canadian people were living in food insecure households. Their studies showed that there was a clear association between the status of household food security and self-reported health issues. As food insecurity increased, self-reported health issues also increased (Vozoris and Tarasuk, 2003). The health issues reported were related to diabetes, cardiovascular disease, hypertension and food

allergies in addition to mental health issues (Vozoris and Tarasuk, 2003). The results of this study were consistent with studies on people in the United States where household food insecurity was associated with poor physical, and mental health in elderly disabled women (Klesges, Pahor et al., 2001). A similar study was conducted in the Lower Mississippi Delta region in the USA to look at the association between household food security and adult health status (Stuff et al., 2004). The results showed that participants who lived in food insecure households were more likely to rate their status of health as “fair/poor”. Furthermore, when studying the association of food insecurity with health outcomes of disabled adults, Brucker (2017) found that adults, both with and without disability were more prone to poor health with increased food insecurity. The use of health care services also was higher for adults living in food insecure households compared to food secure adults. Their visits to health care units were mostly done in the same year or in the following year to becoming food insecure (Brucker, 2017).

Food insecurity was also seen to be associated with impaired levels of glucose control in patients with diabetes (Nelson et al., 2001). This was due to both “hypoglycemic reactions while taking insulin or hyperglycemia if they stopped their insulin to avoid insulin reactions” (Nelson et al., 2001). Most of these patients who participated in the study were suffering from diabetes type II which is related to obesity and thus required calorie restriction as part of the treatment (Nelson et al., 2001). However, since food insecurity was limiting their access to adequate food and restricting their intake of fruits and vegetables, food insecure, low income, diabetic patients found it more difficult to commit to the diabetic diet (Nelson et al., 2001 & Seligman et al., 2010). Type II diabetes patients who suffer from food insecurity usually show poor self-management of the disease and poor monitoring of blood sugar levels (Sattler et al., 2014). Similarly, a study carried out by Becerra et al. (2016) on 8252 participants with type II diabetes in California, USA showed that patients with food insecurity utilised more

healthcare than food secure patients. The study found that food insecure and low self-efficacy patients of type II diabetes utilised double the amount of health services compared to food insecure patients (Becerra et al., 2016). One explanation of high health care utilisation by food insecure diabetic patients is that the choice of medication is the only choice left to them based on their low food purchasing power (Gucciardi et al., 2014). Food insecurity was also linked to low level of cardiovascular health and a number of cardiovascular disease risk factors (Becerra et al., 2016). People who are food insecure are usually dependant on diets that offer high calorie intake for lower prices (Saiz et al., 2016). These meals are often high in sodium and potassium increasing the risk for hypertension (Saiz et al., 2016). In addition, people suffering from food insecurity attempt to overeat when the food is available out of fear of lack of food in the future (Saiz et al., 2016). Some literature also associates food insecurity and inadequate food intake with an increased tendency for smoking among smoking people (ibid.).

#### **2.4.5.2 Food utilisation and obesity**

The dependence on high calorie inexpensive diets and overconsumption when food is available among food insecure people is also connected to obesity according to Fox et al. (2016) who conducted a study to explore the rates of food insecurity among patients visiting a paediatric weight management clinic. The study found that food insecurity was common among the patients of the clinic. Food insecurity is linked to low intake of fruits and vegetables, missed meals and high consumptions of foods and beverages that are dense in carbohydrates, sugars and fats (Fox et al., 2016). This was also seen in the study by Schonfeldt et al. (2018) in South Africa. This study showed that poor people, although they could access enough food, were consuming a high energy diet that lacked essential nutrients. However, malnutrition and obesity are not the only products of shortage of adequate food but also a result of excess consumption of food. Based on the Global Nutrition Report (2015), the

number of over-nourished people in the world almost equals the number of under-nourished people (1.9 billion over-nourished vs 2 billion under-nourished people) (Stats, 2015). South Africa, according to Schönfeldt et al. (2018) is an example of an abundant food secure country where under-nutrition still exists in the country along with the increasing prevalence of over-nutrition and obesity.

The epidemic of obesity according to Mitchell and Shaw (2015) is now affecting more than 35% of the world population with the highest rates in the Americas, Europe and the Middle East and in females more than in men. Their article also showed that the previously linked epidemic to industrialised and wealthy countries is now spreading to low and middle income countries (Mitchell and Shaw, 2015). In the case of low and middle income countries, people are directed more toward inexpensive high calorie foods in replacement to traditional diets that required more preparation time and also were more costly (Mitchell and Shaw, 2015). These countries also have introduced fast food chains that have contributed to obesity (Mitchell and Shaw, 2015). The short and long term consequences of increasing obesity that is related to poor dietary habits and inadequate nutrient intake are alarming. In the short term, obesity is linked to a number of diseases that can increase the utilisation of health services in the country (Mitchell and Shaw, 2015). In addition, and in the long run, obesity leads to a less productive work force. Moreover, the article also highlights the impact that obesity has on the health of children, as the children of obese parents are more likely to also become obese (Mitchell and Shaw, 2015). There was also evidence that pregnant women with poor dietary habits and poor nutrient intake were more likely to conceive babies with higher risk of obesity as they grew up (Ravelli et al., 1976).

#### **2.4.5.3 Food insecurity and mental health**

In addition, poor food utilisation and food insecurity can have a significant effect on the mental wellbeing of people (Jones, 2017). Food insecurity can be accompanied by a number

of unfortunate circumstances such as low income state, low educational level, inadequate food intake and poor health (Jones, 2017). The inability to acquire enough food along with socially unacceptable ways of obtaining food can also trigger anxiety and stress among food insecure people (Jones, 2017). A study by Atuoye and Luginaah (2017), in the upper west region of Ghana, found that mental distress was elevated among food insecure household heads as they would also encounter many sleepless nights worrying about ways to provide food for their families. Davison and Kaplan (2012) also stated that poor intake of certain essential micro-nutrients can result in increased anxiety and stress. Furthermore, food insecurity was also linked to poor mental health among children exhibited by depression and suicidal behaviour and thinking in American teenagers (Vozoris and Tarasuk, 2003). Not only does poor food utilisation and insecurity affect mental health but it has also been shown that poor mental health, especially among women, can lead to food insecurity (Noonan et al., 2016). Depressed and stressed women often tend to spend more on consumer goods that help them feel better than to spend on essential life requirements such as education and food and thus making their households vulnerable to food insecurity (ibid.). Besides, the anxiety and stress linked to food insecurity, there is also an increased risk of high blood pressure and hormonal imbalances that can lead to obesity and insulin sensitivity (Mokdad et al., 1999). Food insecurity was also found to lead to low commitment to physical activity guidelines among children and adults (To et al., 2014)

#### **2.4.5.4 Household food waste**

Moreover, it has been shown that household food utilisation patterns played a significant role in generating food waste that is considered now a challenge to global food security as discussed previously in section (2.2.4.10) of this chapter. The following section explains more about household food waste; its definition and causes.

#### **2.4.5.5 Definition of food waste**

The United States Environmental Department of Agriculture defines food waste as “a subset of food loss and occurs when an edible item goes unconsumed” (Thyberg and Tonjes, 2016). However, in 2015, the World Resources Institute included inedible parts of food to be food waste and defined food waste as the “food as well as associated inedible parts, removed from the food supply chain” (Thyberg and Tonjes, 2016).

Worldwide, an estimated 1.3 tons of food is wasted annually (WRAP, 2008 in Ritcher and Bokelmann, 2017). Food wastage occurs in all stages of the food supply chain. However, in developing countries, food waste is mainly due to poor infrastructure and thus occurs mainly in the early stages of the food supply chain whereas in developed countries, food is mostly wasted toward the end of the supply chain (Witzel et al., 2017).

The highest amount of food waste occurs at the consumer level (Ritcher and Bokelmann, 2017). In the European Union, for example, consumers are responsible for 38 million tons of food waste annually (Menier et al., 2010 in Ritcher and Bokelmann, 2017). It has also been found that two thirds of food waste occurred at the consumption level in Germany (Kranert et al., 2014 in Ritcher and Bokelmann, 2017). Moreover, in Scandinavia, about 10% to 30% of food purchased is wasted (Gjerres and Gaiani, 2013 in Witzel et al., 2017), whilst in the UK, household edible food waste costs around 603 EURO per year (Ritcher and Bokelmann, 2017).

The increase in food waste can contribute to a number of environmental and economical hazards. For instance, food waste causes greenhouse gas emission to the atmosphere to increase. Moreover, it can lead to exhaustion of land and water use in agriculture to compensate for the loss along the food supply chain (Ritcher and Bokelmann, 2017). In addition to land and water, all energy and materials that are used in the production, harvesting, transportation, marketing, purchasing, storage and preparation of food are also wasted (Gustavsson et al., 2011 in Thyberg and Tonjes, 2016). This also leads to increases in

costs for both the food industry and consumers (Ritcher and Bokelmann, 2017). Therefore, preventing avoidable food waste can help decrease the pressure on food producers and thus land and water use. Not only this, but, by reducing the amount of food wasted, there will be an increase in food supply and food availability (Thyberg and Tonjes, 2016). Thus, the increase in food availability would help feed more people and improve food security (Stuart, 2009 in Thyberg and Tonjes, 2016). A theoretical study in Australia suggested that if avoidable food waste was prevented, 921,000 people could be fed for a year (Reynolds et al., 2015 in Thyberg and Tonjes, 2016).

#### **2.4.5.6 Causes of food waste:**

Many studies have been conducted into the causes of elevated rates of household food waste. One of these identified causes was the size of the household. In fact, household size is usually proportional to the amount of household food waste (Baker et al., 2009 in Ritcher and Bokelmann, 2017). This might be because, as the household size increases, more food will be purchased, stored and prepared and thus wasted (Ritcher and Bokelmann, 2017). In addition, households with more children tend to waste more food than households with less or no children (Thyberg and Tonjes, 2016). In their study of 1474 Danish households, (Ebjabou et al., 2016) found that food waste increased with the household size.

Food waste also increases as the income of the household increases (Setti et al 2016 in Ritcher and Bokelmann, 2017) It has been found that as food become more easily available and accessible in developed countries, more food waste is generated (Rozin, 2005 in Thyberg and Tonjes, 2016). Also, as the income of the household increases, household diet shifts into a more diverse diet that contain more dairy, meats, poultry and other short shelf-life foods thus resulting into more food waste (Thyberg and Tonjes, 2016). Moreover, with the rise in income, the amount or portion of budget dedicated to food becomes considerably less. As a result, wasting food would have a lower effect on the budget (ibid.). The principal

motivational factor that drives consumers to avoid waste food is to save money (Ritcher and Bokelmann, 2017). A study of 848 consumers in Denmark showed that consumers who are more price-quality oriented when shopping for food waste less food than consumers who do not care about the price of the food purchased (Witzel et al., 2017). In contrast, price offers on food products were also shown to increase food wastage as consumers bought more food for less money (Lyndhurst, 2010 in Witzel et al., 2017). Another factor that affects food waste is urbanisation. Urban areas produce more food waste than rural areas (Secondi et al., 2015 in Ritcher and Bokelmann, 2017). Strasser (1999) (as cited in Thyberg and Tonjes, 2016) also claims that as food is becoming more industrialised and the distance between the origin of food or the stage of food production and food purchase and consumption, food waste also increases. It has been shown that people tend to waste less food when they are aware of the source of the food or have produced it by themselves (ibid.). This also resonates with the findings of Evans (2012) (as cited in Visschers et al., 2016) who claims that the increase in the number of restaurants available to people and the increasing phenomenon of eating out has led to an increase in food waste as people tend to forget about or care less about the available food they have at home when they decide to eat out. Moreover, a survey carried out by Mallinson et al. (2016) of 928 UK residents aged 16 to 40 years old, found that people who depended more on convenience food were wasting more food than people who were less reliant on this type of food products.

Furthermore, age appeared to have an influence on household food waste. Studies show that older people tend to waste less food than people younger in age (Thyberg and Tonjes, 2016). For example, it has been shown by Quedsted et al. (2013) (as cited in Thyberg and Tonjes, 2016) that people aged 65 and above waste less food than younger people in the UK. This might be due to the fact that these people have witnessed shortages of food during the period

of World War II and thus had become more cautious and valued food more highly compared to younger generations (ibid.).

With regard to gender, it has been observed that women waste less food than men. This might be due to the amount of time and effort women spend on food preparation and provision that makes them conscious of the value of that food (Secondi et al., 2015 in Ritcher and Bokelmann, 2017). However, Koivupuro et al. (2012) (as cited in Thyberg and Tonjes, 2016) found that women who live alone scored the highest amount of food waste compared to men living on their own.

In addition, people who are motivated to eat healthily were shown to be also motivated to waste less food (Quested et al., 2013 in Visschers et al., 2016). However, it was noticed that people with health concerns and/or health motivation purchased higher amounts of fresh foods that exceeded their needs to nourish their family resulting in more food waste (Visschers et al., 2016). People who are more concerned with food safety waste more food than others (Thyberg and Tonjes, 2016).

In addition, research has shown that people have little or no awareness with regards to the effect of food waste on the environment or they simply did not care (Ritcher and Bokelmann, 2017). For example, Ebjabou et al. (2016) found that avoidable food waste occurred in 97% of their analysed sample. In fact, consumers tended to know little about the amount they already had at home at the time of food shopping. In addition, they lacked the necessary knowledge of the proper methods of storing food (Farr-Wharton and Foth, 2014 in Ritcher and Bokelmann, 2017). Thus, household food waste might occur because people usually bought too much, cooked more than they needed or did not use food leftovers (Ritcher and Bokelmann, 2017). In the UK, for example, 40% of food was wasted because the household prepared more food than its consumption needs (Quested and Johnson, 2009 in Thyberg and Tonjes, 2016). Moreover, many consumers believed that purchasing planning could reduce

food waste. However, most of decisions pertaining to food purchase are still made at the time of shopping (Baker et al., 2009 in Ritcher and Bokelmann, 2017).

Improper storage and purchase planning of food can contribute up to 59% of household food waste (Cofresco, 2011 in Ritcher and Bokelmann, 2017). Also, it has been shown that food waste decreased in households that shopped for food more frequently during the week compared to households with more frequent visits to the food markets (Williams et al., 2012 in Visschers et al., 2016). The reason might be that planning for food meals for long periods is more difficult for consumers than short period planning (Evans, 2011 in Thyberg and Tonjes, 2016). Even when consumers tried planning for their food purchase, food was still wasted because other family members refused to eat the food prepared or were not at home when the food was served (Evans, 2011 in Visschers et al., 2016).

#### **2.4.5.7 Food utilisation, the change in consumption patterns and their effect on the food system**

In addition, food product packages are a main component of food waste. It was reported that one third of U.S states ran out of landfill space because of food packaging waste. Thus, the food industry was advised and actually moved toward producing food products with packaging that could be recycled or was bio-degradable (Senauer et al., 1991). Senauer et al. (1991) explained in detail how change in the way people consume and/or utilise their food affected all the food system down to the farmers' level. That is, farmers had to cope with the change in eating patterns, and consumers concerns of health and safety of their food, and this resulted in changes in their market in order to meet customer demand. Moreover, fast food industries along with consumers are now also requiring their food products from farmers to be of certain quality specifications and to be more "uniform" in presentation (ibid.).

The authors further claimed that "farmers in the future will probably give up more of their independence in exchange for greater security" (ibid.). Farmers are now more driven to

produce food that sells well rather than food that grows well even when it comes to basic food products.

The authors also state that consumers are always looking for specific properties in food products and thus require food industries and food scientists consistently work on developing products of such properties such as convenience, low calorie content, etc. One of the important properties of food products is packaging. Sometimes, consumers completely ignore a product if it is not packaged in a way that is appealing to them. Moreover, to maintain the freshness of some food products, which is a property of high importance to consumers, food industries are trying to package foods with suitable and/or breathable materials (ibid.)

In addition, the environment of food retailing has changed and moved increasingly to bigger stores with multi-services to meet the consumers' demands for convenience. These bigger stores provide large sections of frozen, ready to eat and convenient foods in addition to wide areas to sell fresh produce at the same time. Besides, to save consumers time, these retailers also provide services of bakery, laundry, and even post mail at the same premises (ibid.). Actually, this also resonates with the results of this thesis which will be presented in the following chapters.

Returning to the book of Food Trends and with the increasing involvement of women into the labour forces around the globe, women become more pressured in terms of the time and effort they had to manage to fulfil all their duties. Although women, nowadays, participate in many jobs outside the house, they are still required to come back and work inside their houses. As a result, there has arisen an increasing demand for more convenient food products that can be prepared in less time and which requires less effort. Moreover, more consumers prefer to have products that can be purchased, refrigerated, prepared and/or heated, eaten and then sent to the bin in the same container saving the time of both preparation and dishwashing. This trend has caused food industries to develop more products which can be

prepared in the microwave in the same purchase packages. With the change in lifestyle due to both heads of households working, eating patterns have also changed dramatically. People have shifted from eating three full meals at home to eat less numbers of meals often outside the house due to work life requirements and the general changes in their lifestyles. This has led to the increase of fast food and drive-thru' chains where consumers can purchase, specifically designed, finger sized food items that can be held and eaten with one hand while driving. Moreover, moving away from the traditional way of mothers being responsible for deciding the food to be eaten by the family, people have started to have different food preferences even within a single family. Nowadays, every member of the household, including children, might ask for and demand a different type of food which has led, again as discussed above, to changes in products packaging sizes to meet the daily requirements of single eating consumers (ibid.). In Oman, 41.5% of manpower consists of women according to the statistics published by the National Centre of Statistics and Information in 2016 (NCSI, 2017). The effect of the increasing participation of Omani women in the labour force on household food status is discussed in the results and discussion chapters later in the thesis.

In addition, according to Senauer, et al. (1991), "many consumers seem to be almost schizophrenic in their eating habits". They explain this as consumers who are increasingly concerned about healthy food and health-related properties food of in their daily diets are the same consumers who might reward themselves with calorie rich desserts at the end of the day. As a result, both healthy food and fatty dense food industries are growing and thriving.

#### **2.4.5.8 Food utilisation habits in the Sultanate of Oman**

Most studies that were found on dietary habits in Oman were carried out by Abdul Rahman Musaiger between 1991 and 2013. In his early studies, Musaiger found that mothers in Oman in 1991 shifted towards a more diverse diet with more processed foods (Musaiger, 1993). One of his studies also claimed that people in Oman relied basically on bread, rice, fish and

dates in their daily diets (Musaiger, 1987). In 1991, Musaiger's study on 175 mothers indicated that diets include chicken, meat, vegetables, and processed foods. Fruits were consumed more than vegetables as snacks between meals (Musaiger, 1996). He also found that 96% of mothers consumed carbonated drinks between meals. However, diet varied between different regions. For example, mothers in southern regions of Oman, i.e. Salalah, consumed more animal fats than mothers in northern regions.

In 1993, Musaiger et al. studied the nutritional status of adolescent girls in different regions (Abahussain et al., 1999). The study showed that habits of teenage girls regarding breakfast meals are similar to that of mothers in his earlier study. In addition, the diet of girls, as they enrol in schools, differs from younger girls and tends to include more snacks such as potato crisps, falafel sandwiches and canned drinks. These snacks are sold and provided by school canteens. However, he also noticed that older girls (15-18 years old) consumed more fish and vegetables than younger girls. In general, Musaiger found that nutritional habits of girls improved with age. At the time when the study was conducted, Musaiger found that the diet of girls in Oman was similar to that of teenagers in western countries (Abahussain et al., 1999). In addition, it has been shown that these diets were associated with lack of physical activities, socio-cultural factors and energy rich food consumption as Omani food contains more fat than the food in neighbour countries (Musaiger, 2002). Moreover, the study highlights that lunch was a main meal for girls. Musaiger perceives lunchtimes as a social activity bringing all the family together.

Another study by Musaiger (1996) on Omani mothers revealed similar results. Musaiger's work revealed that malnutrition existed because of lack of awareness among women (Musaiger, 1996). In this study, dietary habits of mothers were studied in two regions in Oman; Muscat and the southern region. Between both regions, no significant differences were found that were related to age and educational level. However, differences were found

with regards to infant feeding. These differences were attributed to ethnic backgrounds in both regions. In Muscat, people are from multi ethnic groups, usually from Africa and Asia, while people in southern regions mainly belong to a single ethnic group. Also, it was found that the consumption of processed foods, fatty foods and carbonated drinks increased among people in Oman; however, their dietary habits were rather seen to improve with age. When women were asked to justify some of their puerperium dietary options and/or habits, the only reason that they gave was that they were acquired from their society and older generations.

A recent study on Omani adolescents by Kilani et al. (2013) reveals that adolescents in Oman lack physical activity and healthy food habits. The study highlights that, consumption of fast food among Omani adolescents was higher than that of their counterparts in other Arab countries (Kilani et al., 2013). In addition, more than 32% of the participants in the study skipped breakfast meal.

#### **2.4.6 How women's education and knowledge enhance the status of household food security**

As discussed in previous sections of this chapter, it is evident that women play a key role in maintaining the sustenance of their households including food provision and food preparation. The way women prepare food depends on the information and skills they have obtained from their family and society. It is based on the dietary habits of its region or society, which are part of human behaviour and include all the processes of preparation and eating of food, as food habits are inherited by members of the community (Fieldhouse, 2013).

However, these food habits and beliefs are not fixed or resistant to change. There are many factors that can play a role in changing social norms and beliefs that govern food. One factor is migration which has proven to have an effect on people's food habits. Many Muslim migrants, for example, when migrating from Northern Africa to Europe, could not resist the food culture of their new home country and this included drinking alcohol. American and

European Jews were also found to consume pork on occasional or even on a regular basis as they became motivated by their new societies (den Hartog et al., 2006). Another main factor that is able to change food habits is education. This has been evident in many humid countries where the weather does not support dairy production and therefore such foods did not form part of their diets for generations but the growth of nutrition knowledge has led to them adapting their diets to include imported dairy products (ibid.).

Education and awareness can help enhancing the nutrition status of people around the world and eradicate malnutrition if it is directed to women involved in food provision and preparation. There is some importance to offering homes increased income, or changing the system of agriculture in some regions; however, analysis of the relevant literature shows that the main factor which can hugely impact upon the reduction of malnutrition is the empowerment and education of women (Olumakaiye and Ajayi, 2006). However, this is not a new finding as a survey conducted in Ibadan, Nigeria in the 1980s showed that survival of children was more affected by the education of mothers than by the economy properties of the household (Cleland et al., 1988). It is also asserted that households in which women are more educated have the potential to be much food secured, because women with more awareness and knowledge are more concerned with the nutrition consumption of their families and are better equipped to execute their dietary concerns. Further, as it is a fact that women tend to be responsible for food preparation and childcare within the family and thus are more likely to spend their income on food and their children's needs (FAO, 2009). The increase in women's education and knowledge correlates with children being provided with better nourishment (UNICEF Burundi, 2013). In the instances that children begin to demonstrate indications of malnutrition, as educated mothers have more knowledge and are proactive in managing the condition instead of resigning to the task; moreover, an educated mother is aware of the significance of the breastfeeding in the initial semester and the

importance of nurturing her children in a clean surrounding so as to prevent diseases such as diarrhoea, which can exacerbate malnutrition (Gulati, 2010).

In fact, both empowerment and education assist in fighting food insecurity by enhancing the women's awareness (Burn, 2000). Empowerment of women is about increasing women's choices and options that enable them to gain control over their own lives (Mahmud and Becker, 2012). They gain more power as their ability to exercise choice increases (ibid., 2012) and thus, life outcomes become a reflection of these choices (Kabeer, 2001). The degree of women's empowerment, therefore, is measured by the "existence of choice, use of choice and the achievement of choice" (Alsop and Heinsohn, 2005). Nevertheless, it can be asserted that factors enhancing the empowerment of women perform a major role in ensuring food security not only for themselves but also for their families (Sinclair et al., 2016). Studies from South Africa and Bangladesh have shown that when women have more power over household resources; they normally spend more on education (Van den Bold et al., 2013). According to the women interviewed in this study, the more educated the women is, the more powerful she is in decision making; on the other hand, when women have low status compared to their spouses, they "tend to have weaker control over resources in their households, tighter constraints on their time, more restricted access to information and health services, and poorer mental health, self-confidence, and self-esteem" (ibid., p.7).

This explains the great efforts made by United Nations in raising awareness of rural women on food, health, family planning, and rationalization of consumption that are vital and necessary for the health of rural women, especially in areas where agriculture or services are not available (United Nations Department of Economic, 2006). Furthermore, the United Nations also aims to guide rural women to move away from the inappropriate dietary habits which have resulted from unhealthy food consumption habits on the part of family members such as the widespread purchase of carbonated water and unhealthy industrial foods for

children and to provide guidance on the selection of alternatives that provide good nutrition and health for family members (World Health Organization (WHO), 2016).

Actually, empowering and educating women can have a positive influence in terms of food waste as well. Women in both developing and developed countries have an important role to play in reducing food loss and waste, since women interact with food at each stage of the value chain “from farm to fork” (Lipinski et al., 2013, p.7). Close to the “farm”, women comprise 41% of the agricultural workforce worldwide and make up the majority of agricultural workers in South Asia and Sub-Saharan Africa (Rivera and Alex, 2008). While close to the “fork”, surveys in a wide range of countries show that women are responsible for 85-90% of the time spent on household food preparation. Therefore, targeting women in food loss and food waste reduction campaigns could result in greater reductions than pursuing an untargeted campaign (Quested et al., 2013). An example of these campaigns is the “1 Million Women” campaign in Australia which encourages women to take action on a number of environmental issues, including reducing food waste (Think.Eat.Save, 2013).

This research aims to explore the awareness and knowledge that women in the Sultanate of Oman have in relation to issues pertaining to food provision, storage, preparation, safety and nutrition. It also seeks to understand their role in the national food security.

## **2.5 Oman as a case study**

The fact that the Sultanate of Oman, as explained earlier in chapter 2, is a relatively high income country that is able to provide enough food for full access by all members of its population, makes it an excellent candidate for conducting this research. In addition, Oman is known for its conservative cultural nature and rules that are deeply rooted in all aspects of people’s life. Therefore, these factors make Oman an optimum environment to explore the

effect that culture and social norms have on people's dietary choices and decisions away from the constraints of income and access limitations found in other countries.

This research also becomes important given the fact that little or no similar research has been conducted in the area of Oman, Gulf countries, or other countries with similar conditions or circumstances.

The only study found in Oman that explores some aspects of households' food choices, and worth discussing before moving on to the next chapters of this thesis, is the study by the Public Authority of Consumer Protection (PACP, 2012) on consumer knowledge and product quality in Oman. It was found in this study, that hypermarkets were the preferred place of shopping due to the availability of most needed products under the same roof. The Arab culture has known this kind of market for centuries where consumers can find all their needs in one place (David, 2010). In fact, one of the first things that Prophet Mohammed did on arrival into the city of *Madina* was to announce it as the capital city of Islam to establish a main market that sold all kinds of food products in addition to other goods (Haddad, 2012). Amine and Lazzaoui (2011) studied shoppers' reactions to modern food retailing systems in Morocco and provided a more in-depth explanation of the tendency of people to buy from hypermarkets. Amine and Lazzaoui (2011), found that consumers adapted a new way of shopping where they maintained their relationships with the traditional shops and at the same time sought new choices at the modern food retailers. The way the shoppers mix between these two methods of shopping was dependant on "the product category, the situation of consumption and the social characteristics of the consumer". According to Amine & Lazzaoui (2011), most consumers depended on modern retailers only for complicated or refined products and traditional shops for "common consumption goods". As the traditional shops provide interpersonal contact, modern retailers with a self-service concept also provide a venue for social interaction, entertainment and relaxation. These modern retailers meet the

increasing demand of quantity of food; provide more options and quality choices in comparison with traditional shops. As a result, they serve the needs of consumers that are increased due to their openness on international media and higher levels of education. Consumers of middle and high income levels are more open to new choices offered by modern retailers. Thus, some consumers may be confused as to whether to adopt the new way of shopping entirely or partially or remain as traditional shoppers depending on their social and economic status (ibid.). The findings of the current research, which are presented in chapter 4 (see page 103) of this thesis, also resonates with both the PACP (2012) and Amine and Lazzaoui (2011) studies.

The study of the Public Authority of Consumer Protection (2012) also studied shopping habits and found that 81.4% of its sample wrote a shopping list. The study justified that as a result of the increasing expense of daily life and the need to control household expenditure. When looking at what determined consumer choices of food products, 81.2% of participants stated that they did not trust new products that were unknown to them or were used before by them or the people they knew (PACP,2012). No justification or any other determinants were given in the study. However, a justification could be found in a study on Qatari consumers, by Jamal et al. (2006) given that Qatar and Oman share many traditions and similar lifestyle. The study found that shopping for most women was a humdrum practice that they had to do among other responsibilities within their households so they usually tend to shop for the same brands and/or go for the same products in order to save time and get the shopping done as smoothly as possible (ibid.). In addition, in her study on the motivation of Saudi girls towards dietary change, Bakhotmah (2012) finds that taste was the greatest motivational factor toward both change and/or resistance to change. PACP (2012) also found that consumers tended to focus mainly on the expiry dates as most food products were of short shelf-life and thus needed to be checked.

No more studies or data was found on household food pertaining to practices (i.e. food safety and nutrition related practices). However, given the fact the Oman is a conservative country in terms of religion and traditions similar to the neighbouring countries in the region, one can assume that these practices are not new but rather old and rooted in the Arabic culture of Oman and the rest of Arab and Muslim countries. David (2010) explained in detail many food safety practices that were adopted by these societies even before Islam and similar practices were found in the current research (see chapter 4 – section 4.2.3). Some of the practices described by David (2010) date as far back as the 11<sup>th</sup> century and included the prescription that “meat must be thoroughly cleaned of any blood and washed in pure cold water in a clean bowl; a knife used to cut up vegetables should not be used at the same time to cut up meat”; food items which have lost their fresh colours and smells should not be used in cooking.

Another issue that lacks data in case of the Sultanate of Oman is household food waste. Haddad (2012) discussed the relationship between Muslims and food waste. In Islam, food is considered the gift of God and thus must not be wasted (Haddad, 2012). Sharing the leftovers of food with neighbors, poor people and even animals also stems from Islamic traditions that encourages sharing all God gifts with other people especially those in need like the poor and animals (Haddad, 2012). Therefore, discarding cooked and leftovers is not necessarily an act of underestimating the value of food but because many of the traditions around preserving and keeping food are concerned with the food that has not been cooked or cooked but not touched and or mixed with other foods (David, 2010)

This research aims to fill this gap in literature and to investigate knowledge and practices women have pertaining food safety, nutrition, food waste and food security. It was conducted in two regions of the sultanate which are the governorates of Muscat (representing an urban region) and North Batinah (representing a rural region). Musaiger (1996) confirms the

cultural difference between the two regions stating that in the urban region (Muscat), people originate from mixed ethnic groups such as migrants from Asia and Africa in addition to the Arabian Peninsula, while people in Sohar, a rural region, are mainly from one ethnic group which makes them, and the rural regions, an optimum choice for conducting this research. More details on these regions in addition to the justification for choosing them will be provided in the next chapter on the methodology adopted in this thesis.

## **3 Methodology**

### **3.1 Introduction**

This chapter outlines the methodological approaches adopted to meet the research aim. It is divided into seven sections. These sections include the main aim and questions of the research, the research design, methods, population and sampling, data analysis, validity and reliability and research limitations.

The main aim of the research was to gain a greater understanding of women's participation in household food security in Oman and, more generally, in the Middle East.

This led to the formulation of the research questions:

1. What is the current level of awareness regarding the issue of food security among households? (regarding food purchase, storage, preparation and consumption)
2. Who is responsible for food-related decision making in the household?
3. What sources of information/ services/ help do women receive related to food issues?

### **3.2 Research Design**

This research is mostly exploratory and descriptive in nature as it is aimed at gaining an in-depth insight into women's role in household food security in Oman. It is also aimed at gaining a better understanding of their perception of different food issues and their sources of information. As discussed previously in chapter 2, food habits and thus household food security can be significantly affected by cultural and social norms (Conner and Armitage, 2002). However, most research into household food security has been conducted in either western or developing countries or in communities where income and agriculture play a role in affecting household food security. This research was conducted to explore the role of women in household food security where individual preferences are mainly governed and

associated with Omani Islamic culture. Justification for the focus on women in this research was discussed in section 2.4 of chapter 2.

Exploratory research is generally used when a problem is not clearly defined (Creswell, 2003). In this research, the substantive problem is actually defined but has not yet been researched in this particular context. In addition, descriptive research can answer the "who, what, when, where and how?" types of questions which elicit information relevant to the nature, frequency and context of certain phenomena or events (Lee and Soyray, 1995). Thus, descriptive methods in a study assist with the gathering of detailed data and in providing a clear, itemised image of the phenomena under investigation in the study (Sandelowski, 2000). Moreover, this research, in terms of research philosophy adopts a subjectivist epistemology<sup>1</sup> as it seeks to generate and define knowledge based on how the participants understand and perceive their reality (Moon and Blackman, 2014).

### **3.3 Research Methods**

According to den Hartog et al. (2006), data on food beliefs and attributes can be “obtained by means of interviews, group discussions with women and men and by observation” (p. 97). Three methods were used in this study and were run concurrently and independently; semi-structured face-to-face interviews, online discussion groups, and self-completion questionnaire. Triangulation was used to ensure the validity of this research and that the findings from each method generally congruent. According to Brink (1993); “The major goal of triangulation is to circumvent the personal biases of investigators and overcome the deficiencies intrinsic to single-investigator, single-theory, and single-method thus increasing the validity of the study” (p37).

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<sup>1</sup>The subjectivist epistemology is “of the belief that there is nothing like ultimate true knowledge out there but whatever we perceive as truth is as a result of our intersubjective socio-cultural consensus of views, which is perceived as reality or objectivity in terms of knowledge” (Kamil, 2011, p. 68).

Semi-structured in depth interviews on food safety, nutrition and security perception were carried out with women, (n=70), within households. This method enabled a thorough understanding of the participants' perceptions and experiences to emerge (den Hartog et al., 2006). Online discussion groups with female participants of different ages, income status and educational level were conducted. The purpose of using this method was to discover shared understandings, perceptions and knowledge of women about food safety, nutrition and security. Focus groups were used to produce rich exchanges of ideas between participants (Peterson and Barron, 2007). Questionnaire surveys were also used to collect further data from a wider sample than that which was reached through interviews. Questionnaire surveys can be used in qualitative research "since certain clearly defined facts or opinions have been identified by more qualitative methods, as questionnaires explore how generally these apply, if that is a matter of interest" (Dixon-Woods et al., 2005). In this research, using a questionnaire helped to explore women's opinions and knowledge pertaining to different food issues supporting the interview and the discussion groups methods.

A pilot study was also conducted prior to this research which helped to improve the various data collection methods.

All measures involving human participation were approved by the Research Ethics Committee within the Environment Department of the University of York.

The following section provides a detailed explanation of each of the methods used to collect the data in this research:

### **3.3.1 Data Collection for literature review**

Data for this research originated from two sources. The primary data included data collected from official and governmental bodies in Oman such as the Oman Council, Ministry of Agriculture, Ministry of Health, The Public Authority of Consumer Protection, National Centre for Statistics and Information, Sultan Qaboos University and the Public Authority for

Stores and Food Reserves. This data was mainly in the form of reports and field studies. The secondary data was sourced from journals, books, magazine, and published articles that supported the study topic. All measures involving human participation were approved by the Research Ethics Committee within the Environment Department of the University of York. All participants were assured that all data generated during this research was only for scientific research purposes and the privacy and confidentiality of the data were also assured. The following diagram (Figure 3-1) represents the strategy followed during the secondary data collection which also contributed towards the literature review chapter of this research:

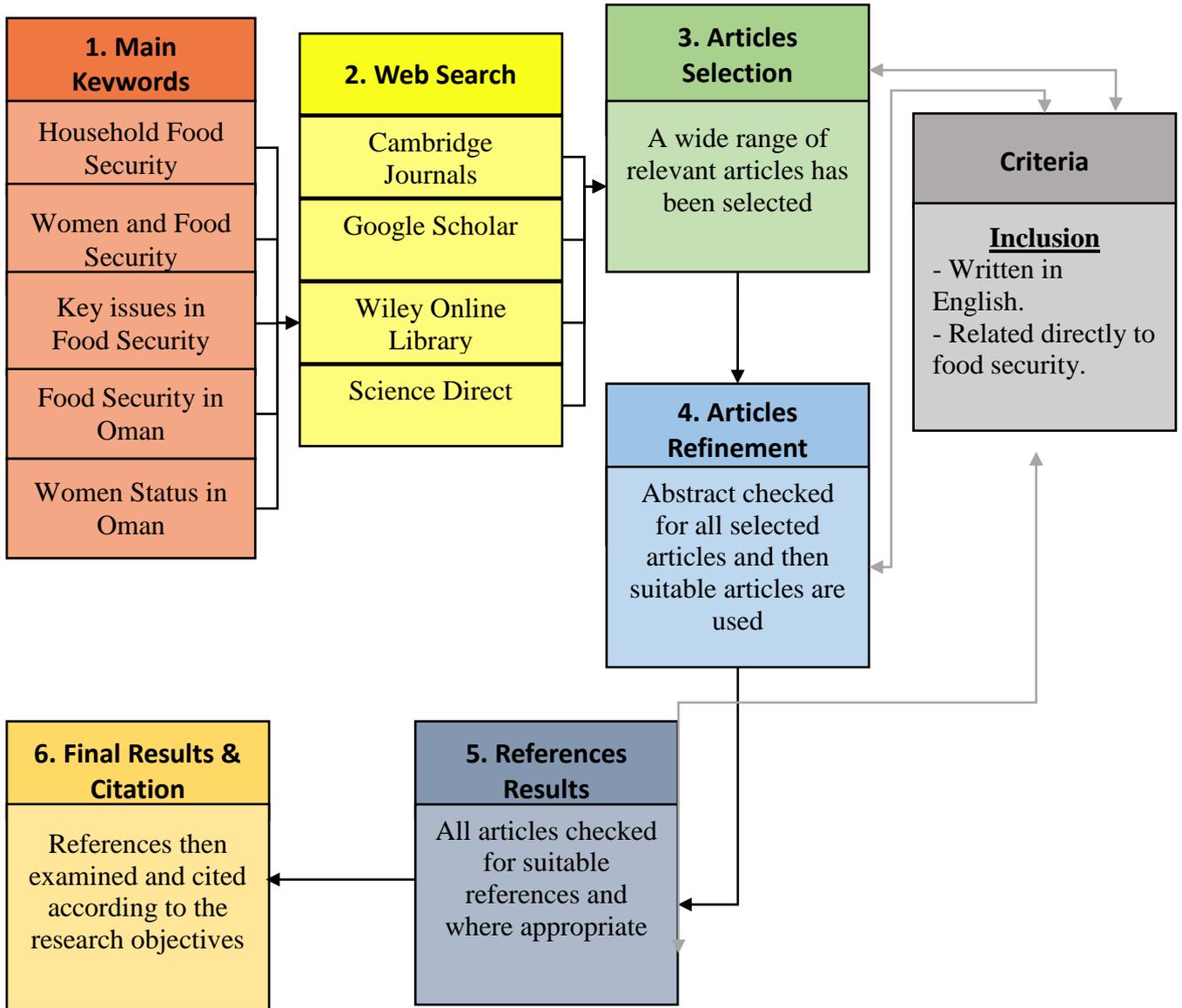


Figure 3-1 Strategy of secondary data collection

### **3.3.2 Semi-Structured Interviews**

The most commonly used qualitative data collection technique is the interview (Worrall, 2000), as the researcher is directly involved in a conversation with a sample drawn from the population being investigated. Several advantages of the use of interviews to collect data have been pointed out by Bryman and Cramer (1999). First of all they allow the researcher great flexibility, permitting a much more in-depth probing of the matter under investigation. They can also draw on the interviewer's personal skills in building up a relationship with the participants which encourages more honest disclosure. Interviews are also more inclusive in that they can include people whose reading and writing is poor but who can answer verbally with less difficulty.

Using semi-structured interviews<sup>2</sup> in this research enabled a thorough understanding of the respondents' life perception and experiences to emerge (den Hartog et al., 2006). The interview questions were formulated using the survey guide provided by den Hartog et al. (2006) and the household expenditure and income survey by the National Centre for Statistics and Information in Oman (2012). The national survey was selected due to the fact that it was previously tested and implemented on a population similar to the sample of this study in similar areas in the Sultanate of Oman, whereas the manual for field studies by den Hartog et al. (2006) offered a further detailed guide on food habits and consumption that has been implemented in developing countries with similar prevailing conditions to those which pertain to this research.

The questions posed to the participants were related to subjects of food provision, storage, consumption, safety and nutrition. These subjects were selected based on the four main pillars of food security and the main aim of this research and they were presented in the order

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<sup>2</sup>Semi-structures interviews were used as they are considered to be a main source for exploratory data (Ghauri and Gronhaug, 2005). They provide in-depth information on people's attitudes, facts and opinions (Thomas, 2013).

suggested by the manual guide of den Hartog et al. (2006). Participants were also asked about their sources of knowledge and information pertaining to food issues in addition to whether they were familiar with the term “food security”. The interview question guide is provided in appendix III, page 234.

All interviews were held in the Arabic language. Prior to the interview, a verbal consent was requested from the interviewees. They were also briefed about their right to withdraw from the process of being interviewed at any time they wished to<sup>3</sup>.

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<sup>3</sup>Usually as I arrived at the house of a participant the women of the house would greet me and welcome me with a tray of fruits, desserts and Arabic coffee that is usually served and put on a mat on the floor. Most of the participants would not allow me to start the interview until I had the coffee or had some fruits or dates. Some insisted that I join them for lunch or dinner depending on the time of the interview during the day. Interviews were usually held in the guests’ sitting room of the house. With most of the urban region interviews, the interview was attended by the participant only. However, all interviews that were held in the rural region, and few in the urban region, interviewees were attended by other female family members and/or female neighbours. When other women were asked about the reason of their attendance, few explained that they were invited by the participant as she would feel shy and would be unable to carry on the interview by herself while others said that they came out of curiosity or to learn something new. During the interview, some women would interrupt to agree or disagree with what is said by the participant or to further explain her answer. Sometimes, after the interview recording was over, other women attending the session would discuss what has been said while having their coffee, dates and fruits.

On one occasion, neighbours, during the coffee break, laughed and suggested that most of the interviewee’s responses during the recorded interview were made up and did not represent her real life but an image she wishes to deliver. They would also ask me questions pertaining to food safety and nutrition. In some cases participants would ask to pause the interview so that they could pray and come back later to resume the interview. During interviews, participants would sometimes refuse to answer some of the questions and preferred to move to the next one. This explains why some of the response percentages did not add up to 100% in all sections as many questions were skipped by the respondents.

### **3.3.3 Online discussion groups**

A qualitative approach using discussion groups was also used in this research. The rationale for using this method was to provide a more in-depth assessment of women's hopes, fears and aspirations (Afifi and Al-Sherif, 2014). This is important when studying food-related perceptions and practices as food is to fulfill many social roles which is linked with thoughts, fear and hopes of people (See chapter 2, section 2.3.3). The focus groups which participated in this study were divided into four online discussion groups (details of numbers of participants and their demographic details are given in section 3.5 of this chapter) using the *WhatsApp* social media application. This method was more convenient for both the researcher and participants as women could not be gathered in one venue at one point in time. In addition, online discussion groups allowed for women from different regions of Oman to gather and discuss regardless of the distance between them and in their preferred time. As women in Oman generally need their guardian's permission to travel and attend events outside their family and work affairs, online discussion was more convenient. Focus groups with female participants of different ages, income status and educational level were also conducted. Conducting the online discussion groups with women participants enabled the identification and sharing of understandings, perceptions and knowledge of the participating women about food safety, nutrition and food security.

Prior to forming the discussion group, a special *WhatsApp* account was created for this study. Then, a broadcast message was sent to all researcher contacts; these contacts then re-sent it to their contacts and so on. Women who were interested in participation then contacted the researcher for further details. All women were informed about the nature of the discussion group and their written consent (online) was taken prior to adding them to the groups. Each member was asked, in a private conversation, to state their consent to participate in the study in their own words. They were also asked, in private chats, to provide their age, educational

level, residence governorate and to describe their income level as low, middle or high. Three groups were created, based on women's educational level, giving that education of women is one of the most important factors affecting household food security (See chapter 2, section 2.4.6), once the number of participants in each group reached 6 women. However, as more university degree holding women expressed their willingness to participate, a fourth group was created. In each group, the questions were asked by the researcher and participants were allowed to discuss it for 24 hours or until all participants shared their opinions. All discussion groups were held in Arabic.

The questions posed in the online discussion groups contained broad themes which sought to elicit the perspectives of respondents in relation to food supply, food safety perception, food preparation and cooking, nutrition perception and food waste. All questions and discussions were held in Arabic however, a translation of the question guide used during the discussion sessions is provided in Appendix III, section 10.4, page 234.

### **3.3.4 Questionnaire**

Questionnaire surveys can be defined as simple tools for gathering and recording information about a specific issue of interest. They essentially consist of lists of questions, accompanied by clear instructions, and space for the provision of answers or administrative details (Adams and Cox, 2008). According to Phellas et al. (2011) questionnaires are generally used:

- To gather real information with the aim of using this factual information to classify people and their conditions and circumstances.
- To collect direct and clear information relating to people's behaviour.
- To ascertain the main attitudes and opinions of a group of people relating to a particular issue or case.
- To determine the satisfaction levels of customers with a product or service.

- To collect basic information which can then be utilised over time to test changes.

In this study, a self-completion questionnaire was used as a quasi-triangulation<sup>4</sup> method and in order to gather more data supporting and extending the data collected by the qualitative tools mentioned above. The triangulation process further contributed towards reducing the bias that may be caused by research tools (Klein and Olbrecht, 2011). Within the scope of this PhD research, the questionnaire survey was used to extend the reach of the study beyond the participants within the interviews and focus groups.

The questionnaire was divided into three sections. Section A sought information from the target sample about their demographic details, which according to Phellas et al., (2011) should include data such as income level, gender, educational level, location, ethnicity, race, and family size. The demographic profile in this research sought information from the respondents on age, educational level, employment states and monthly income. The key premise on which the questionnaire survey was targeted at Omani women was to solicit their views about perceptions of food security, sources of information, the extent to which participants attended relevant courses, the extent to which participants would like to attend a course related to food matters, reasons given to justify their willingness to attend courses and reasons given to justify their unwillingness to attend courses.

Questions used in the self-completion questionnaires in this research were formulated using the same question guide as for the semi-structured interviews. The questionnaire included both closed and open questions. The purpose here was to raise the level of statistical confidence in the results to consider whether the data collected in more than one way would have similar results and so, to corroborate or support each other. A copy of the questionnaire survey is provided in Appendix IV, page 238.

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<sup>4</sup>Triangulation, which also called cross examination, means using more than one tool or method to collect data and analyse the same phenomena, in order to verify the results of the study (Yeasmin and Rahman, 2012)

### **3.4 Population and Sampling**

In the following sub-sections, the sampling area of the research, the sampling techniques and sample size details are explored in further detail.

#### **3.4.1 Sampling Area**

The study was conducted in two different locations in the Sultanate of Oman; As'seeb region in Muscat governorate and Sohar region in North Batinah governorate. As'seeb region represented mainly the urban areas of South Al Hail, Al Khoud, Ma'beela and Mawaleh while Sohar region represented the rural areas of Amq and Majees. Both As'seeb and Sohar regions are located in the north of Oman with an approximate distance of 189 km between them. To ensure uniformity and the reduction of bias in the choice of the sampling area, the researcher ensured that the samples were representative of urban and rural areas. Further, urban and rural areas tend to have gaps in terms of production and income generation, and it has been shown that the gaps between urban and rural regions account for a lion's share in the inequality within a country (Young, 2013).

#### **3.4.2 Sampling Technique**

For the semi-structured interviews and focus groups, mixed sampling methods of quota and snowball sampling were used. Random sampling was difficult to apply in this research because of its inability to reach out to the entire population given the constraints on resources and the timeframe of the research. Another constraint was the cultural environment of the study which did not allow a female researcher to reach out independently to different respondents. Socio-cultural norms in Oman include certain restrictions on women's mobility and ability to travel for education and other purposes without the approval of the family

(Elnaggar, 2007). Families would not usually allow a stranger (in this case the researcher) to interview their women.

### **3.4.3 Sample Size**

The semi-structured interviews were carried out with 70 Omani women across both rural and urban areas as mentioned above. In addition, four online discussion groups involving a total of 27 respondents were carried out. A total of 400 questionnaires were distributed in Muscat (200 copies) and Sohar (200 copies). 117 responses were returned from Sohar (only 100 were used for analysis) and 100 responses from Muscat. Thus, a total of 200 questionnaires returns were used for the analysis in this research.

### 3.5 Demographic Details of the Participants of the research

The following three tables (3-1 to 3-3) represent the demographic details of all the participants of the interviews, questionnaire and discussion groups of this research based on their age, education level, income level of the household, and their governorate of residence (in the case of discussion groups' participants).

**Table 3-1** Demographic details of interviews' participants

		Rural		Urban		Total	
		N	% (of total sample)	n	% (of total sample)	n	% (of total sample)
Age	(20-29)	3	15	6	12	9	12.9
	(30-39)	8	40	33	66	41	58.6
	(40-49)	5	25	3	6	8	11.4
	(50-59)	4	20	8	16	12	17.1
	Total	20	100	50	100	70	100
Education level	None	1	5	1	2	2	2.9
	Primary school	7	35	4	8	11	15.7
	Secondary school	8	40	7	14	15	21.4
	University degree	4	20	38	76	42	60
	Total	20	100	50	100	70	100
Household income (OMR)*	< 800	10	50	2	4	12	17.1
	900 – 1700	6	30	19	38	25	35.7
	1800 – 2600	0	0	20	40	20	28.6
	> 2700	4	20	9	18	13	18.6
	Total	20	100	50	100	70	100
Employment	Employed	4	20	37	74	41	58.6
	Housewife	16	80	13	26	29	41.4
	Total	20	100	50	100	70	100

Table 3-2 Demographic details of Questionnaire's participants

		Rural		Urban		Total	
		N	% (of total sample)	n	% (of total sample)	n	% (of total sample)
Age	20-29	24	12	24	12	48	24
	30-39	66	33	55	27.5	121	60.5
	40-49	10	5	21	10.5	31	15.5
Educational level	Primary school	4	2	4	2	8	4
	Middle school	5	2.5	11	5.5	16	8
	Secondary school	6	3	20	10	26	13
	University degree	63	31.5	51	25.5	114	57
	Diploma	19	9.5	7	3.5	26	13
	Masters	3	1.5	7	3.5	10	5
Employment status	Unemployed	9	4.5	28	14	37	18.5
	Employed	91	45.5	72	36	163	81.5
Monthly income (OMR)	≤ 1000	27	13.5	24	12	51	25.5
	1000 – 1500	31	15.5	21	10.5	52	26
	1500 – 2500	34	17	40	20	74	37
	≥ 2500	8	4	15	30	23	11.5

Table 3-3 Demographic details of discussion groups' participants

		Group 1		Group 2		Group 3		Total	
		N	% (total Sample)	N	% (total Sample)	N	% (total Sample)	N	% (total Sample)
Age	20-29	2	28.6	7	50.0	2	33.3	11	40.7
	30-39	3	42.9	4	28.6	4	66.7	11	40.7
	40-49	2	28.6	1	7.1	0		3	11.1
	Not specified	0		2	14.3	0		2	7.4
Educational level	Secondary school	7	100.0	0		0		7	25.9
	University degree	0		14	100.0	0		14	51.9
	Higher degree (masters and PhD)	0	0.0	0	0.0	6	100.0	6	22.2
Income level	Low	0		0		0		0	
	Medium	6	85.7	8	57.1	3	50.0	17	63.0
	High	1	14.3	5	35.7	3	50.0	9	33.3
	Not specified	0				0		0	
Governorate	Muscat	2	28.6	4	28.6	3	50.0	9	33.3
	Dhofar								
	Musandam								
	Ash Sharqiyah (S,N)	0		1	7.1	0		1	3.7
	Al Wusta								
	Al Buraimi	0		1	7.1	0		1	3.7
	Al Batinah (S,N)	3	42.9	4	28.6	1	16.7	8	29.6
	Ad Dhahirah	0		0		1	16.7	1	3.7
	Ad Dakhiliyah	1	14.3	2	14.3	1	16.7	4	14.8

### **3.6 Data Analysis**

Interviews were audio recorded and fully transcribed for analysis. Each transcript was read and reread several times before the analysis. Data then was analysed using a combination of deductive/ inductive coding approaches using ATLAS.ti software. This approach was also used to analyse the discussion group data. The data analysis followed a three stage process. It started with open coding whereby the main themes in relation to the topic of interviews and discussion sessions were highlighted; the participants in the research were coded as per their location, i.e., into urban and rural regions (U1-50 and R1-20). Under those themes, sub categories were also highlighted in the transcripts to gather information about that subcategory. Open coding was effective as it accentuated different themes and perceptions of the sample.

The next stage was axial coding whereby instead of focusing upon the data provided by the respondents, the researcher re-read the transcripts in order to validate the researcher's concepts and the subthemes that were made in relation to the responses. This was done for the purpose of confirming the selected concepts and subthemes, gathered from the literature, with the responses given by the participants and confirming the relation between the concepts and subthemes (Bauer, 2000). All of the discussion conversations were fully transcribed and translated for analysis. Each transcript was read and re-read several times before the analysis in order to find the themes within the responses in a similar manner as with the interviews. In addition, descriptive statistics in the form of frequency distribution tables were created for the analysis of the questionnaires responses using SPSS version 22 software.

### **3.7 Validity and Reliability**

According to Brink (1993) there are four risks that might increase error that threatens the validity and reliability of qualitative research; the researcher, the participants, the social context of the research and the data collection and analysis methods. In this research, special attention was given to each of these risks to reduce error and increase the validity of the study.

In addition, participants might have tried to please the researcher and/or provide answers that they thought were more acceptable (Brink, 1993). Thus, during the process of collecting data for this research, all participants were notified that there were no right or wrong answers and that all that was expected was their candid opinions or perceptions. Moreover, the aim of the research was explained prior to any interview, discussion session and in the front page of the questionnaire. Participants were told that the research was intended to explore the beliefs and food habits of Omani women, so that their responses should reflect the true essence of their lives and experiences.

### **3.8 Summary**

This chapter discussed the methodology used in this research in detail as well as giving a detailed justification for the choice of approaches and tools. It also gave a detailed description of the data collection methods and sources. The next chapter presents findings on women's perception pertaining to food safety and nutrition and their food habits in regards to food provision, storage and consumption.

## **4 Awareness and Perception of Food Safety and Nutrition among Omani Women**

### **4.1 Introduction**

This chapter provides insights into women's role in household food security in Oman based on the findings from the analysis of the data collected from the questionnaire and interviews in an attempt to answer the research questions on women knowledge pertaining various food issues and meet the main objective of which was to explore the current role of Omani women in household food security. These findings helped the researcher to gain a better understanding of the participants' perceptions of different food issues, particularly food safety, nutrition and food security.

Therefore, drawing on these findings, this chapter will explore the means by which Omani women plan, access, purchase and provide the food for their households, how they maintain the safety and nutritional content of the food and how they handle food waste.

### **4.2 Findings**

The following are the accounts of respondents gathered under the themes included within the study via interviews, online discussion groups and questionnaire:

- Food supply, which included the concerns of food accessibility and food availability;
- Food safety perceptions, which included the issues pertaining to their awareness of the importance of ensuring food safety;
- Food preparation and cooking, which includes the aspect of decision making at the household level; nutrition perception, which includes their knowledge of the nutritional dietary practices; and
- Food waste, by providing insights into the household management of food waste.

Details of methods used in addition to demographic data of participants were listed in chapter three of this research. Definitions provided in this chapter are from literature to clarify the terms used in the questions and/or discussed among the participants which were not previously stated in the literature review or other chapters of this research.

#### **4.2.1 Practices and challenges surrounding food provision, purchase and preparation**

As discussed previously in the literature review, household consumption patterns have a great impact on food waste generation and food security (see chapter 2, sections 2.2.4.10 and 2.2.3). This section represents the findings from the interview participants' and from questionnaire respondents' practices and habits pertaining to food purchase and preparation in their households and contains the following sub-sections: sources of food, challenges faced in accessing food, frequency of buying food, who buys the food, planning for food, food choices determinants and reading of food labels and facts.

##### **4.2.1.1 Sources of Food**

To answer the research questions on Omani women's knowledge and practices pertaining food purchase as part of food availability and access, being an essential part of household food security, participants were asked about their food sources and their access to them.

When interviewing urban respondents on the accessibility and availability of food, all 50 of them stated that they depended mostly on hypermarkets to get food for their families.

Approximately 12% of them depended entirely on hypermarkets while the remaining respondents had other means of food acquisition such as local shops, farms and fish markets.

Each of the participants in this 12% group belonged to small families and they preferred to buy all their food from hypermarkets as they only required small quantities. A common response from these respondents were; "[we get our food] *from the hypermarket such as Maya, Carrefour and Lulu (main hypermarkets in Oman), even fruits and vegetables, because we're a small family we don't need so much*". However, the remaining 88% of

respondents interviewed sourced their food from a range of sources, for example, fruits and vegetables from local farms, fish from fish market and from hypermarkets for other food commodities. 46% of urban respondents stated that they only consumed "fresh" meat and chicken that they raised or purchased from local farms. 22% of them owned their own farms, 8% raised their own livestock, and 4% got eggs from chickens raised at home. Only one respondent received food as gifts and one other stated that they met their needs regarding fish by fishing themselves.

All the respondents were of the view that they could find all the food they required in the market. This is captured well in this quote by one of the respondents: *"If I can't get what I want from one market place, I know I will get it from another one"*.

Rural respondents interviewed in this study (n=20) sourced their food from local shops, farms, and hypermarkets. About 30% of them stated that they got all their food from "Lulu" and "Carrefour" that had opened recently in Sohar. Another 30% of respondents stated that they bought food from hypermarkets but also that they would buy from local farms and/or grow some food in their own farms. However, 20% of respondents said that they did not go to hypermarkets at all for food shopping; instead, they shopped solely from local shops and farms. 15% of the respondents depended only on local shops and only one got her family's food from all three sources. 10% of the respondents mentioned that they did not have to buy fish as their husbands went fishing in their free time.

Food products that were grown and/or bought from farms included: radish, coriander, rocket, dates, mangos, lemons, bananas, tomatoes, watermelons, fresh milk and fermented milk, red meat, poultry and eggs. All rural respondents, except one, agreed that they could find all the food they wanted in the market. Only one said that there were not enough varieties of food available in the market.

The results of the questionnaire indicated that about 81% of urban respondents depended mainly on hypermarkets for their food purchase compared to 69% of rural respondents. The majority of participants in both regions also stated that they could find all the food they needed for their households. Thus, the data collected from the questionnaires resonated with the results of the analysis of the interviews. Table 4-1 below represents data on food sources and availability.

Table 4-1 Food supply

		Rural		Urban		Total	
		N	% (of total sample)	N	% (of total sample)	N	% (of total sample)
Sources of food	Gift and barter	2	1	6	3	8	4
	Farm	16	8	4	2	20	10
	Hypermarkets	69	34.5	81	40.5	150	75
	All of the above	13	6.5	7	3.5	20	10
	Other sources	0	0	2	1	2	1
Ability to find all food needed	No	7	3.5	8	4	15	7.5
	Yes	71	35.5	73	36.5	144	72
	Sometimes	22	11	19	9.5	41	20.5

The results show that the majority of the interviewed householders purchased their food from hypermarkets, a trend that has been on the increase in the region. Based on the findings of the study, urban households tend to rely more on hypermarkets than rural households as the latter have more immediate access to food resources such as local farms. This is consonant with the study by the Public Authority of Consumer Protection (2012) on consumer knowledge and product quality in Oman, where hypermarkets were found to be the preferred place of shopping due to the availability under the same roof of most needed products (see chapter 2 section 2.5 – p: 79).

#### 4.2.1.2 Challenges faced in accessing food

During the interviews, interviewees were also asked about the challenges they faced in accessing food since challenges in accessing food might limit the availability of food and affect household food security. Exploring the challenges faced in accessing food can also help understand the limitations that prevent women from playing their role in ensuring that their families are food secured.

66% of urban respondents stated that they faced some difficulties when purchasing food<sup>5</sup>. The key challenges they stated included high and/or unstable prices of food, crowdedness of hypermarkets and difficulty in finding a car parking space close to the hypermarket. Figure 4-1 represents the prevalence of these challenges among the respondents.

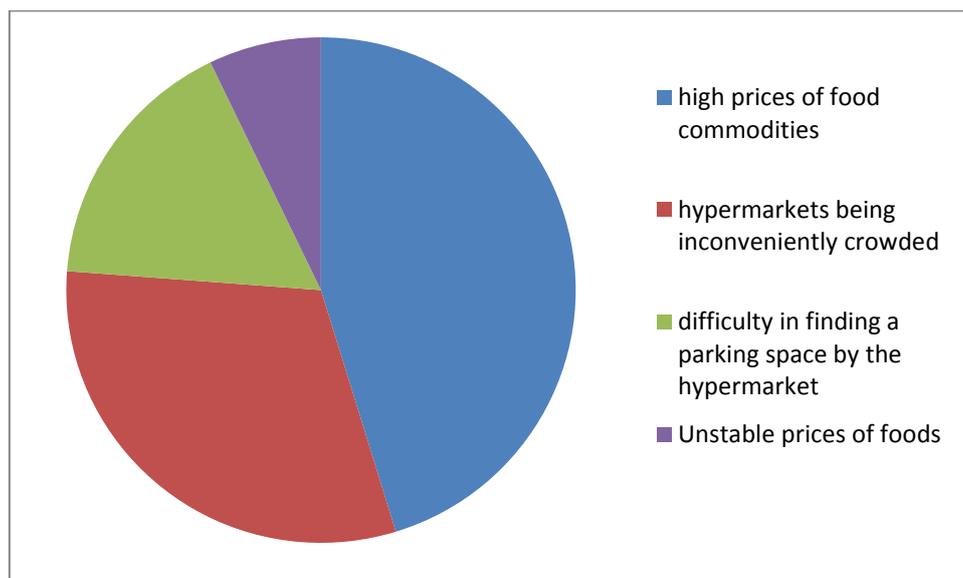


Figure 4-1 Challenges faced in accessing food

As is evident from the figure 4.1 above, high prices of food are the main and most prevailing challenge compared to other challenges listed by the participants. However, during the interviews, the interviewees were very reluctant to admit this and were embarrassed.

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<sup>5</sup>This question was faced by silence in the majority of interviews as women smiled and/or hesitated to answer. Some women would smile and say “*Alhamdulillah (means thanks to God) all is well and all our needs are met, we won’t ask for more*”. As I repeated the question in different forms and tried other synonyms to the word challenges, and ensuring that no one would listen to the interview except for me, women started to give some answers.

However, once acknowledged during the interviews, (especially in interviews attended by more than one woman) other interviewees nodded in agreement or admitted to facing the same challenge.

An interesting observation made during the interviews was that generally interviewees came up with solutions while discussing the challenges that they faced. For example, in order to overcome the challenge of high prices, U13 (35 years old, secondary school, low income, unemployed) responded that: "*Prices are high, but when I find an increase in price, I go to another hypermarket of better prices*", another respondent (U18 – 40 years old, secondary school, middle income, employed) stated that, "*prices are high depending on the product but we find alternatives*". U02 (50 years old, primary school, high income, unemployed) stated, "*I used to shop in Carrefour, but I now buy my food from Lulu, I feel the prices in Lulu are better*". On the other hand, U8 (38 years old, university degree, middle income, employed) responded by saying that she did not mind the high prices of food in the supermarket next to her house as long as she did not need to drive long distances. Within the 66% of respondents who mentioned the challenges they faced relevant to food accessibility, 9% changed the time of their shopping to avoid the crowd at the shops at the end of each month. 6% of respondents stated that the quality of food was the only problem; 3% of the respondents stated the difficulty encountered in sourcing low fat foods while another 3% of urban respondents complained that most foods were organic now which made them of "*low quality*".

40% of rural respondents stated that they did not face any problems and challenges regarding food shopping. However, 50% stated that they face challenges such as high prices and overcrowding of the market especially in weekends. Of these one respondent, R02 (28 years old, high school, middle income, unemployed), explained that, "*Prices are a problem...I know that there are shops that are cheaper than Carrefour but I really prefer to buy all I*

*want from one place...and during weekends, Carrefour becomes very crowded...this is difficult for me”.*

Questionnaire respondents were also asked about the challenges they face pertaining to food purchase. 29% of urban respondents stated that there were no problems challenging their household food supply. However, another 20% stated that they faced all challenges that were listed in the questionnaire (these are outlined in the following table (Table 4-2). 28% of urban respondents answered to this question. It was believed that physical access was challenging as supermarkets were located far from their houses (13%) or they lacked means of transport (15%). On the other hand, 22% of rural respondents considered distant markets from their residency to be challenging. 17% of them stated that they did not have any problem in getting food, 15% ticked “all of the above”. Prices were considered an issue for more rural than urban respondents. In addition, and for both groups, the need for the accompaniment of husband scored the least percentage of responses. More details are given in Table 4-2

Table 4-2: Challenges faced by women pertaining food supply

	Rural		Urban		Total	
	N	% (of total sample)	N	% (of total sample)	N	% (of total sample)
Prices for food commodities are higher than what I can afford	14	7	8	4	22	11
Supermarkets are located away from my house	22	11	13	6.5	35	17.5
I don't have a car to take me to the market	10	5	15	7.5	25	12.5
I can't go to the market without my husband	6	3	2	1	8	4
I can't find all what I want in the market	7	3.5	3	1.5	10	5
Supermarkets are always crowded at the time I do my main food shopping	11	5.5	10	5	21	10.5
All of the above	15	7.5	20	10	35	17.5
I don't face any challenges/ difficulties	17	8.5	29	14.5	46	23

In fact, the participants in both interviews and questionnaires stated that they were able to find the food they needed with a few challenges which were mainly prices and the crowdedness of the hypermarket. These two challenges were stated by participants from both urban and rural regions. More challenges then appeared through the results of the questionnaire, such as the location of the market and the lack of transportation that limited the access of women to food supply. This was due to the freedom participants experienced with the self-completion questionnaire compared to the interview where they faced the interviewer as stated in the results section. The results also showed that participants lacked basic planning and shopping planning. This also can be seen in the perceived challenges stated by them. Many of the challenges discussed during interviews were related to the crowded markets or the difficulty in finding a parking space which could be resolved if the consumer developed

good planning skills by choosing a different and less crowded time of the month to carry out their food shopping.

#### **4.2.1.3 Frequency of buying food**

To understand participants' shopping practices as part of women's food purchase and role in household food security to be explored in this research, interviewees were asked to state the frequency of their food purchases. Frequency of food shopping can be related to planning skills and also can be related to food waste generated in the household (see chapter 2, section 2.4.5.6).

40% of urban participants stated that they bought large supplies of food once a month, 7% preferred to buy weekly and another 7% preferred to buy whenever they were low on stocks. 20% of the participants stated that they planned their purchasing so that some food would be bought every few weeks and some would be bought every month or so. The following quote summarises their food buying strategy: "*some things like rice we buy every two months, other things once a month, then there is meat, chicken and vegetables that we buy twice a month and we buy bread and fresh milk every two days*" (U25 – 31 years old, university degree, middle income, employed). Participants who bought food whenever they needed it without any planning justified that practice by stating that it was because they "*have a small family*" or, because "*food gets spoiled, so we prefer to buy only what we need when we need it*".

Rural interviewees' (n=20) responses varied to that of the urban interviewees. 35% of rural interviewees said that food was bought monthly, while 65% bought their food once or twice a month, or sometimes once in every two months, in bulk. However, in addition, all of them made food purchases when households were low on food<sup>6</sup>.

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<sup>6</sup>An important note here is that almost all urban women interviewed in this study live in small family units with their husbands and children while most of rural women live and share the house with members of extended families. Thus, the amount and type of food needed in households differed between the two regions.

This question was also directed to respondents, who completed the questionnaire. Table 4-3 represents their responses:

Table 4-3 Frequency of buying food among questionnaire participants

		Rural		Urban		Total	
		N	% (of total sample)	n	% (of total sample)	n	% (of total sample)
Frequency of food shopping	once a month	41	20.5	40	20	81	40.5
	once a week	27	13.5	16	8	43	21.5
	twice a month	26	13	31	15.5	57	28.5
	Other	6	3	13	6.5	19	9.5

In summary, results showed that a high percentage of households purchased their food requirements on a monthly basis. However, there were also households that purchased food at a different, regular or irregular, frequency. This contradicts the results of PACP (2012) which found that the majority of its participants (89.5%), bought their food on weekly basis (see chapter 2 section 2.5 – p: 79).

#### 4.2.1.4 Who buys the food?

Participants were asked about who, in the household, was responsible for or in charge of buying food for the family, in order to further explore the role women had in terms of household food security and whether they were empowered to make food-related decisions. About 46% of urban interviewees stated that it was a joint responsibility between them and their husbands and, hence, they shopped for food together, while 9% stated that the duty for buying food alternated between husband and wife. However, 33% said they went by themselves to buy food, 15% shopped for food with other members of the family and 9% of the respondents let their spouses do the grocery shopping.

On the other hand, only 60% of rural participants responded to the question of who, in the household, bought the food. 15% of those who responded stated that they shopped for food alone (5% of them stated that they only had to go for shopping in the absence of their

husband or when he could not go). 40% stated they shopped with their spouses and 5% responded that they shopped with their children.

One of the rural participants, R17 (39 years old, university degree, high income, employed), said; *“my husband used to go by himself for many years...but since last month, I started to go with him...I think I would keep going with him from now on”*. Only one interviewee, R8 (41 years old, university degree, high income, employed), said that the “household head”, i.e., her husband, is the one providing all food needed.

This question was also directed to respondents who completed the questionnaire. Table (4-4) represents their responses:

Table 4-4 food shopping responsibility among questionnaire respondents

		Rural		Urban		Total	
		N	% (of total sample)	N	% (of total sample)	N	% (of total sample)
Person responsible for shopping of food	Son	3	1.5	4	2	7	3.5
	Wife	25	12.5	11	5.5	36	18
	Daughter	5	2.5	8	4	13	6.5
	Husband	41	20.5	12	6	53	26.5
	Housekeeper	16	8	6	3	22	11
	wife and husband	6	3	57	28.5	63	31.5
	Other	4	2	2	1	6	3

In summary, the results of this section indicate that women usually shopped for food either by themselves or accompanied by their husbands. This is an indication that women in Oman play a major role in household food provisioning and choice-making. Still, some women, especially in the rural region, depend completely on male members of the family to supply their households with food requirements.

#### 4.2.1.5 Planning for Food

Further to the previous questions, participants of both interviews and questionnaires were asked about their food planning practices.

The term “food planning” appeared unfamiliar to many participants during interviews; they tended to repeat it once or twice after me, and then asked me about what I meant by it.

When urban participants were asked whether they planned their meals before shopping for food, only 27% of respondents responded positively and 33% said that they sometimes planned but did not do so consistently. 30% of participants remained silent until the question was changed. Of the 51 women who said that they did not plan when buying food, 77% justified their answers. About 74% of them explained that they did not need to plan as they

always bought the "*same essential food*" or "*routine food*" and 3% added that they only cooked what they were used to cooking during their whole life, so they did not need to plan. Urban participants were also asked about their routines prior to food shopping. About 92% said that they checked their kitchen cabinets first to make a list and/or to know what needed to be bought. Among those, 65.9% said they checked their kitchens by themselves, 4% did so with their husbands, 15% with their house maids and 10.8% allowed others in the household to check. However, 78% of them stated that they, or someone else in their household, prepared a shopping list. Again, those who did not write up a shopping list gave the main reasons for not doing so as knowing from memory what they usually needed and/or that they always bought the same products. One participant explained; "*No, I don't write a list because I know what I need and I check the kitchen before shopping to make sure of the things that are needed ... also, when I notice that I don't have enough of a product at home, I would buy more of it because I know how much we consume in a month*" (R15- 24 years old, university degree, high income, employed). However, 4% of the interviewees said that they only wrote a shopping list if their husbands were the ones doing the shopping, so that they could know what was needed.

In addition, during interviews, 20% of the rural participants stated that they usually planned the meals that they intended to prepare and then bought their food based on that. In contrast 80% of the interviewees said that they did not plan for grocery shopping, half of these respondents ignored the question when first asked. However, 55% of them said that they checked their kitchen cabinets before shopping.

Additionally, when asked whether they took a shopping list, 40% of rural women interviewed confirmed that they always prepared a shopping list. Similar to urban participants, 35% of them said that they knew and could remember what to buy without the need for a list. One commented; "*no, we don't need a list...we just fill the big car with food...like every*

*month...and if we needed more, we will buy more at any time”* (R11- 52 years old, illiterate, high income, unemployed).

It is worth noting that some participants in both regions stated that they planned for food shopping only after having the term explained to them. They would first say that they did not plan their meals in advance and then asked the interviewer to repeat the question to clarify the term again and changed their responses.

According to the questionnaire respondents (see Table 4-5 below) only 13% of rural and 10% of urban respondents planned their meals prior to shopping. Besides this, only 35% of rural respondents checked their kitchen stores before shopping compared to urban respondents.

Results also showed that 23% of the total samples, both urban and rural, prepared a shopping list prior to shopping. These results are presented in detail in Table 4-5

Table 4-5 food planning practices among questionnaire participants

		Rural		Urban		Total	
		N	% (of total sample)	N	% (of total sample)	N	% (of total sample)
Before shopping	plan meals to be prepared	13	6.5	10	5	23	11.5
	check food stores at the house	35	17.5	61	30.5	96	48
	write a shopping list	24	12	22	11	46	23
	I don't need any of this	5	2.5	7	3.5	12	6

The results show that although planning meals was a rare practice, respondents regularly checked their kitchen cabinets and storing units and wrote shopping lists prior to food shopping. This resonates with and supports the study of the Public Authority of Consumer Protection (2012) which found that 81.4% of its sample wrote a shopping list (see chapter 2 section 2.5), therefore, giving more insight on the food purchase related practises and skills

women adopt in order to fulfil their role in household food security being explored in this research.

#### **4.2.1.6 Food Choices' Determinants**

There are many factors that define people's dietary choices and affect their food purchase and consumption habits (see sections 2.3.2 and 2.3.3 of the Literature Review chapter). Thus, investigating the determinants of food choices of the participants of this study will help understand what motivates them to make these choices and shapes the role they are playing in providing food and maintaining the food security of their households.

When asked about what influenced their choices of a food product in the market, 28% of urban participants said that quality was among the most important criteria. 6% of them stated that high quality food was a product of a well-known brand. Another 6% thought that good quality food was the food recommended to them by the family or food which they heard and/or had read good reviews about. Furthermore, 16% stated that good quality food was food that was locally produced or was a product of an Arab country.

Good quality food was understood to be identifiable from its known source or origin, adequate price, its ingredients, the shape and the packaging of the product. Quality was also viewed to be directly proportional to the selling rates. The participants also deemed Omani food to be of good quality and if a certain Omani food was not available then they preferred food produced in other Arab countries.

The participants were also aware of or paid attention to the status of the company producing the food. They mentioned that companies with 'weak status' meant that they were perceived as having poor production, storage and handling of the food. When asked what they meant by weak status, they said that companies that had less numbers of products or weak advertisement or were reported by the media to have had losses in profit were considered as being of weak status and, thus, as having low quality products. One participant responded to this question saying: *"I care about the status of the company ... if it has many branches, then*

*the company is strong ... weak companies mean weak production, storage and handling of food*". Lastly, they were also of the view that good quality food was never included in the sale offers, so they tended to avoid food products that were on the special offers shelf.

As was mentioned previously, all urban participants were living in small family units which included the participants themselves, their husbands and their children if they had any. Therefore, it was interesting to find that more than 34% of them still followed the choices of their parents and extended families even after years of living away from them. One of them said that she would call her family to check on the products they were using before deciding which to buy, which would usually be the same. Another participant stated that she used to live in her husband's family house and that as she moved to her own house with her husband and children, she tended to buy the same food they used to eat in their family house.

The taste of food was a determinant of choice of 20% of the women while price was mentioned by only 16%. Two women stated that they would always choose food with the highest price in the market as they believed it would be the best. Only one woman preferred to buy food products of intact packaging that maintained its colours as an indicator that it had not been exposed to the sun.

Rural women tended to mainly buy market food products that they knew and were familiar with (45%) and that tasted good (35%). About 30% mentioned a well-known brand and 20% thought that quality was most important when choosing food. Quality to rural women was often linked to sensory properties of food such as taste and colour. When asked to explain what the term "quality" meant to them, most women said; good taste, well known, fresh colours and good packaging. Below are some of their responses to the question on what defined their food product choices:

- *"everything is fine with me"* (R2 – 26 years old, secondary school, low income, unemployed)

- *“I try new things each time”* (R13 – 28 years old, secondary school, middle income, unemployed)
- *“Based on the brand ... and the product that my mother used to buy ... I never buy any food that I didn’t try before or that I don’t know”* (R15 – 24 years old, university degree, high income, employed)

This question was also directed to those respondents who completed the questionnaire. Table 4-6 represents their responses:

Table 4-6 food choices determinants among questionnaire respondents

		Rural		Urban		Total	
		N	% (of total sample)	n	% (of total sample)	N	% (of total sample)
criteria of food products preferred	price vs. quantity	8	4	9	4.5	17	8.5
	Price	39	19.5	34	17	73	36.5
	Taste	9	4.5	7	3.5	16	8
	nutrition value	11	5.5	19	9.5	30	15
	country of origin	6	3	4	2	10	5
	Brand	13	6.5	10	5	23	11.5
	buying what the family is used to	14	7	17	8.5	31	15.5

According to the results above, it was clear that choices of food products depended mainly on brand, price, taste and what participants knew and/or used in their households and circle of extended family and friends. Nutritional factors were given less importance. Again, this was similar to the results of (PACP, 2012) where 81.2% of respondents stated that they did not trust new products that were not known to them or had not been used before by them or the people they know. The findings of this section emphasises the role that culture and society play in defining people’s dietary choices (Again, see sections 2.3.2 and 2.3.3 of the Literature review chapter) and contribute to the main objective of the research and the question on

women's perception and sources of knowledge and information pertaining food related issues.

#### **4.2.1.7 Reading food label and facts**

To explore the awareness and skills women have pertaining to food purchase as part of the main objective of this research, participants were asked if they read the information provided on the labels of food products that they buy.

On food products on supermarket shelves, 70% of urban participants tended to check “best before” and “expiry” dates. They even added emphasis to their answers by using phrases such as: “*of course I do*”, “*oh that is an essential thing*”, “*yes, it is important*”. One, coded as U34 (38 years, primary school, high income, unemployed), said that she would always take her son with her for shopping so that he could help her check the expiry dates. Around 24% of participants said that they only checked dates sometimes and on certain products only such as milk, dairy products and fresh juices. However, 6% of participants stated that they did not pay attention to dates on food products.

When asked about whether they checked the ingredients of food products, 50% of participants said they did not, while 32% of them said they sometimes checked. Participants who sometimes checked food ingredients said that they did so before buying products for the first time. However, 6% of them said that they would only check ingredients of food that they were buying for their little children. Another participant, coded as U17 (42 years old, university degree, low income, unemployed), within the 32% that checked for the ingredients, stated that she started to check food ingredients after she signed up to a diet programme, as she needed to buy healthy food consistent with her diet. Moreover, one participant coded U41 (25 years old, university degree, high income, employed) said that she looked for “*E numbers in food ingredients as it indicates carcinogenic food ingredient*”. Only 18% of participants said that they always checked food ingredients on the label of products they bought.

Participants were also asked if they read the nutritional facts on food products. All of the participants asked about what “nutritional facts” meant and only 4% of them said that they would read nutritional facts on the label.

In contrast, about 55% of rural participants said that they always checked “best before” and “expiry” dates. One of these participants, coded R13 (30 years old, secondary school, middle income, unemployed), stated that, *“yes, I read them on all the products that I buy...we were not concerned about the expiry dates in the past but now everything changed after awareness campaigns that took place recently”*. This was mentioned by other participants as well as they stated that the warnings and the latest news about the Public Authority of Consumer Protection arresting shop owners selling expired food products had made them more aware and alert when shopping for food. Yet, participant, R15 (24 years old, university degree, high income, employed), said that she did not check the dates on food products because she trusted the shop. However, only 25% of the rural participants stated that they would check the food ingredients sometimes but none of them knew or read nutritional facts on the label of food products.

During shopping, 65.5% of questionnaire respondents, both urban and rural, stated that they checked “expiry” and/or “best before dates”. However, this percentage dropped to 54.5% for nutritional facts and to only 31% for food ingredients. More detailed results are presented in Table 4-7.

Table 4-7 Shopping practices pertaining reading food labelling

			Rural		Urban		Total	
			N	% (total sample)	N	% (total sample)	N	% (total sample)
During shopping, women;								
	Check "expiry" and "best before" dates	No	4	2	11	5.5	15	7.5
		Yes	64	32	67	33.5	131	65.5
		Sometimes	23	11.5	9	4.5	32	16
		I don't know the meaning of these terms	9	4.5	13	6.5	22	11
	Check nutritional facts on food label	No	22	11	15	7.5	37	18.5
		Yes	51	25.5	58	29	109	54.5
		Sometimes	13	6.5	14	7	27	13.5
		I don't know the meaning of these terms	12	6	13	6.5	25	12.5
	Read food ingredients on food label	No	19	9.5	14	7	33	16.5
		Yes	27	13.5	35	17.5	62	31
		Sometimes	39	19.5	38	19	77	38.5
		I don't know the meaning of these terms	15	7.5	13	6.5	28	14

In general, the results of this chapter highlight that more than half of the urban participants tended to check expiry dates on food products which they purchased. However, participants were not aware of or cared to check food ingredients or to read the nutritional facts.

Rural participants on the other hand did not focus on these aspects at all. According to PACP (2012), consumers tended to focus mainly on the expiry dates as most of the food products were of short shelf-life and thus needed to be checked. This was, according to the PACP (2012) study, due to lack of awareness of the importance of food labels or due to the lack of time that women had for shopping. In section 4.2.1.6 of this chapter (food choices' determinants), it was found that participants were highly motivated by properties of the food product that were more related to its physical attributes, origin and recommendation by others than nutritional content. That explains why the majority of participants cared more about the expiry date that reflected a safety aspect than food ingredients and nutritional facts.

#### **4.2.2 Food preparation decisions within the household**

Participants of interviews and questionnaires were also asked about who decided what food was to be prepared at their houses in order to gain more insight into their food related decision making power (see sub-section 4.2.1.4 of this chapter). Identifying this decision making power helps to answer the question of this research and understand how much of household food security is sustained by women and the role they have in it.

It was interesting to find that about 81% of the total interviewees (both rural and urban) stated that they were responsible for food related decisions in their households.

36% of urban participants stated that they made all food decisions. 16% stated they did so with their husbands; 12% stated that they included the whole family in the decision making process;

10% stated that they consulted their children and 10% included other family members such as sisters, mothers in law or the housemaid in the decision making process. Only one urban participant stated that her mother in law was involved in making these decisions.

45% of rural participants (n=20) interviewed stated that they generally made the food preparation decisions in their households. Another 30% stated that the entire family was involved in decision making. 15% said that the family of the husband decided on food and 5% stated that the food preparation decisions were often made by the person preparing the food.

According to the results of the questionnaire and in both regions, urban and rural, the majority of respondents made the decision regarding food preparation at their household. More detailed results are presented in Table (4-8).

Table 4-8 Decisions on food

		Rural		Urban		Total	
		N	% (of total sample)	N	% (of total sample)	N	% (of total sample)
At the household level, food is decided upon by;	husband	11	5.5	14	7	25	12.5
	wife	61	30.5	56	28	117	58.5
	children	14	7	18	9	32	16
	wife and husband	4	2	2	1	6	3
	the whole family	0	0	9	4.5	9	4.5
	other	10	5	1	0.5	11	5.5

#### **4.2.2.1 Decision-making authority: Government and Household Level and the view of discussion groups' participants**

Further to the results of interviews and questionnaire, participants of discussion groups were also asked to discuss who should make food related decisions both at the household and government level. Their detailed responses are presented below:

##### Group 1 (secondary school level)

In group 1, respondents seemed to agree that this should be at the government level; the Public Authority of Consumer Protection should be in charge. They believed that gender did not matter as long as the position was taken by the most qualified person to do the job. However, at the household level, women, as mothers, should be the decision makers. Two participants added that men, as fathers, should be involved as well. Only one participant was of the view that it was the responsibility of everyone.

##### Groups 2 and 3 (university degree level)

The group of university degree holders (only group 2 as group 3 did not give any responses to this topic) agreed that, at the household level, both wife and husband should share responsibility and decide upon food purchase, preparation and consumption. They suggested government authorities, for example, the Ministry of Health, the Ministry of Agriculture and the Public Authority of Consumer Protection were better qualified to decide at higher level on food related policies.

Another participant argued that food safety and nutrition was the responsibility of all people and that everyone should play a role; *"Everyone has a role but the family has the essential role from the beginning. The awareness and knowledge of family in addition to good eating habits will pass to the children. Schools and teachers have a major role after the family. Also, all the*

*institution of society and the country in general should play its role in educating people directly and indirectly such as Ministry of Health, Ministry of Media, educational institutions, etc.”*

Group 4 (higher degree level)

The participants in the fourth group also agreed that, at the government level; it did not matter whether men or women were the decision makers. The most important thing was that decisions were made by qualified and specialised authorities. They gave examples of governmental authorities that should be more involved in food security such as the Ministry of Environment, the Ministry of Commerce, the Ministry of Health and the Ministry of Regional Municipalities and Water Resources. At the household level, participants believed that it was the role of both parents but with more authority being given to mothers. According to one of them; "*women as mothers are the ones responsible to make decisions that will affect their children's awareness in regards to food*".

Based on the results above, it is clear that all groups agreed that gender did not matter as long as the decision was made by a qualified person. This also reflected the general status of men and women in the general law of Oman which was discussed in chapter two of this research. By law, all qualified men and women were considered to be equal in terms of job opportunities and privileges. The participants also agreed that women, as mothers, shared the responsibility with the husband/father at the household level but bore more responsibility toward their children's health and nutritional status. However, as the level of education increased, women were more able to distinguish various governmental parties that were working on food related issues and different platforms at which this responsibility should be held and shared.

### **4.2.3 Food safety perception and practices among participants in the study**

Food safety refers to the handling, storage and preparation of food in a way that prevents infections and ensures that the food people consume retains enough nutrients essential for a healthy diet (Langiano et al., 2012). Food can be said to be unsafe if it is exposed to germs or dirt and, in such a state, if consumed it can cause diseases and infections such as diarrhoea. Food safety reduces the exposure of individuals to risks of transmitting foodborne diseases (Meah, 2014). It is achieved through various avenues such as proper cleaning and sanitisation of cooking surfaces and utensils, maintenance of intensive personal hygiene, correct heating, correct storing and heating of food at the correct temperature and in a suitable environment, pest control measures and understanding the causes of food poisoning, food allergies as well as food intolerance.

In this section, the perceptions of participants of both interviews and the questionnaire in relation to food safety issues was explored through a set of questions to explore their awareness of food safety as an important part of household food security. Details of the findings are summarised below.

When interviewees were asked about what food safety or what safe food meant to them, 28% of the urban participants stated that they did not know. 8% stated that safe food was food low in fats and sugars and which contained all necessary vitamins and minerals for good health. 14% were confused between safe and nutritious food. The responses of the 12 participants are summarised in Figure 4-2 below (based on frequency):

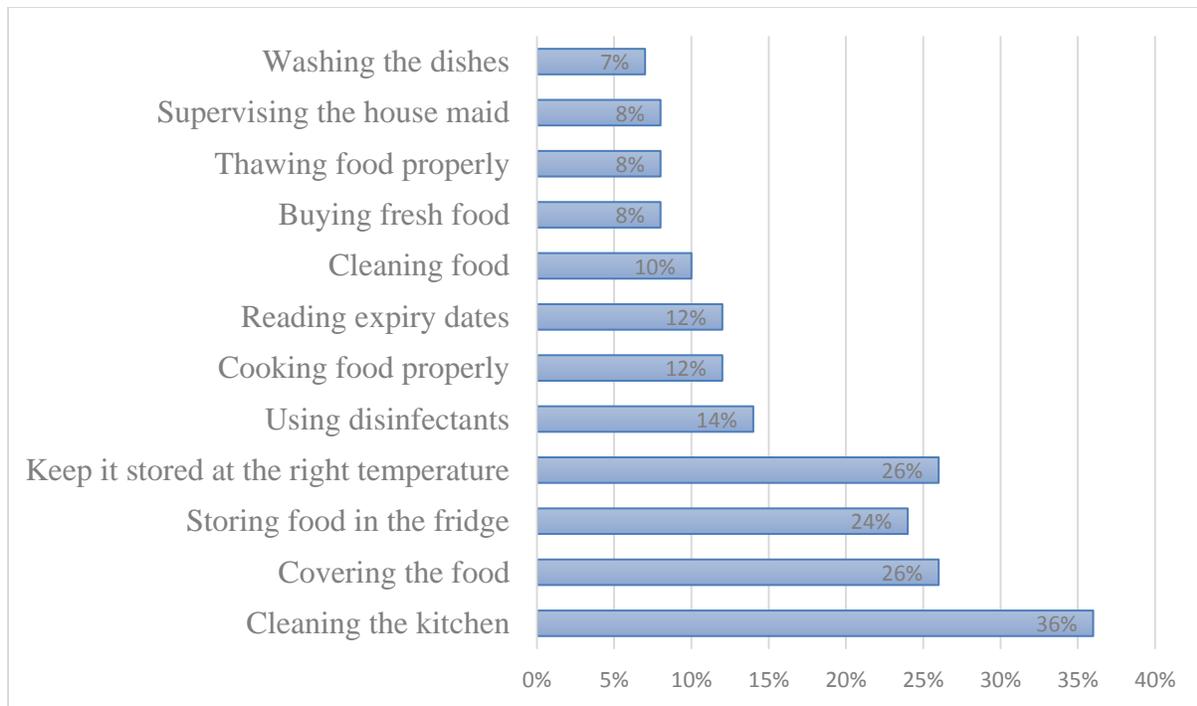


Figure 4-2 Perception of food safety among urban participant

When asked why they should maintain the safety of their food, 38% of urban participants stated that they did not know why it was important to keep food safe. The remaining participants were of the view that safe food could protect everyone from getting ill (28%), to maintain good health (34%), to avoid contamination (6%) and to avoid bacteria (4%).

One of the urban participants (U 08 – 38 years old, university degree, middle income, employed) shared her fear of bacteria and stated: *“if the food is not clean and safe, it would transfer bacteria into my body ... I know my body contains good bacteria but the food can transform them into harmful bacteria ... this might be toxic to my body and causes diseases”*. Another participant, U26 (37 years old, university degree, middle income, employed), commented; *“it is important to have safe food to live a healthy life ... and for our looks to be young and matches our age”*

To explore whether participants were aware of the term “microbes” and its relationship to food safety, participants were asked whether they knew what microbes were and how they dealt with

them. 32% of the urban interviewees did not know and asked to move to the next question. Some of the responses included phrases like “good and bad” (6%), “microbes are pathogens” (12%), “harmful” (16%), “scary” (6%) and, “I hate them” (4%).

One participant, U40 (29 years old, university degree, middle income, employed), believed that microbes were dust: “to me, I feel microbes are an army ready to attack if I left an opening for them in kitchen”. These participants stated that they would protect their kitchen from the dangers of microbes by good cleaning practices, using disinfectants, storing food based on optimum temperature and humidity, using different chopping boards for different types of food, eliminating spoiled food and covering food. Below are some examples of the answers of urban participants:

- “Microbes are another world ... I separate everything ... I separate chicken from vegetables and use a different chopping board for chicken and separate knife ... and the cleaning sponge; should be different ... there is a sponge for each thing” U36 (30 years old, university degree, middle income, employed)
- “They are pathogens that I avoid by cleaning the place ... I also burn luban<sup>7</sup> to kill all microbes in air” U18 (40 years old, secondary school, middle income, employed)

When the urban participants were interviewed on what strategies they used to keep food safe, 92% responded to this question. Their answers included several practices which are summarised in Figure 4-3 below based on the frequency of responses:

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<sup>7</sup>luban is a plant-based gum often burnt in households for purification process in the northern part of Oman

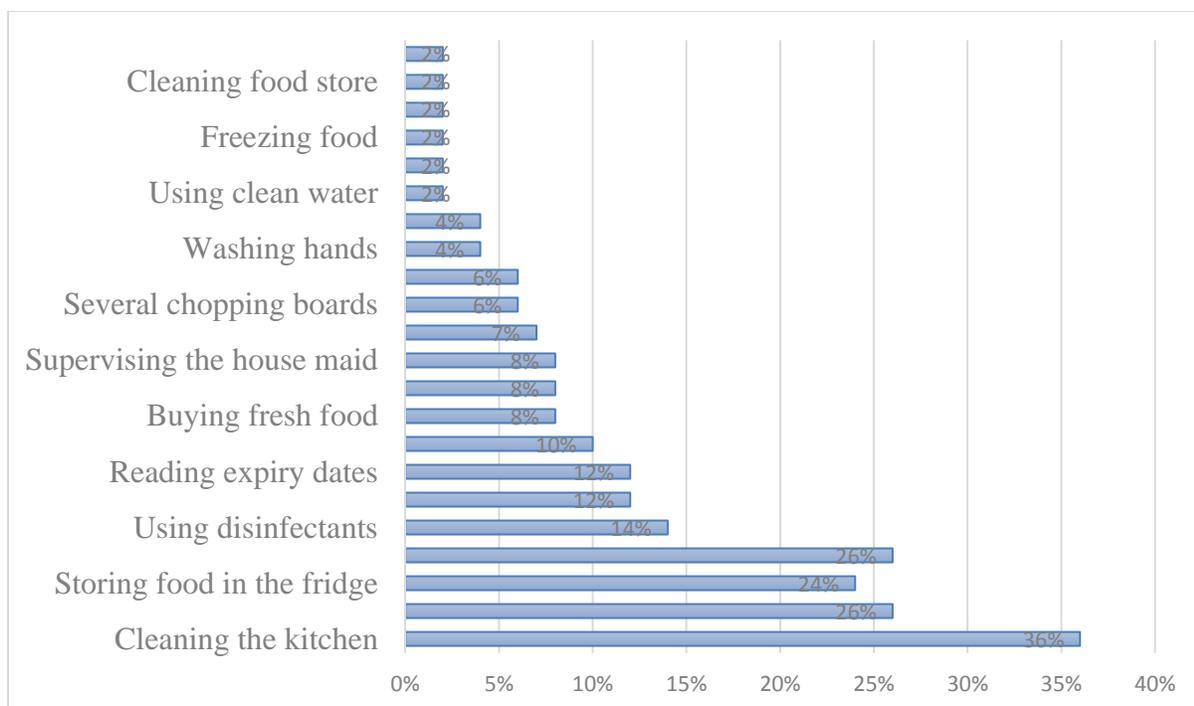


Figure 4-3 Methods of maintaining food safety among urban participants

Two interviewees stated that food would be safe if they prepared it themselves. Below are some of the responses that included further precautions:

- *“I store them well in the fridge ... and only take out the quantity I really need ... no more than that” (U48- 30 years old, university degree, middle income, employed)*
- *“I switch on the air conditioner in my kitchen the whole time, so the food doesn’t spoil” (U14 – 39 years old, secondary school, middle income, unemployed)*
- *“I get rid of all rusty dishes and spoons” (U3- 43 years old, secondary school, middle income, employed)*
- *“I don’t keep the food I bought for long times inside the car” (U32- 30 years old, university degree, middle income, employed)*
- *“I keep the food in special storage bags when storing it in the fridge” (U11- 31 years old, university degree, middle income, employed)*

Participants were then asked about the responsible person for maintaining the cleanliness of food storage and preparation areas in their houses to further explore the role women played in maintaining food safety in their households.

16% of urban women said that they were responsible for cleaning their kitchens and making sure that everything was kept in its proper place. 2% stated that they shared the responsibility with their housemaids. However, 50% of participants saw this as the responsibility of the housemaid as their only responsibility was to supervise the handmaid's work. Only 1% stated that they usually cleaned the kitchen with help of other family members such as the husband, children, or the entire family together.

According to 45% of rural participants (n=20), safe food was considered to be the food that was cooked at home by the wife, mother or daughter. These participants and 40% more (85% of rural participants) shared their views on food properties that made it safe for them. These responses are illustrated in Figure 4-4 below (based on frequency).

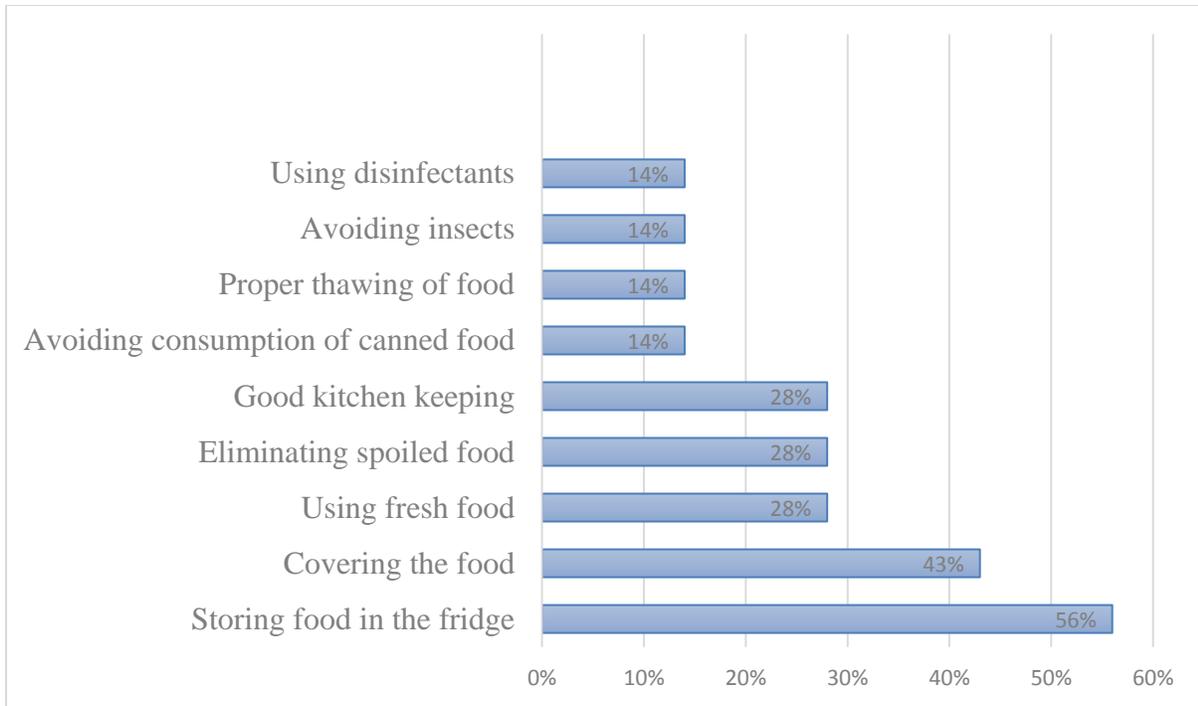


Figure 4-4 Perception of food safety among rural participants

60% of rural participants did not choose to respond when asked whether food safety was important for them. However, 35% stated that food safety was important to maintain good health; one interviewee commented; *“not always ... it’s not important”*.

When asked about what microbes were, 40% of the rural participants did not respond and 3 stated that microbes were creatures that they could not see. 40% of the participants described microbes as bad, harmful, dirty and disease causing. When these interviewees were asked what strategies they used to tackle microbial contamination, they stated that they did so by keeping the place clean (35%), covering the food (25%), keeping the food in the fridge (20%), using disinfectants (15%), eliminating spoiled food (5%) and eating food soon after cooking (5%) (Percentages represent frequency of responds)

Rural participants were also asked to talk about how they maintained food safety in their houses. Only 35% responded to this question by listing their routine practices. These practices are presented in Figure 4-5 below. (Based on frequency)

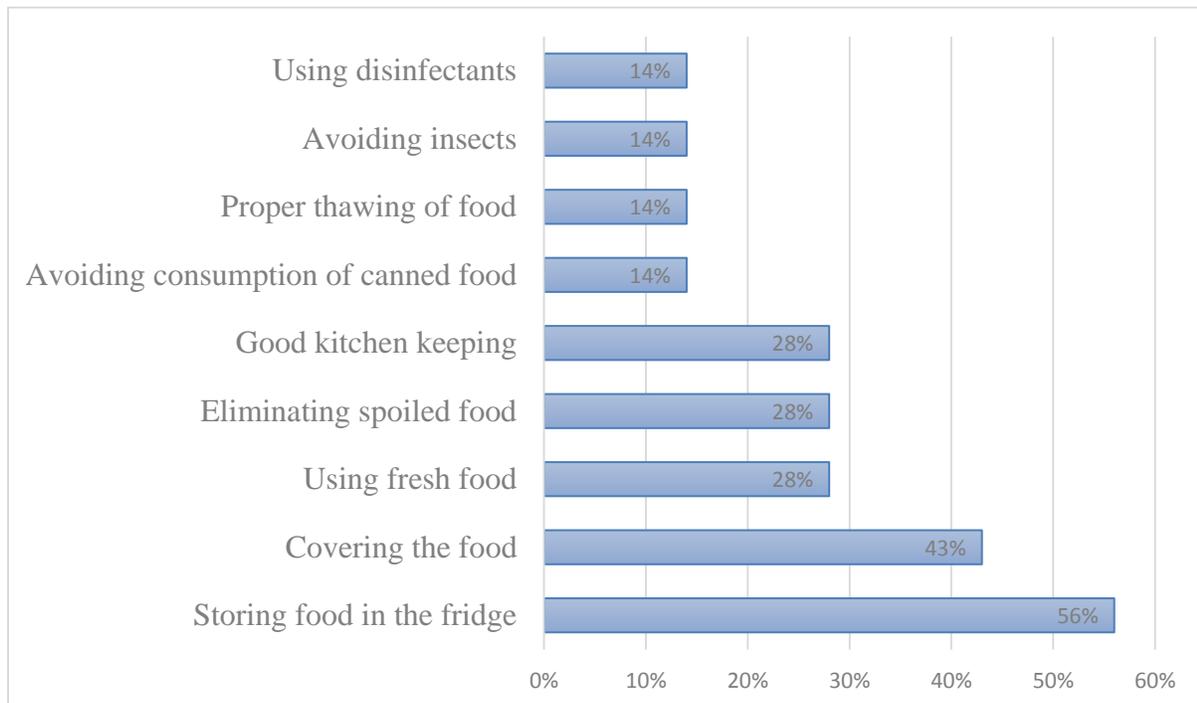


Figure 4-5 Food safety practices adopted by rural participants

Below are two examples of rural participants' full responses to this question:

- *“I cover the food ... I also keep it in a cool place and always clean my kitchen”. (R4- 40 years old, secondary school, middle income, unemployed)*
- *“I supervise everything in the kitchen that is made by my house maid ... I also ask her to wear gloves ... I sometimes pop in the kitchen without her noticing to check if she is wearing the gloves ... I also monitor the place with cameras ... and I assign a special bag for her to put food waste in it and we give that to animals ... food waste of vegetables, fruits and rice”. (R17- 39 years old, university degree, high income, employed)*

When asked about their food preparation cleanliness, 40% of rural participants stated that cleaning the kitchen was their responsibility. However, 10% said that that maintain the cleanliness of the kitchen with the help of the maid while another two left the job was for the maids under their supervision. 25% of rural participants stated that, in their households, kitchens were to be cleaned by whoever was cooking.

Respondents who completed the questionnaire were also asked to describe what food safety meant to them and how they ensured that the food served in their household was safe. Approximately 62% of urban respondents believed that food safety was related to good storing practices, cleanliness, absence of harmful substances and making sure to consume food before its expiry date. In comparison, only 35% of rural respondents shared similar perceptions. Table 4-9 presents respondent's perceptions of food safety.

Table 4-9 Participants' perception of food safety

Perception	Urban		Perception	Rural	
	N	%		N	%
Disease prevention by enjoying Healthy food	20	10.0	It's safety with no defects concerning production and expiry dates	14	7.0
The food is healthy and doesn't contain chemical compounds	13	6.5	I make sure of the validity of the product and it's expiry date before using it	8	4.0
The food is clean and the ingredients are edible	12	6.0	It must contain all nutritional values	16	8.0
Useful, with nutritional benefit, free from harmful and carcinogenic substances	10	5.0	Choice of appropriate food for me and my family to avoid nutritional problems	7	3.5
Keeping food in its specified places according to refrigerators	9	4.5	I like the saying " take your food before your medication"	1	0.5
Good keeping and storing of food	8	4.0	Good keeping and storing of food	5	2.5
Healthy and unspoiled food kept in appropriate places	7	3.5	Making sure if the food is healthy or not	4	2.0
House prepared healthy food from the farm	7	3.5	The food free from preservatives	2	1.0
Healthy unexpired food	3	1.5	The good and healthy food in the same time	8	4.0
I have never heard of this term before	4	2.0	The healthy food that has all nutrients	6	3.0
I heard about this term before, but I am not really sure what it means.	7	3.5	The healthy food appropriate for the family and free from chemicals	4	2.0
			Keeping and using it properly	2	1.0
			I have never heard of this term before	8	4.0
			I heard about this term before, but I am not really sure what it means	15	7.5

All 96 urban and 81 rural respondents shared proper food safety practices that they followed in their households. Their responses are listed in detail in the Table 4-10.

Table 4-10 Food safety practices adopted by respondents

Practice(s)	Urban		Practice(s)	Rural	
	N	%		N	%
Washing vegetables and fruits carefully	5	2.5	I check the production and expiry dates	10	5.0
Freezing the frozen food in suitable temperature	6	3.0	I make sure that fruits and vegetables are good and check the production and expiry dates	5	2.5
Cleaning the refrigerator and the place of preparing food	3	1.5	I make sure of expiry date, oven temperature, food storage and keeping	20	1.0
Making sure of washing food carefully before preparation	4	2.0	Make sure of production validity and date before using it and wash vegetable and fruits	4	2.0
Following the right steps to make sure that the food is suitable	2	1.0	Make sure of washing food carefully before preparation	6	3.0
Following the right steps for cutting, cooking, serving and keeping	10	5.0	Make sure of cleaning my kitchen and the existing kitchen ware	3	1.5
Keeping food in good conditions and cleaning the kitchen with detergents	8	4.0	I keep cleaning the kitchen, washing food and kitchen ware before using it	18	9.0
Tasting and examining food and making sure it's free of microbes	7	3.5	Use clean kitchen ware	15	7.5
Examining food and reading the production and expiry dates	19	9.0	I don't know	19	9.5
Supervising the process of washing vegetables and fruits and using the right Kitchen utensils	12	6.0			
Cleaning carefully all kinds of food I prepare	9	4.5			
Making sure of the Product validity before preparing it	11	5.5			
I don't know	4	2.0			

During interviews, the majority of participants in both urban and rural regions were not able to differentiate food safety from the definition of good nutritious food. This is considered as a common response as consumers tended to relate risks to what they could identify and assess by themselves in everyday life. In addition, approximately 60% of them also had limited knowledge of the nature of food microbes and pathogens. Nevertheless, all the women who participated in interviews and/or questionnaires stated that proper food safety practices were being maintained in their households. Women showed a marked tendency to keep their kitchens, food storing units and cooking utensils clean in addition to maintaining proper temperature and covering of the food at all times. They also were able to link these practices with prevention of diseases and bad health.

According to the original plan of the research, observations should also have been carried out to have a deeper knowledge of the practices of participating women. However, due to a number of reasons including the refusal of the women to participate in observed sessions, the observation part was cancelled. Yet, this study tried to get an overview on the general practices that women believed were vital to maintaining the safety of the food and kitchens in their households.

#### **4.2.4 Nutrition perception and practices among participants of the study**

Nutrition refers to the intake or consumption of food, considering the body's dietary needs. It can also be defined as the process of assimilation and utilisation by the body of essential food elements such as vitamins, carbohydrates, proteins, and fats that are present in the diet (Palmer and Boyd, 2016). Good nutrition can, therefore, be described as a diet which is adequate, balanced and coupled with physical activity. Good nutrition is a cornerstone of healthy living (Nestle, 2013). Moreover, poor nutrition or, in other words, lack of good nutrition can result in

the reduction of body immunity to diseases or infections, high disease susceptibility, impairment of mental or physical development and decreased productivity (ibid.).

Furthermore, the relationship between nutrition and household food security can be understood through the concept of nutrition security. It is very difficult for households to attain food security in the absence of nutrition security (Coleman-Jensen et al., 2014). If the household is not in a position to afford an adequate and consistent diet, or if food is only accessible at specific times, individuals will be forced to cope through overeating food whenever it becomes available. This contributes to obesity and overweight conditions. Additionally, human needs which are the needs of the household can only be fulfilled through a diversity of micro-and macronutrients to ensure that disease prevention and good health are attained (ibid.).

The participants of the study, through interviews, questionnaire and discussion groups, were asked to define what nutrition and nutritious food meant to them. They were also asked if they were familiar with the food pyramid and whether they used it in their meal planning. The rationale behind this was to explore their perception and awareness pertaining to nutritious food. In the interviews, 34% of the urban participants considered nutrition to mean eating food that contains all required nutrients for a healthy life. For 20% nutrition was food that people needed to build a healthy and strong body. 22% of the urban participants were not able to define the term and, at the end of the interview, asked for the correct definition of the term “nutrition” and whether they could be provided with information on how to ensure nutritious diets were being provided for their families.

Figure 4-6 shows the phrases that were frequently used during interviews to describe nutritious food (percentages represent the frequency of the respond among urban participants):

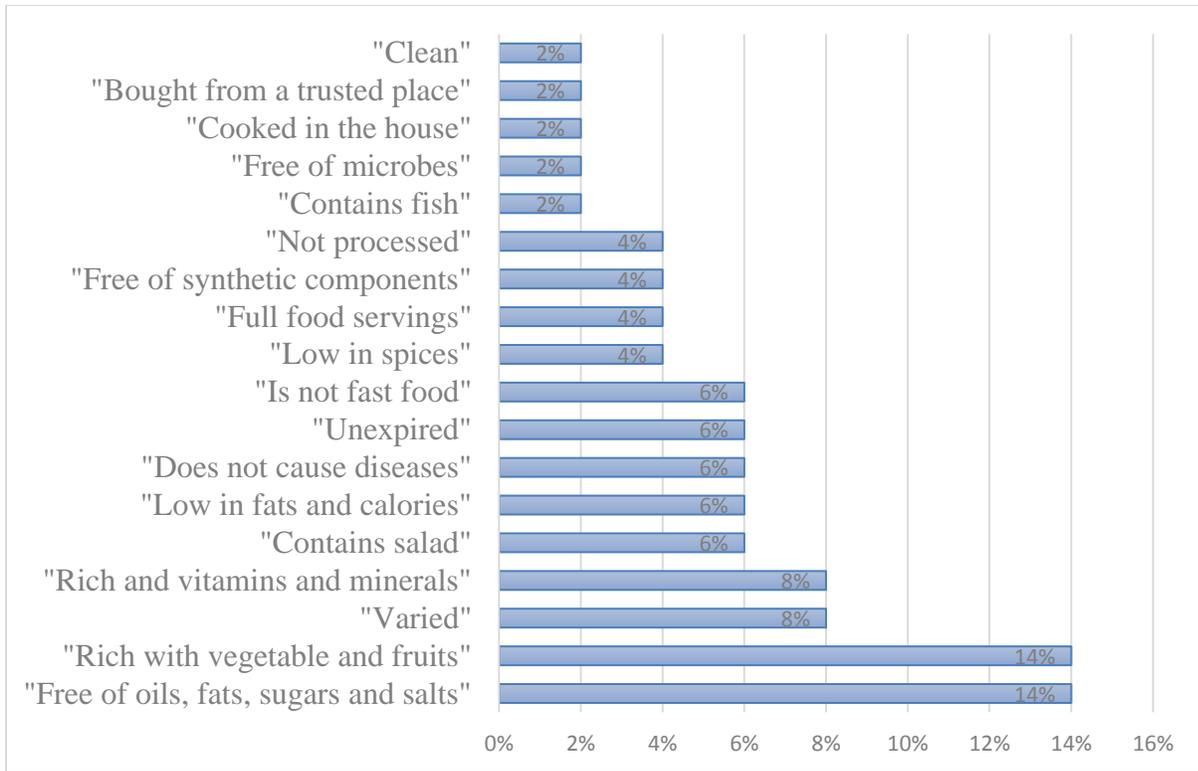


Figure 4-6 Perception of nutritious food according to urban participants

One participant commented on nutrition by saying; *“nutrition is health; thus it is life”*.

When urban participants were asked about how they ensured that food prepared in their households was nutritious, 20% of participants could not respond to this question. On the other hand, 80% shared their methods and ideas which are displayed in Figure 4-7.

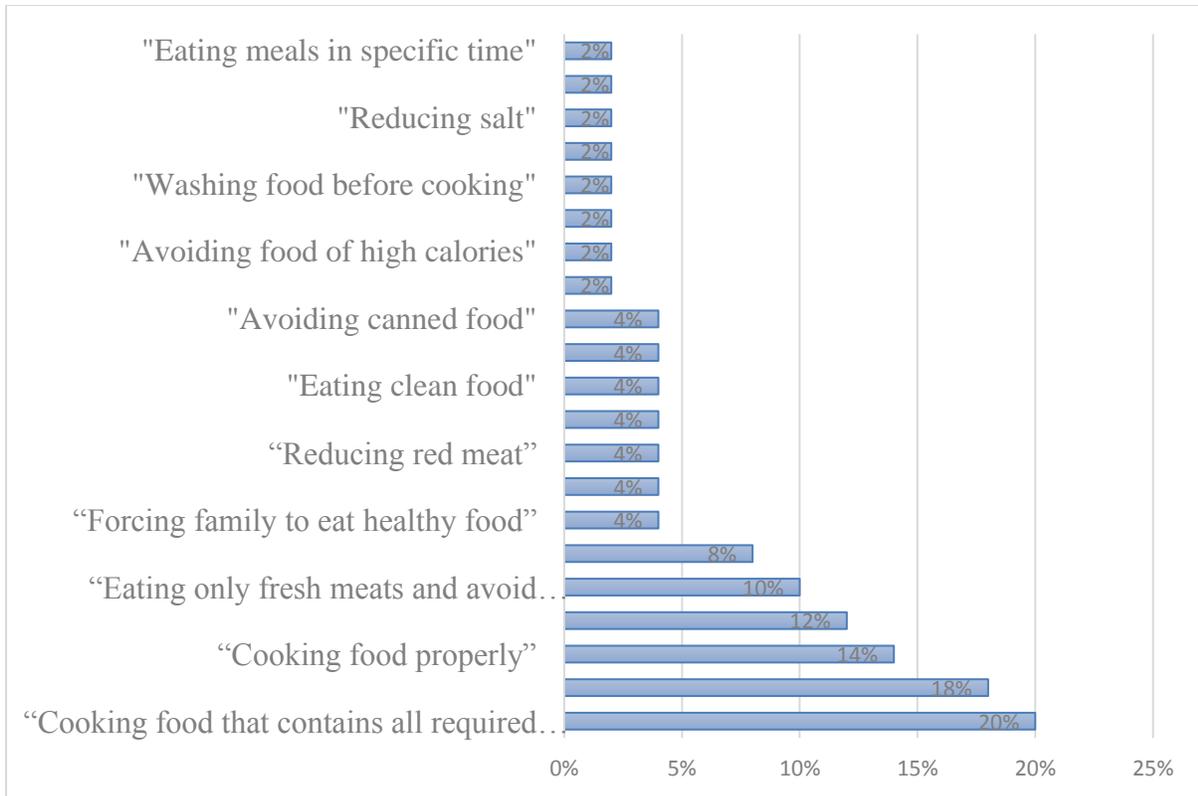


Figure 4-7 Methods of insuring nutritious food among urban participants

The following quotes capture some interesting methods shared by urban participants:

- *"I try to include more fruits and vegetables ... I ask my family to reduce their intake of calories ... I sometimes put more salads and less meat ... even with fruits, I chose low calorie fruits ... my life after dieting became better, I would never go back to obesity again"* (U35- 24 years old, university degree, middle income, employed)
- *"I don't cook meat very often now ... when they send fresh meat from the village, I cook it and serve it to my family ... and I don't buy hotdogs, we don't like to eat them ... these processed foods are not healthy and heavy on the stomach"* (U12- 34 years old, university degree, high income, unemployed)
- *"... I put a fruit basket near the television ... I also buy more juices ... when we get lots of bananas, I make banana juice ... I sometimes freeze the banana in freezing bags for juice"*

*making ... I make juice out of water melon as well” (U16- 23 years old, university degree, middle income, employed)*

- *“I always give my children a cup of orange juice before going to school and a cup of milk before they sleep, this is compulsory in my house besides fruits and vegetables” (U14- 39 years old, university degree, middle income, employed)*
- *“I ensure that the food served to my family is nutritious by monitoring their weight and haemoglobin level. If they’re healthy, it means my food is healthy” (U26 – 37 years old, university degree, high income, employed)*
- *“Everyone in my family has an allergy from a certain type of food, so I avoid that food” (U21- 25 years old, university degree, middle income, employed)*

Interviewees were further questioned on their knowledge regarding nutrition by asking whether they were aware of what a food pyramid was. 68% of the interviewees responded that they knew what a food pyramid was. 8% stated that they have heard about it but were not sure of what it was, while 24% did not know what a food pyramid was.

Figure 4-8 below summarises the responses of those participants who responded to knowing what the food pyramid was: (percentages represent the frequency of the responses among urban participants)

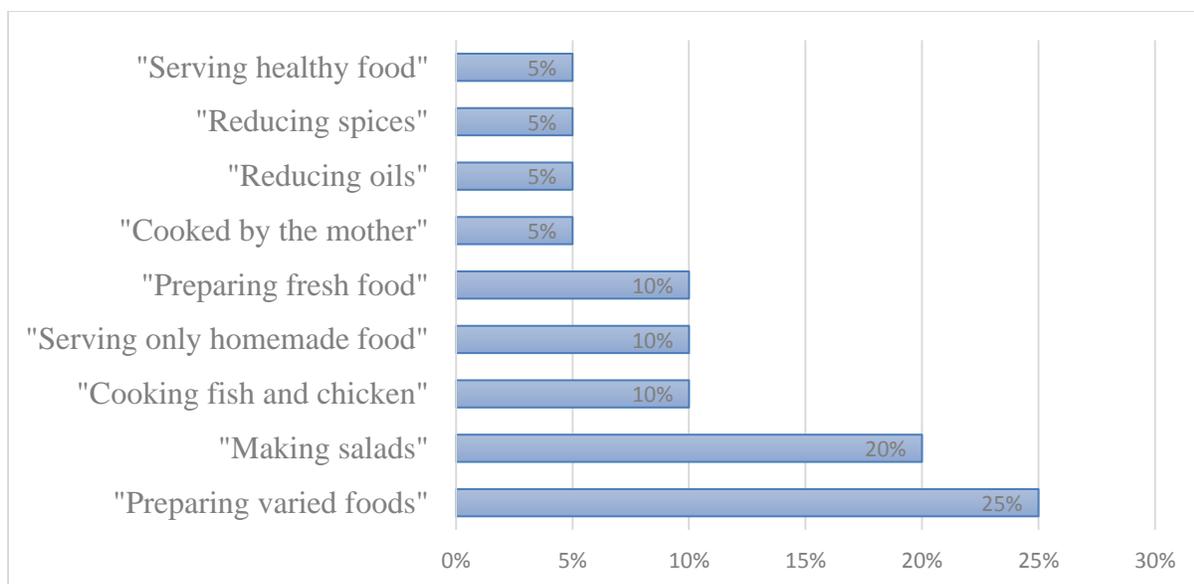


Figure 4-8 Definition of food pyramid according to urban participants

Among these 68% urban respondents, only 34% claimed that they use the food pyramid in planning the diet of their families. The following quotes capture their views:

- *"We use it ... for us, Omani people, rice, meat and fish are necessary in our diets everyday ... fruits are also important and vegetables ... milk sometimes ... for my kids, they drink so much milk even camel milk" (U16- 23 years old, university degree, middle income, employed)*
- *"I use it because I have children in different age groups and they have special dietary needs and varied foods to grow" (U08- 38 years old, university degree, middle income, employed)*

12%, of the 68% who stated they knew what the food pyramid was, said that they did not intend to follow the food pyramid but that their habits and food choices were similar to that indicated by the pyramid.

When asked about how the rural participants in the research defined nutrition or nutritious food, 45% could not respond or stayed silent. Figure 4-9 represents how the remaining 55% defined nutritious food: (percentages represent the frequency of the responses among urban participants)

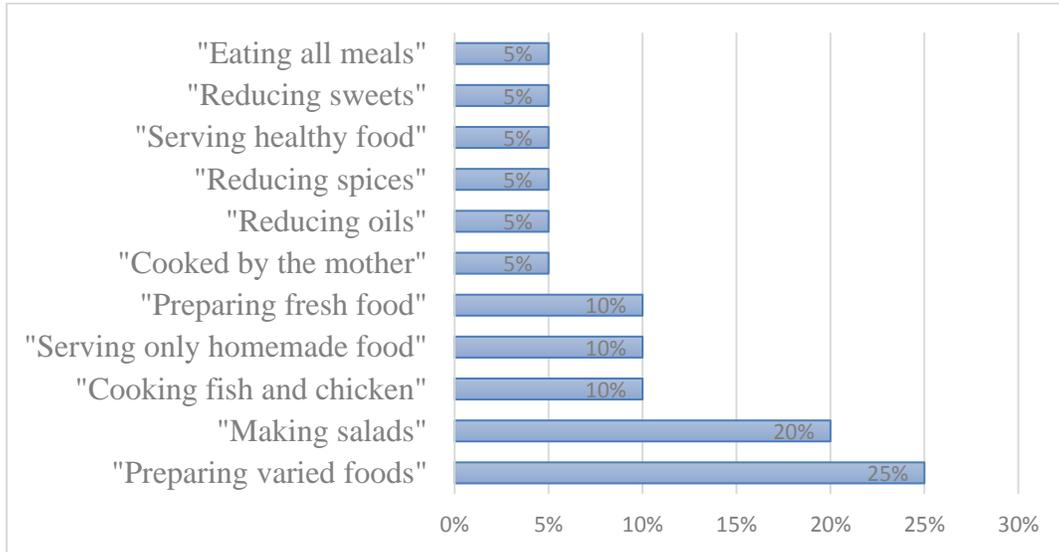


Figure 4-9 Perception of nutritious food among rural participants

Those 55% were then asked to share their methods of ensuring that the food they prepared for their families was nutritious. Figure 4-10 below presents their responses.

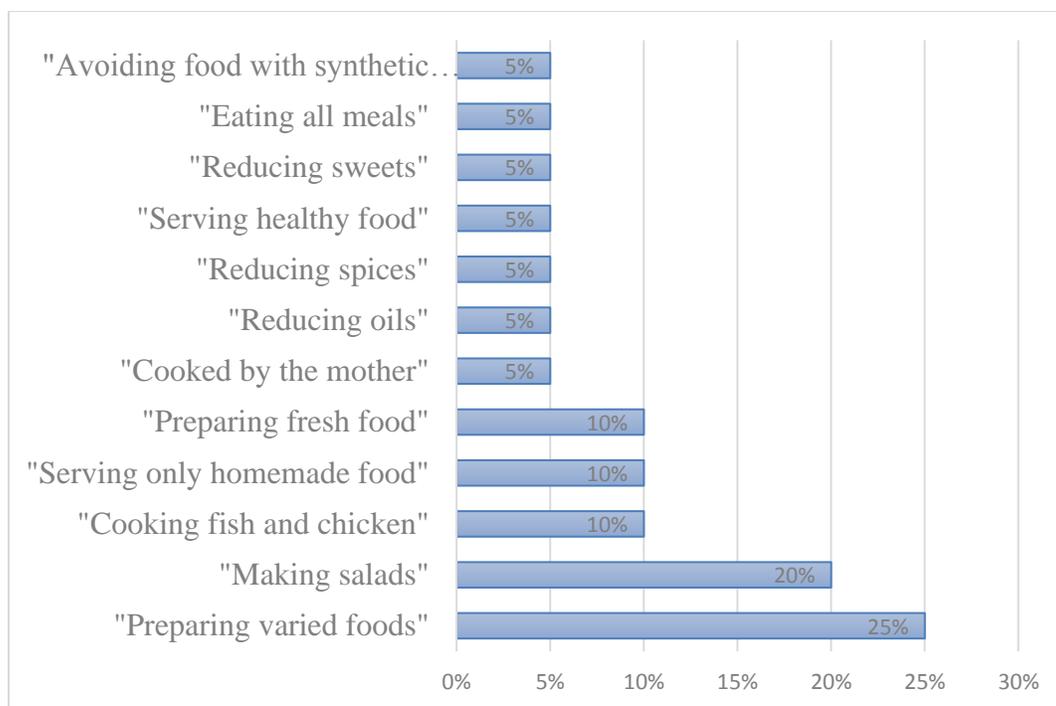


Figure 4-10 Methods of insuring nutritious food among rural participants

15% of participants could not respond to this question. One of them laughed at the question and asked to move on to the next one. The following quotes capture some of their responses:

- *"I know that the food I cook is healthy ... all the food we prepare is nutritious"* (R6- 53 years old, primary school, low income, unemployed)
- *"I cook different types of foods ... and I cook their favourite food"* (R15- 24 years old, university degree, high income, employed)
- *"we only eat fish when my husband and his brothers go fishing ... they don't buy fish and rely only on what they catch ... my sons like fish and when there is no fish, I cook chicken ... if there is no chicken, I make burgers and hotdogs"* (R9- 31 years old, secondary school, low income, unemployed)
- *"I cook the food and add sauces, spices and oil"* (R20- 34 years old, primary school, low income, unemployed)

Rural participants were also asked whether they knew what the food pyramid was and whether they used it to plan their diet and the diet of their families. 55% of them stated that they knew what the food pyramid was. To 30% of them, it was composed of different food types such as proteins, carbohydrates, vegetables, dairy and fats. Two of the participants said that it was about putting food at different levels as it started with healthy food and ended with unhealthy food. When asked about the food pyramid, a participant commented “*no, I don't know it ... we eat fish only*”. Only 15% claimed that they used the food pyramid to plan for their meals.

The questionnaire also sought to gather information on nutritional aspects in the form of open questions. Respondents were asked to describe what ‘good nutrition’ meant to them. By doing so the intent was to build on the results of the interviews and further explore women’s’ awareness regarding nutrition in a wider group of respondents.

73% of urban and 62% of rural participants were of the view that ‘good nutrition’ referred to foods that were low in calories and rich in nutrients. Table 4.11 presents the women’s views on ‘good nutrition’

Table 4-11 Participants' perception of nutrition

Perception	Urban		Perception	Rural	
	N	%		N	%
The food that contains all nutrients	10	5.0	The food that contains all nutrients	10	5.0
The food that is free from extra calories for the body	2	1.0	Choosing the right complete food	5	2.5
Nutritious food is free from fat and useless nutrients	8	4.0	The food contains all nutrients necessary for growth	7	3.5
Nutritious food that helps in body building	4	2.0	The useful, healthy, and harmless food	9	4.5
The food that benefits the body without causing any harm	16	8.0	Healthy nutrition is the right and appropriate food necessary for the body	13	6.5
The nutritious food that is free from cholesterol, fat and sugar	6	3.0	Right nutrition and right eating	6	3.0
The daily habits of healthy eating	5	2.5	Right nutrition that means having healthy balanced meals	2	1.0
The nutritious food that is prepared and served at home	1	0.5	Right nutrition is choosing healthy and unspoiled food that helps the body and doesn't cause any harm	6	3.0
The healthy food that is free from any defects	3	1.5	Right nutrition is having the good and balanced food	8	4.0
The complete food that contains all functional groups	8	4.0	Good thinking and growing up	1	0.5
It's the classification of food according to its ingredients and their benefit to the body	2	1.0	The diversity in the meal	1	0.5
It's the food that contains proteins and vitamins and all necessary nutrients	9	4.5	Having complete and balanced food	1	0.5
I have not heard about this term before	6	3.0	I have not heard about this term before	10	5.0
I have heard of this term before, but I am not fully aware what it is	20	10.0	I have heard of this term before, but I am not fully aware what it is	21	1.5

When asked to describe how they ensured that nutritious food was served to their families, around one fifth of the whole sample stated that they did not know. However, 65% of participants included choosing food that was rich in nutrients and reducing oils. This percentage of women dropped to 50% in the rural sample. Moreover, 6 rural and 1 urban participants stated that food was nutritious when they supervised its preparation or prepared it themselves. Their responses are listed in details in Table 4.12.

Table 4-12 Nutritional practices adopted by participants

Practice(s)	Urban		Practice(s)	Rural	
	N	%		N	%
I know it's ingredients and its source	10	5.0	I watch its preparation and make sure it's free from harmful ingredients	4	2.0
The food must be healthy and appropriate for eating	17	8.5	I try not to have fast food or frozen meat	6	3.0
The meal contains all nutrients	9	4.5	It contains all nutrients	12	6.0
The kitchen and kitchen ware must be clean	11	5.5	If it has all the necessary nutrients for the body	19	9.5
I use the useful kinds of food	2	1.0	I use the useful kinds of food	5	2.5
I choose the fresh food and avoid oils	14	7.0	If it is clean and safe regarding the expiry date	12	6.0
Choice of the ingredients carefully	2	1.0	Using healthy ingredients containing nutrients	8	4.0
If all the ingredients are natural, healthy and low fat	6	3.0	I mostly supervise while preparing food	2	1.0
Use healthy ingredients containing nutrients	6	3.0	I know how to determine the healthy food and cook the food free from fat and oil	7	3.5
			I make sure that my family eats healthy and diversified food	1	0.5
Prepare it in a healthy way using the proper cooking oil	1	0.5	The good choice of the meal before cooking	1	0.5
I prepare it by myself, make sure that it's fresh and healthy and I don't add high calorie ingredients	1	0.5			
I don't know	21	10.5	I don't know	23	11.5

An image of a food pyramid was included in the questionnaire and participants were asked whether they could recognise the image (see questionnaire sample in Appendix IV page 238). The food pyramid image was chosen as it was always displayed on posters at health centres. 83% of rural participants and 68% of urban participants claimed that they recognised it.

Table 4-13 Participants responses on whether or not they recognised the food pyramid

	Rural		Urban		Total	
	n	% (of total sample)	n	% (of total sample)	n	% (of total sample)
No	17	8.5	32	16	49	24.5
Yes	83	41.5	68	34	151	75.5

More than 75% of the total sample was able to name the object as “food pyramid”. 4% of them gave close names such as “food scale” and “food triangle”. However, 11.8% of respondents named the pyramid according to their understanding of its purpose. Their detailed responds are given in Table 4-14.

Table 4-14 Results on name of given figure (food pyramid)

Responses	Rural		Urban		Total	
	N	% (of total sample)	n	% (of total sample)	n	% (of total sample)
Food pyramid	64	32	50	25	114	57
Food scale	3	1.5	6	3	9	4.5
Food triangle	1	0.5	2	1	3	1.5
Proteins and carbohydrates	8	4	2	1	10	5
Food dish	1	0.5	1	0.5	2	1
Healthy meal	3	1.5	1	0.5	4	2
Healthy food	1	0.5	1	0.5	2	1
I don't know	2	1	5	2.5	7	3.5

Participants were asked about their thoughts on the uses of the pyramid. 71 rural respondents were able to link the food pyramid to balanced and healthy diets required by the body. However, only 39 urban participants responded to this question. Table 4-15 summarises their responses.

Table 4-15 Uses of the food pyramid

Responses	Urban			Rural	
	N	%		N	%
To know the food group and the daily body needs for every meal	10	14.7	To know the necessary nutrient for the body	19	22.8
Used in food	5	7.3	To classify the food necessary for growing	16	19.2
To satisfy the body needs from food and the nutritional benefit	1	1.4	To provide the body with the necessary daily food	5	6
Classifying food, its ingredients and benefits	6	8.8	To know the food groups and its ingredients	10	12
To know the nutritional benefit and provide kinds of food and calories	1	1.4	To know the exact method for balanced food	7	8.4
To know the useful menu and its importance	1	1.4	To know and take the right food for the body	4	4.8
Providing food for next generations	1	1.4	To provide a complete healthy meal	4	4.8
Organizing the body needs from food	2	2.8	To classify the nutritional value	2	2.4
In healthy eating	4	5.6	To know a healthy food programme	1	1.2
In food diversification	2	2.8	To know the right nutrition	1	1.2
To strengthen the immunity system and the body bones	1	1.4	To know the balanced food	2	2.4
For healthy body	1	1.4			
For balanced healthy food	1	1.4			
Wheat + chicken + fruits + juice	3	4.2			
I don't know	29	42.6	I don't know	12	14.4

In summary, when participants were asked about their perceptions of what constituted nutritional food, responses followed the same pattern as that of food safety perceptions where they stated types and conditions of food. However, there were also some participants in both urban and rural regions who included some aspects of food safety in their definition of good nutrition or who stated that they did not know or understand the term. Moreover, especially among rural participants, nutritious food was believed to be the food that was cooked by the female head of the house (27% of rural participants interviewed) or that which was cooked at home (18%). This can be related to the Islamic culture and traditions (see chapter 2 of literature review).

From the results of interviews and the questionnaire, one can notice that participants, especially from the urban region, adopted good practices to ensure that the food provided to their families was healthy. Their definitions of nutritious food, which included reducing sugars, oils/fats and processed foods, indicated that they knew about the negative effect of these food types on health. They were also aware of the importance of including a variety of food types into the diet including vegetables and fruits. Moreover, participants showed a general, and occasionally vague, knowledge of the food pyramid and its significance. Sources of knowledge from which these participants got their food related knowledge are discussed in the following chapter.

In addition to interviews and questionnaires, views of food safety and nutrition were also explored through the discussion groups. Details of participants' responses are presented in the following section.

#### **4.2.4.1 Views on food safety and nutrition among discussion groups' participants**

To answer the research question on the current level of awareness of women regarding food safety and nutrition, which was expected to be reflected in the role women played in household food security, participants of discussion groups were asked to share their views on food safety and nutrition and to discuss the definitions of the terms in addition to any ideas and beliefs related to them. Below are the responses of the participants of the four groups:

##### Group 1 (secondary school level)

Approximately 78% of respondents in the first group (7 out of 9) participated by discussing their views on food safety and nutrition. All of them considered both terms to have the same meaning that included both the cleanliness of the food and maintaining good health. They also included avoidance of fast and fatty foods.

##### Groups 2 and 3 (University degree level)

According to 7 of 8 participants (87%) who answered this question from the second group, both food safety and nutrition were perceived as having similar meanings and/or complementing each other. Three respondents stated that food safety was about eating food at specific times and in specific quantities while nutrition was more related to the quality of the food. Another two believed that safe food is that food that was free of disease causing components, i.e. fats and cholesterol, whereas nutrition was understood as eating healthy varied meals. The remaining two said that it was the food that contained all necessary nutrients that the body needed. To these two, nutrition was eating healthy food based on requirements of gender, age and health status of a person.

However, in group 3, 3 out of 4 participants (75%) shared their opinions on these terms by stating that food safety was about good food that contained all required nutrients to promote good health. On the other hand, nutrition was about a special diet that was given by a dietician,

in some cases, to target some weight goals or specific health conditions. Yet, the fourth participant held a different view. She believed that: *"food safety or safe food is the food that we eat on the go, so we don't die out of hunger but we don't know if it's good for our health and body or not. Nutrition is eating what helps me maintain good health and have beneficial nutrients. For example, I have anaemia that won't go away by eating only safe food without making it a nutritious food"*.

#### Group 4 (higher degree level)

According to the 5 members of the 4<sup>th</sup> group, safe food was seen as food that was free of any harmful substance to human body and health and that it was not expired. One of them added that safe food always looked good to the eye and did not smell bad. On the other hand, they all agreed that nutrition was about food that contained all nutrients and had been prepared in a healthy way. Two participants also pointed out that nutrition required awareness of the needs of the body for certain nutrients, i.e. vitamins and minerals. They both believe that the body could give signals and cravings for certain foods as a sign of deficiency of a specific nutrient. This led the discussion to the importance of reading and learning about food and nutrition for respondents. One responded by saying that she tried to read on the topic but found that it was difficult as the topic was *"complicated"*. Another thought that it was easier to manage her own diet and food habits than to try and change the diet of the whole family. Two other participants agreed as they thought that being a working mother made it difficult to learn new ideas especially when dealing with small children.

As the results of discussion groups clearly show, education had an impact on how women perceived various food issues. Participants in discussion groups were gathered from a wider

geographical area than both interviews participants and questionnaire respondents and were grouped based on their educational levels.

Analysing the results, it is clear that perceptions of food safety and nutrition evolved positively as the education level of women increased. The two terms were seen as different but related in groups of higher education compared to being seen as one general term in the group of women with secondary education. Also, as the level of education increased, the vocabulary used by respondents expanded in relation to food components and related matters. Furthermore, it was noticed that participants who were more educated discussed, not only their perception of the term, but also sources of related knowledge and knowledge of how to obtain it given their life circumstances.

#### **4.2.5 Food waste**

Food waste is considered one of the major challenges to global food security (see chapter 3, section 2.2.4.10 and 2.3.3). In order to understand participants' perception of what is considered as food waste and their food waste related practices, a set of questions was directed to them via interviews and questionnaire. Exploring their understanding of this concept will enable to further understand household food utilisation patterns that women adopt as previously discussed in Chapter 2 (see section 2.4.5.4) and the factors influencing household food waste.

Details of the questions are given in interviews question guide and questionnaire sample in Appendix IV. The responses from both urban and rural participants are summarised below.

#### **4.2.5.1 Food waste results from interviews**

##### *4.2.5.1.1 Unserved cooked food*

When asked what they would do with unserved cooked food, 62% of the urban participants said that they would store it in the fridge for later use. Only 2% of them stated that unserved food was discarded because the children refused to eat leftover food. 4% preferred to give this food to animals while 1% stated that the unserved food was given to poor foreign labourers. (33% of urban participants did not answer to this question).

In comparison, 35% of rural participants stated that they would store the unserved food in the fridge. 20% preferred to give all unserved food to animals and 10% stated that they would discard it.

*“We only keep the food of special occasions if it was not touched”*. R2 (28 years old, secondary school, middle income, unemployed)

##### *4.2.5.1.2 Food leftovers from plates after eating*

A total of 52% of urban participants stated that they give food leftovers (food that is left in served plates) to animals which they raise at home or else sent it to animals raised by their families and/or neighbours. These animals included chickens and goats. 10% of participants said that they would store it in the fridge if it was still edible. 10% stated that they either fed it to cats or discarded it into the bin while 16% of respondents said that they would immediately throw it away. However, 12% of urban participants answered that they only served what they needed and thus they did not have any leftovers on their plates.

When asked about how they managed the leftover food, 65% of rural participants (n=20) said that they fed it to animals. One of the participants stated that it would be stored for later use,

while another rural participant stated that they discarded the leftovers. (25% of rural participants did not respond to this question).

#### 4.2.5.1.3 What is considered as food waste

The participants were asked about their view on how they categorised what food waste was. According to urban participants who were interviewed, food waste included a range of components which are presented in figure 4-11.

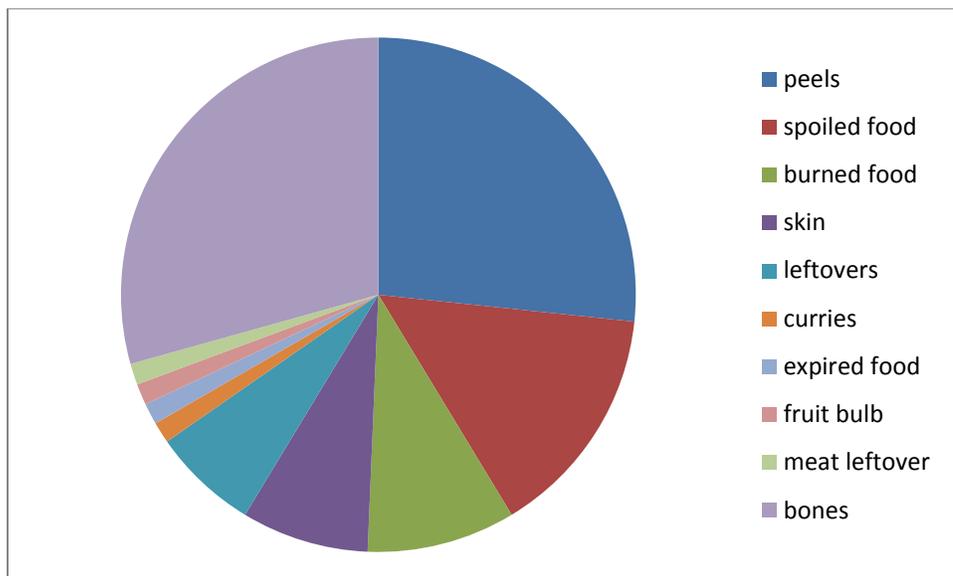


Figure 4-11 Food Waste Items

All urban participants said that they discarded all food waste in the bin.

Moreover, based on the interviews with rural respondents, food waste that was discarded in the bin included spoilt food (44%), bones (33%), food leftovers (22%) and peels (22%). 10% rural interviewees said nothing about their wasted food while 55% did not answer this question.

#### 4.2.5.2 Food waste results from the questionnaire

The questionnaire also included three questions on food waste. Participants were asked to choose from a set of given options, how they would handle food leftovers, food waste and what they considered to be food waste. Results showed that 29.5% of the sample kept food leftovers for

later use; most of these lived in the urban region. 32 participants stated that food leftovers were disposed of in the bin. However, 38.5% of participants, (15% rural and 23.5% urban), stated that they donated food leftovers to the poor, 6% stated that they fed it to animals and 20% of the respondents claimed that they usually did not have any food left over. In addition, 43.5% of participants considered food waste to include inedible parts; 30% of them included spoiled food. Only 22% of rural participants stated that they disposed of food waste in the bin and 74% of them fed it to animals. However, the percentage of food waste disposal in the bin rose to 50% for urban participants compared to 47% who stated that they would feed food waste to animals. Detailed responses are presented in Table 4-16.

Table 4-16 Interview results on food waste

		Rural		Urban		Total	
		N	% (of total sample)	N	% (of total sample)	N	% (of total sample)
Food leftovers are;							
	Given to the poor	30	15	47	23.5	77	38.5
	Kept for later use	25	12.5	34	17	59	29.5
	Disposed in the bin	22	11	10	5	32	16
	Fed to domestic animals	7	3.5	5	2.5	12	6
	I usually don't have any food left over	16	8	4	2	20	10
Food waste includes;							
	Spoiled food	24	12	36	18	60	30
	Inedible parts of food	47	23.5	40	20	87	43.5
	Leftovers	24	12	15	7.5	39	19.5
	All of the above	5	2.5	9	4.5	14	7
Method of waste disposal;							
	Fed to animals	74	37	47	23.5	121	60.5
	Thrown in the bin with other wastes	22	11	50	25	72	36
	Other	4	2	3	1.5	7	3.5

As highlighted in the results, 62% of urban participants preferred to keep the non-served food in the refrigerator for later use. This approach was less observed among rural participants in this study. However, both urban and rural participants agreed that food waste should be recycled by using it as animal feed. More research is required to understand the motives behind the use or disposal of food waste. Unfortunately, no data was found on the quantity of household generated food waste in Oman. Yet, this study showed that women were aware of the value of food and believed that it should not be wasted. This might be a consequence of their religious traditions

that are rooted in Omani society. In Islam, food is considered as the gift of God and thus must not be wasted (Haddad, 2012). Sharing the leftover food with neighbors, poor people and even animals is also derived from Islamic traditions that encourage sharing all God gifts with other people especially those in need such as the poor and animals (Haddad, 2012). Another explanation is that many of the traditions around preserving and keeping of food are concerned with food that has not been cooked or else has been cooked but not touched or mixed with other foods (David, 2010). Even with the installation of cooling apparatus such as freezers and fridges, which became available in Oman after the provision of electricity supply after 1970, people are still unaware of the possibility or ability of these machines to maintain the safety and preserve these types of food. This was evident from the questions that participants directed back during the interviews on the possibility of keeping cooked food safe in the refrigerator for later use.

#### 4.2.6 Food security perception according to participants of the study

The way women play their role in their households' food security depends mainly on the knowledge and information they acquired, on the topic, from their family and society (see chapter 2, section 2.4.6). This section presents the results on the awareness of participant women in interviews, questionnaire and discussion groups of the term of food security and its meaning in the national context. Exploring the knowledge that participants have in regards to food security can help understand how they are connected to the wider issue of the national food security of the country and how they are motivated to fulfil their role in it.

##### 4.2.6.1 Food security perception based on the results of interviews

During interviews, urban interviewees were asked whether they were aware of the term 'food security'. 36% of participants stated that they had never heard of this term before; 8% were unsure and 22% stated they were aware but did not know what it entailed. However, 30% of the urban sample interviewed in the study stated that they knew what food security was. Details of their responses are summarised in the table 4-17 below

Table 4-17 Perception of Food security

No	Notion of food security	Proportion of Agreed Respondents
1.	Provision of food in the country and avoiding shortages	14%
2.	Maintaining food safety	10%
3.	The need for everyone to get his or her required quantities of safe and healthy food	4%
4.	Not wasting good food	2%
5.	Avoiding canned food because it is not healthy	2%

Those urban participants, who claimed to know what the term 'food security' meant, were also asked whether they believed that women had any role in ensuring it. For 50% of the participants, women were perceived as having a major role in taking care of her family in terms of providing safe and healthy food. Two stated that women might have greater responsibility than men

because they were closer to their children than fathers were. One of them stated: *“a woman is the fundamental element of food security”*. The other commented; *“women have a role in using only what they need and not wasting food”*.

On the other hand, only three rural interviewees stated that they were aware of the term ‘food security’. The responses of the rural participants are reflected in the quotes below

- *“Yes, but I ignore it and don’t care” (R3- 50 years old, primary school, low income, unemployed)*
- *“yes, it is to provide for myself and my children with safe and healthy food” (R7- 34 years old, university degree, middle income, employed)*
- *“yes I heard though I don’t know what it means” (R19- 31 years old, secondary school, low income, unemployed)*

#### **4.2.6.2 Food security perception based on the results of the questionnaire**

An open question was included in the questionnaire for women to share their ideas on food security. 11% of rural and 10% of urban respondents indicated that food security was about the availability and abundance of food in the country. In addition, about 8% of rural and 12% of urban respondents indicated other aspects of food security such as safety, nutrition and price monitoring as a definition of food security. Detailed responses are listed in Table 4.18.

Table 4-18 Respondents' perception of food security

Perception	Urban		Perception	Rural	
	N	%		N	%
the food must be healthy and appropriate for eating	2	1.0	the ability of countries to provide healthy to the citizen	10	5.0
providing food for healthy life	4	2.0	the availability of enough food for all people in a certain country	5	2.5
the ability of the country to provide people with the necessary food	8	4.0	having stock of food reserve	4	2.0
providing secured food	1	0.5	the availability of food	3	1.5
the food isn't expired	5	2.5	the availability of food for all people for a long period	2	1.0
providing the minimum level of good and healthy food to people	3	1.5	it means the right nutrition	2	1.0
providing good food and looking for its source to	1	0.5	making sure of the food validity and its benefit to the body	2	1.0
ensure it's free from diseases	1	0.5	the healthy food free from chemicals	1	0.5
the ability to provide necessary food for any country by importing it	3	1.5	It's the observation and protecting the consumer	1	0.5
secured and harmless food	1	0.5	it is keeping food in a safe place	1	0.5
It fulfils the specifications and laws for food safety	3	1.5	it is providing food for those who need it	1	0.5
I have not heard about this term before	26	13.0	I have not heard about this term before	23	11.5
I have heard of this term before, but I am not fully aware what it is	42	21.0	I have heard of this term before, but I am not fully aware what it is	45	22.5

#### 4.2.6.3 Food security perception based on the results of discussion groups

All discussion groups were asked whether they had heard of food security and then to share and discuss their views on the subject. Below is a summary of their responses:

##### Group 1 (secondary school level)

Only 57% of participants of the first group shared their views on food security. Half of them had heard about the term [food security]. One of them defined it as; "*the self-sufficiency of local production in a given country*". Another participant added that Oman was not self-sufficient as it imported most of its food. She explained that the reason was the harsh weather and low soil fertility although these challenges, according to her, might be solved. This opinion initiated a discussion with another participant. The third participant was of the view that a reason of low food production in Oman was that agriculture was run by foreign labour and had been abandoned by Omani youth. Another participant argued that the youth should not be blamed but the government as she believed that the government did not provide enough support. Her sentiments were captured in the following quote:

*“The government is so strict especially when it comes to supportive loans. They limit you with few years to pay it back. This is not a support. Everything now needs green houses and money! If the government didn’t support me, who will? For example, we can grow oranges, mango and grapes, yet, the country still imports them rather than marketing and supporting our yield. We can grow everything if we can get the support”.*

However, the second participant was of the view that it was not the responsibility of the government but the role of farmers to take care of their farms. Yet another, a fourth participant, intervened in the discussion by saying that she had not heard of food security before.

#### Groups 2 and 3 (university degree level)

In the second group, four out of six participants stated that they were aware of the term ‘food security’. However, only two of the participants gave their views on the topic. One of the participants believed that it was the self-sufficiency of food in a country while the second participant believed the term meant providing enough food for generations to come in a given country.

Five out of six participants of the third group agreed that they heard of the term ‘food security’ before and they all believed that it was the ability of a country to provide enough food for its people at all times and having a secured food supply chain for future generations.

#### Group 4 (higher degree level)

In the fourth group, all 6 respondents agreed that food security was the ability of a country to provide enough food for all of its people by means of local production, import and storing food stocks for emergencies.

#### **4.2.6.4 Summary**

Based on these findings, it can be seen that urban interviewees had relatively better perceptions of food security than rural interviewees. However, data gathered from questionnaires showed that both urban and rural respondents, had acquired similar ideas and perceptions regarding the notion of food security. The reason behind the differences in the results of interviews between the two groups might be due to the openness of urban women, in general, to exchange ideas during interviews compared to rural women. Living in an urban region was also considered an important factor in raising women's awareness of food issues as discussed in chapter 2 of this research.

It seems clear from the results gathered from the discussion groups that the participants from all educational levels were aware of the concept of food security. However, it was seen that with the increasing level of participants' education, their interaction in the discussion also increased and they seemed to have the ability to provide a defined and precise definition of food security. Discussion groups demonstrated not only their knowledge about the notion of food security, but also their concerns and views with regards to the status of food security in their country. Such an enhanced level of interaction might be due to the mode of discussion which was used on a social platform that was already in their daily usage. Additionally, the discussion group provided the women with freedom of expression in relation to their opinions and perceptions. Such a freedom would have been constricted if they had been presented with even an open ended questionnaire or been exposed to the anxiety of face-to-face interviews.

#### **4.2.7 Level of awareness of women and men in the society pertaining to food safety, nutrition and food security**

One of the main objectives of this research was to explore women's perceptions and their awareness pertaining to various food issues. To help meet this objective, participants of discussion groups were asked to share their thoughts and views on the level of awareness in society and particularly among women with regard to food safety and nutrition. Details of responses of each group are presented below.

##### Group 1 (secondary school level)

According to responses made by the participants of this group, it seems that the level of awareness is increasing as people now are more educated than before. These participants also agreed that women were more aware of issues of food safety, nutrition and food security as they were mainly responsible for feeding their families. One participant believed that a woman was more aware than a man even when she was not educated, "*She will still be able to maintain the*

*cleanness of food and care about her family's health". This opinion was supported by another participant who stated that it was necessary to accompany husbands to the market to ensure that the husband bought the proper products.*

*Another participant stated: "He [husband] doesn't know what to buy and sometimes he just forgets what I asked him for. Even when I write down a list; he will still miss some items or bring the wrong variety or brand. Men need to learn. I can't accompany him every time as I have other things to do".*

#### Groups 2 and 3 (university degree level)

The second group believed that awareness of food safety and nutrition increased remarkably among all groups of society, i.e. men, women, elderly, youth, rich, poor, etc. However, it was argued that women might have greater awareness than men as they were more involved in food purchase, preparation and consumption at the household level. The effect of social media was also discussed regarding the awareness of people. While two claimed that social media helped to disseminate information and raise awareness more easily to all people, this view was opposed by another participant saying that: *"Some information that is being broadcasted, especially through WhatsApp application, is incorrect. It needs referencing and more reliability"*. One participant added that awareness was not an issue as people were aware of which food was safe and nutritious. According to this participant, even when people were aware, they often did not act upon their knowledge and still continued their bad eating habits.

The participants in group 3 were of the view that awareness in general was increasing but its level depended on many factors such as level of urbanisation, economic level and educational level. However, it was also claimed that what people had was not an awareness but knowledge. According to a participant of this group; *"We don't have awareness. What we have is knowledge. Awareness is knowledge plus implementation of this knowledge. Even though, the time we're*

*living in has made it easier to obtain information and provided more options, our lifestyle is taking an opposite direction. We are now more tempted toward unhealthy options that are away from food safety and good nutrition".* The remaining participants supported this claim by giving examples on how people, even when they knew, still failed to act on their knowledge. This distinction between knowledge and awareness was an important insight which emerged from the discussion in group 3.

#### Group 4 (higher degree level)

The respondents of the last group seemed to believe that even elderly people were sufficiently aware to make healthy food choices. In addition, they gave examples of the number of people who were attending sports and diet centres and how these numbers were increasing. One of the participants stated that; *"even children have relatively high awareness now because their mothers are planning their meals in a better way. That is also because of new modern educational syllabus used in schools that [put the] spotlight on these issues"*. However, this was not the opinion of other participants who were of the view that people in Oman did not have the required level of awareness as they were still tempted by unhealthy food despite their knowledge of the consequences. For example, one objected by saying that: *"in my opinion, people don't have awareness and don't seek for it. Unfortunately, even sick people who need to follow a special diet don't care enough to choose healthy food. However, we can still find some people who try to eat safely and healthy. Some people in the society think that eating smaller quantities of different foods is wrong. Instead, the best, according to them, is to eat too much of one or two types. Some gain so much weight in Ramadan, fasting month, and why is that? They blame Ramadan but if one followed healthy eating habits, optimum weight would be maintained. This month is an opportunity to heal not to get fat and sick. If we just followed the example of Prophet Mohammed; one third for food, one third for water and one third for breath, we won't get all*

*these new age diseases. I am not a pessimist but I wish if these mistakes would be reduced in our society. However, and in general, I think that women, in our society, are more aware than anyone else regarding healthy eating".*

Based on the findings from the discussion groups above, it is clear that education level affects how women observe food attitudes and habits around them. Women with secondary education had a basic idea about awareness and how it was evolving in society. They made comparisons between the awareness of men and women based on their daily household experiences. On the other hand, women with college degrees and higher education levels expanded their observation to include different groups within society and their behaviours regarding food in addition to the way people handled information. They discussed their perceptions of the difference between knowledge acquisition and awareness. They also emphasised the role of self-education and learning in raising women's awareness.

#### **4.2.8 Contribution of women toward food safety, nutrition and food security at household and government level**

To further investigate the role of Omani women in household food security, safety and nutrition, participants in the discussion groups were asked to discuss this role at both household and governmental level and whether they, as women, had authority to make decisions in matters of food. Asking participants to share their views in the discussions groups helped to enrich the findings generated from both interviews and questionnaire and indicate how education level can affect the empowerment of women and their perception of their role that is being explored in this research.

Details of the questions asked to discussion groups are given in AppendixIII (page 238). Responses of each group are given below.

#### Group 1 (secondary school level)

About 75% of the participants in group 1, agreed that women played an essential role in providing good nutrition to their families and ensuring that all food issues were taken care of. One of them added that; *"A women is as important as the queen of bees. She has an important role in all this and remaining bees get their strength from her"*. Furthermore, one participant pasted a long article from the internet on the role of women. When she was asked to provide her personal view, she replied; *"honestly, I don't know how to say it but I am sure we have a role in that"*.

When asked whether they had authority to decide for matters of food, only one of the nine participants responded. The participant believed that women had the authority only at the household level as it was *"difficult"* to get it at a government level.

#### Groups 2 and 3 (university degree level)

Only four women responded to this question. They agreed that the role of women in Oman was limited to the preparation and consumption aspects of food as they were not producers. They also believed that this role began with women educating themselves regarding food safety and nutrition. The role was perceived as further expanding to involve good purchasing habits, proper food storage, preparation and feeding their families healthy and nutritious food. Two of the participants added that a woman should ensure the food security of her household by managing the income and resources of the family to sustain availability of food at all times. Another participant stated that women had a role and responsibility to raise the awareness of people in her community regarding food issues. However, only one participant believed that women could play their role at a higher level through their positions and jobs in related governmental authorities.

Similar to the second group, only 4 out of 6 participants in the third group shared their views on this question. According to them, the role of women in ensuring food safety included:

- Proper storage of food items in the kitchen (100% of respondents)
- Checking the expiry date on food products purchased to feed the family (75% of respondents)
- Safe means of cooking (50% of respondents)

The participants listed women's responsibilities toward ensuring nutrition as:

- Educating one's self through reading and attending courses on proper nutrition and how to apply this knowledge in everyday life (75% of respondents)
- Raising awareness of family members, friends and members of society about good nutrition (75% of respondents)
- Providing healthy food to the family and avoiding unhealthy and fast food. (50% of respondents)

Finally, they all agreed that women played a major role in food security by:

- Reducing food waste by cooking the exact quantity needed by family members (75% of respondents)
- Producing food through agriculture (50% of respondents). One participant believed that: *"Sometimes women, especially in rural area, can produce many crops depending on the climate nature of the region they live in. this way, they don't only provide an economic necessity but a secured one also as no chemicals or pesticides were used".*

When asked whether they thought that they had any authority pertaining to food related decision making, all four participants in group 2 agreed that they had authority to take decisions in their households. Three of the participants were the main decision makers in their households when it came to decisions regarding food. The fourth said that she shared this role equally with her

husband. However, all of them said that they did not have any authority in decision making outside their households. Two of the participants believed that women could participate and assume a role if they were qualified and could work at higher positions in the country. A third participant claimed that the status of women in decision making at the government level in Oman was still not clear especially in areas of food safety and food security. Challenges that they believed, were faced by women included:

- Lack of support for women, and
- Absence of media contribution in raising awareness regarding the role of women

It was also stated by the participants in group 3 that they had authority to decide upon food issues at the household level. They used phrases such as "*ability to influence*", and "*my opinion is to be heard and accepted*". Furthermore, two of the participants believed that women who were in high positions could participate in decision making at the government level. Similar to group 1, one of the participants argued that; "*In areas that are related to food, nature of platforms are not clear to me at the government level. Where can I participate and share my opinions outside my house and small community? Except for my work place if I was working as a dietician or a food supervisor at a school or something or maybe business might give women an opportunity to direct their work toward food issues. Nevertheless, channels of decision making for women seems vague to me*"

#### Group 4 (higher degree level)

Participants in the fourth group believed that the most important role of women was to educate themselves by reading about these issues (food safety, nutrition and food security). They were of the view that by learning and practicing good food related habits, women could act as role models for their families and friends. According to one participant; "*a woman may spread*

*awareness by practicing it by herself. She can pass the knowledge and affect others positively and easily in her environment".*

Another participant added: *"In my personal life, I was able to change people around me in a positive way, i.e. my children, family, co-workers and friends. I also monitored the meals that are provided to students in the school I work in. in addition; I talk to parents about healthy food choices for their children. I am even thinking of preparing a simple training course for students and their families about the importance of having a breakfast meal".*

Participants in group 4 also talked about the role of women in setting nutritional rules in their households. They believed that women had the role of purchasing beneficial foods and preparing them in a healthy way in addition to good food preservation practices. Women also had the role of ensuring that their children adopted good eating and food handling habits. All of the participants agreed that women should plan their families' meals and prepare them in required quantities to eliminate food waste and sustain food security. For all the participants, food safety and nutrition were perceived as being the domain of women and of women only.

Only two participants in the fourth group talked about their personal experiences. One of the participants was positive about her authority to make decisions in all three topics at both levels. The other participant also believed that she had the authority and the ability to affect her environment of family and friends. This participant provided examples of how they, family and friends, were attracted to change and follow her example as she changed from white to brown wholegrain bread. She believed that: *"whatever you want to change in your world, change it inside of yourself first. Even at the level of government, I can contribute and change if I have a strong will".*

Another participant joined in the discussion. Two participants agreed that a woman was the fundamental unit of a society and that her influence started from the house. If women started to change how food was handled, prepared and consumed in their houses, this would be passed on to their family members and from them to other people at different levels. One of the participants added that she strongly recommended to people in decision making positions that they should encourage the participation of women in all fields of food to decide and evaluate former decisions.

One of the participants pointed out that the main challenge was the attitude of society regarding the role of women; the other two participants believed that the challenge was the way women perceived themselves. According to these two participants, there are no external challenges except for how women evaluated their own abilities and their self-esteem in addition to their belief in social paradigms that held women back. One of the participants elaborated; "*challenges are linked to the personality of woman her-self; does she know the right way to influence others and make decisions? Is she patient enough to achieve her goals? Is she able to plan for her goals? Does she have the proper skills to form qualified teams of different specializations?*"

In summary, discussing women's decision making authority showed how education level not only improved women's confidence but also the way they perceived themselves within their environment. In this study, participants who were at secondary school level could not see themselves acting beyond the borders of their households. Only one participant of their group responded to the question in short specific words. On the other hand, women with college degrees discussed the possibility that women might participate in decision making at a wider level beyond their households. In addition, they listed challenges that they, as women, faced that

prevented them from achieving that authority. However, according to one participants of in the higher education group, women were capable of taking part in decision making at all levels starting from the household. They acknowledged the constraints placed on women by the society but also believed that women had a responsibility to bring about change by assuming their position as influencers and decision makers.

In general, and as the results indicate, women of all educational levels played a major role in ensuring that their households were food-secure. As their level of education increased, their knowledge and awareness of that role and how to improve it also increased. As women became more highly educated, their role in food security would also expand to reach beyond their families and households to benefit more groups in their society. This was expected to increase in the coming years since women's education and employment rates in Oman were increasing (NCSI, 2017).

### **4.3 Conclusion**

In this study, a sample of 297 respondents were studied from across two regions in Oman to understand their social beliefs, practices and the attitudes that they adopted in relation to food purchase, storage, preparation and consumption in order to gauge their level of awareness of the crucial issue of food security, i.e., food utilisation. The study identified that women played a key role in all food related practices in their households. They took the responsibility of food purchase from hypermarkets and/or other sources of food. They were also responsible for storing, preparing and ensuring that the consumption of healthy food by their families was best practice or to at the very least supervising that these were done to their satisfaction standards. The results show that women lacked planning skills prior to shopping by not planning meals or during shopping as many of them shopped at irregular times or kept their shopping to the time of

month when hypermarkets tended to be crowded. Shopping at crowded hypermarkets might increase the duration of shopping and thus affect the quality and safety of food products purchased. Results in relation to food waste, also suggests that some women do not plan the quantity of food cooked, thus resulting in wasted food leftovers. However, women appear to practice good cleaning and hygiene routines in their kitchens both in rural and urban regions.

In general, participants had a good working knowledge of food safety and nutrition that improved with factors of income, education and income. Moreover, young women were more aware and open to adopting new practices and choices than older women especially in urban region.

## **5 Sources of Information and food-related educational programmes available to Omani Women**

### **5.1 Introduction**

Education of women helps in improving the nutrition status of their families and children and also in fighting food insecurity. It also helps to raise the awareness of women thus giving them more choices and means to fulfil their role in household food security (see chapter 2, section 2.4.6). This chapter presents the findings relating to Omani women's sources of knowledge and information pertaining to the food issues previously discussed in this research and explores the range of training and/or educational programme available to them. Identifying sources of information in addition to the available programmes is important for understanding the motive behind daily food-related practices which women adopt and their awareness pertaining to various food safety, nutrition and food security issues. This is the main scope of the thesis.

### **5.2 Findings**

The results presented in this section are derived from the analysis of the data obtained from the interviews, discussion groups and questionnaires that were presented in the previous chapter. Details of methods used (see section 3.3) in addition to the demographic data of the participants (section 3.5) are listed in chapter three of this research. Some of the sections of findings provided are based on issues raised in the literature in order to clarify the results of questions and, in addition, issues discussed among the participants which were not previously stated in the literature review or other chapters of this research are also presented.

#### **5.2.1 Sources of information**

### **5.2.1.1 Results based on Interviews**

During the interviews, participants were asked to talk about their sources of knowledge regarding food purchase, storage, preparation and nutrition to help generate the data necessary to answer the research questions (see chapter 1, section 1.2). The responses from the participants are summarised in Table 5.1 below.

Table 5-1 Sources of information

	Rural		Urban	
	Sources of Information	Proportion of Agreed Respondents (%)	Sources of Information	Proportion of Agreed Respondents (%)
1.	Family	78	Family	50
2.	Internet	40	Television	35
3.	Television and radio	32	Books	15
4.	Books	32	Past experience	10
5.	Self-learning	16	Internet	10
6.	Past experience	14	Self-learning	10
7.	Friends	12	Husband	5
8.	Social media	6	School	5
9.	Job	6		
10.	Courses	6		
11.	University	2		

### 5.2.1.2 Results based on the questionnaire

The analysis of the questionnaire data showed that the higher percentages of respondents in both regions acquired their knowledge and information regarding food issues from television and radio. Both urban and rural respondents showed similar percentages of responses to the given options. However, based on the results, urban respondents tended to learn more from health centres and schools than from their parents although the difference in percentages was not great. On the other hand, rural respondents scored more responses in favour of getting their knowledge from their parents compared to health centres and schools although the difference in percentages was very small. Table (5-2) presents all answers provided by the questionnaire respondents.

Table 5-2 Sources of knowledge and information

	Rural		Urban		Total	
	N	% (of total sample)	N	% (of total sample)	n	% (of total sample)
Husband	9	4.5	7	3.5	16	8
parents and old members of the family	19	9.5	12	6	31	15.5
School	16	8	13	6.5	29	14.5
health centres	13	6.5	15	7.5	28	14
television and radio	21	10.5	23	11.5	44	22
Friends	8	4	10	5	18	9
Internet	10	5	14	7	24	12
Other	4	2	6	3	10	5

### 5.2.1.3 Summary

The analysis of data from the interviews showed that while appreciably more than 50% of interviewees across both rural and urban regions considered their families to be their main source of information on food issues, there was, however, a significantly higher proportion of rural respondents that considered family to be their major source of information (78%) as compared to urban respondents (50%). The second main source of information for urban women was television followed by social media and books while, for rural interviewees, their second main source was social media. However, data accessed through questionnaires demonstrated a somewhat different result: both rural and urban participants stated that their main source of food related information was the TV and radio. The fact of TV being a major resource in the lives of women can shed light on the impact that this might have had on their current awareness and perception of food related issues. An ongoing longitudinal analysis of the content of popular media content and advertisement material would be beneficial in order to understand the changing trends of food and nutritional motives of people in the country over time. In addition, while sitting in front of the TV, individuals are presented with a vast array of food related advertisements that are high in fat, sugar and salt, whereas healthy foods, for example

vegetables, are not publicised enough (Vereecken et al., 2006). Moreover, the promoting methodologies utilised as a part of TV commercials may prompt misinterpretations of the nutritional value of foods and are frequently more centred on psychological and emotional needs as opposed to hunger and other sustenance attributes. These advertising techniques also help downplay less eye-catching food, and may result in their being left out of a normal eating routine over a long time period (ibid.).

The results of the questionnaires also showed that besides TV, urban participants depended upon health centres, internet and schools for food related information before asking their families. On the other hand, rural participants considered their families to be a principal source of information before depending upon schools, health centres and the internet. This may largely be due to the nature of life in the rural regions of Oman compared to the urban regions. For instance, in rural areas, as also explained in chapter 4, people tend to live in larger households and within extended families that form a strong bond and provide channels of customs and information. In contrast, urban families live within small household units of husband and wife with their own children that separate them from the influence of tradition that is found in the rural region (Connell & Crawford, 1988). Additionally, women of the urban region are from different tribal groups and are usually employed in higher paying jobs that require higher educational degrees and, thus, they are more receptive to other sources of information (Wilson et al., 2003)

## **5.2.2 Attendance at food-related training courses**

### **5.2.2.1 Results based on interviews**

Participants were also asked whether they attended any training course, workshop, or lecture or whether they had received educational leaflets from any governmental body on food safety and nutrition to help them to explore the sources of information/ services/ help related to food issues.

Only 24% of urban participants said that they had attended and/or received awareness programme/material. 14% of the participants attended lectures organised by their children’s schools, 4% attended lectures in health centres and 6% (n=12) had jobs where these programmes were delivered such as in the Ministry of Health and the Public Authority of Consumer Protection. 60% of participants interviewed shared their views on the importance of these programmes. The reasons they provided are summarised in Table 5-3 below:

Table 5-3 Importance of Food-security awareness programmes

No.	Reasons that lent significance to educational programmes	Proportion of Agreed Respondents (%)
1.	Raising awareness of people	38
2.	To prevent diseases	16
3.	Correcting bad habits	4
4.	Help teach people good shopping skills	2

Below are some extracts from urban participants’ responses on this question:

- *“It is very important to have such programmes ... and it is important to teach girls about food issues before they get married ... they need awareness and knowledge ... I think they need to teach girls in schools these things”, said by U17 (42 years old, university degree, low income, unemployed)*
- *“we need them because no matter how educated we get, one can’t cover everything and thus we need more training and courses”, said by U11 (31 years old, university degree, middle income, employed)*
- *“sometimes we don’t give enough attention and ignore critical things ... awareness programmes will help us know what’s best for us”, said by U15 (35 years old, university degree, middle income, unemployed)*

When asked about their sources of knowledge, family was mentioned first by 50% of participants.

In the rural region, 10% of participants attended awareness lectures in health centres during pregnancy, 10% at their daughters' schools and only two at their work place. Only 20% stated that they had received educational leaflets.

Finally, rural participants were asked if they thought that providing similar programmes would be useful or important for them. Only 65% responded to the question saying that there was a need for more programmes to be targeted at women. 30% of participants felt a need for these programmes to learn more about healthy food and diet. Three of the participants stated that these programmes were useful in raising general awareness. However, one participant was of the following view: *“not all courses are useful ... however, some can benefit people's health”*

During the interviews, the enthusiasm of the participants was clearly evident as they inquired whether the researcher could deliver lectures and talks on nutrition and food safety issues and some were willing to organise the venue for the event.

Comparing the responses of participants according to their age, education and income levels, the analysis of the data showed that there were no major differences in perceptions of participants toward food topics that were discussed during the interviews. In addition, participants from all educational levels showed similar tendencies to follow customs and habits rather than to gain new information or knowledge. Reasons justifying why education level did not appear to have a great influence on the participants are further discussed in the next chapter.

Only rural participants, whose monthly income was equal to or less than 800 RO (GB£1920), showed a clear unwillingness to learn new information and/ or skills. Yet, the majority of

participants willing to learn were of the same income group. However, and in general, as income level increased, willingness to learn increased among participants.

#### **5.2.2.2 Results based on the questionnaire data**

Respondents were asked to indicate whether they had attended any educational course or lecture or had received information and leaflets about healthy nutrition. According to the results, the percentages of participants who said that they had attended courses and/or received leaflets in both regions were quite close. 47% of urban participants and 58% of rural participants stated that they had attended food-related training courses.

Respondents were also asked whether they would attend any further educational or training course on nutrition, food safety and food security. The results showed that 75% of the total sample said that they would attend such courses. The following Table (5-4) presents results in more details:

Table 5-4 Results of the extent to which participants would like to attend a course related to food matters

	Rural		Urban		Total	
	N	% (of total sample)	N	% (of total sample)	n	% (of total sample)
No	29	14.5	21	10.5	50	25
Yes	71	35.5	79	39.5	150	75

To provide more in-depth data, participants were asked to justify their responses to the above question. Tables 5-5 and 5-6 below summarise the reasons provided by the respondents on why they would have liked to attend further events related to food

Table 5-5 Reasons given to justify the willingness to attend courses

Reasons justifying willingness to attend	Urban		Reasons justifying willingness to attend	Rural	
	N	%		N	%
To help my family to avoid diseases	30	20	To make healthy food that would keep my family healthy	14	9.2
To increase awareness and health culture	17	11	For the benefit of all the family	10	6.7
I don't know	7	4.6	To increase the awareness of the importance of the food and the safety for all the family	7	4.6
To gain experience in choosing good food	7	4.6	To know the nutritional value of food products and how to choose the appropriate food	5	3.3
To know the good food and its quality	6	4	To increase the awareness of the importance of healthy food and to know what is new	4	2.7
To avoid bad shopping habits	6	4	To know about all these subjects and gain wider knowledge	4	2.7
To be aware of others' experiences	4	2.7	To know what is new about food safety	6	4
For food security and rationalization	2	1.35	To improve our food	1	≤ 1
			To know about countries that produce our food	1	≤ 1
			To improve my nutritional habits	1	≤ 1
			To follow the right methods for shopping	1	≤ 1
			I don't know	17	11.3

Table 5-6 Reasons given to justify the un-willingness to attend courses (F=frequency of response)

Reasons for the Omani women unwillingness	Urban		Reasons for the Omani women unwillingness	Rural	
	F	%		F	%
Shortage of time	7	14	Shortage of time	7	14
Relying on my previous experience	6	12	I have enough information	7	14
I don't know	5	10	I have experience	6	12
No need for training or lecture	3	6	I can get the information from the media, social media, relatives and friends	4	8
			I don't know	5	10

The results shown by table 5-5 resonate with the results of the previous chapter. Respondents are aware of the importance of providing safe and nutritious food for their families and this can also be seen in their responses to this question on their willingness to attend the educational courses. In addition, the qualities that determined their food choices (discussed previously in last chapter section 4.2.1.6) appeared again in this question. Respondents were willing to attend courses to learn more about good quality food to buy, countries producing the food products they consumed and the nutritional value of these products which were all determinants of choice which were mentioned by them in the previous chapter. Moreover, respondents in both regions stated that shortage of time was one of the reasons preventing them from being willing to attend educational courses. This can be linked to the general lack of planning skills (also discussed in the previous chapter) which participants also stated that they would like to learn from these courses (see table 6-5). Another reason that caused participants to be unwilling to attend was their reliance on knowledge that they had acquired from their previous experience that was mainly obtained from their families, given the fact that their families were their main source of information. Another interesting finding is that 6% of the responses given by rural respondents stated that social media was a source of information that could be relied on instead of attending formal educational

sources of food-related matters (see also table 5-1 in section 5.2.1.1 of this chapter). It is interesting to find that social media, although to a small percentage of 6%, can be considered by a small number as a reliable source of knowledge.

### **5.2.3 Sources of information and availability of educational programmes according to participants of discussion groups**

To obtain more in-depth data on sources of information and available training and educational programmes that can support and enhance the data generated from interviews and questionnaire, participants of discussion groups were asked whether there were any training and awareness programmes provided to women related to issues of food safety, nutrition and food security. The discussions questions were:

Who are the key providers of these training programmes?

Do participants in focus groups consider these programmes very important?

Any specific programmes which are considered as important by the focus group members? What were the key expectations from the training programmes which they have undertaken?

The following is a detailed account of their responses.

#### Group 1 (secondary school level)

In the first group, four participants responded to this set of questions. They all agreed that there were no appropriate programmes that were currently directed toward food safety, nutrition and food security. However, all four women had attended a health centre and/or hospital where a nurse or health educator gave them advice on nutrition for children and during pregnancy. Three of them believed that creating training and educational programmes was essential to raise the awareness of all people in society - men and women. One suggested that similar programmes

should be given through the associations of Omani women<sup>8</sup> that were available across all regions of the country.

#### Groups 2 and 3 (university degree level)

In the second group (n=14), all respondents who participated in this discussion stated that there were no training programmes available for women in Oman on topics of food safety, nutrition and food security. 7 of them talked about the work of health educators in hospitals and health centres. According to these 7 participants, health educators should do more and reach more patients than was assigned to them by doctors. The respondents also stated that there were no national campaigns to raise awareness on these topics. One of the participants stated that; *"since the beginning of time, all training and educational programmes have focused on family planning, danger of drugs and some diseases. We have nothing about healthy food"*. Another participant agreed and added: *"I wish they make some TV programmes that are dedicated to these issues. And if they would spend on these programmes what they are spending on other youth programmes. This topic is as important for people as the topic of careers, for example"*. Another respondent contributed by stating that these programmes were available on TV, although not specialised, and that people should look for them.

However, all participants agreed on the importance of providing similar programmes in order to raise the awareness of people. One of the interviewees suggested that the government should design compulsory training programmes for school students. This was because they, the participants, expected that these programmes would benefit all people in the country. They believed that as the purchasing power of people was increasing, awareness had become even

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<sup>8</sup> The Ministry of Social Development established the first Omani women's association in 1971 with the aim of raising the level of Omani women and integrating them in different developmental fields. Currently, the number of associations in the Sultanate reached 59 women's associations and 5 branches in various regions and states of the Sultanate.

more important. They also believed that raising awareness would reflect positively on the economy of the country.

In contrast to the previous group, all five participants of the third group who discussed this question agreed on the availability of training programmes. Moreover, three of them had attended some training in hospitals, schools and exhibitions organised by the Ministry of Education. However, according to two of the participants, these events lacked proper advertisement as they usually were directed to small groups of mothers and teachers in schools and pregnant women visiting health centres.

Participants also agreed that there was an increasing need to have similar programmes to answer people's questions regarding food. They believed that such programmes would help correct unhealthy food habits that were deeply ingrained within the society.

#### Group 4 (higher degree level)

In the last group, four participants shared their views on the above questions. Only two of them confirmed the availability of appropriate programmes in schools and hospitals while the remaining two had not heard of any. Those who knew about the programmes said that they needed more advertising to reach wider audiences. Moreover, they believed that programmes should be targeted at more people other than sick people in hospitals and health centres. They also suggested providing more programmes in mosques and through media channels. One participant thought that the available programmes were limited by health service providers and needed to include greater expertise within different areas of health and nutrition. Also, there was a suggestion of creating specific programmes for school children. Another suggested that the

government should design a system to create, deliver, evaluate the influence and collect feedback of similar programmes.

All of the participants believed that training programmes in food-related topics were critical for building a stronger and healthier society.

Based on the results of the discussion groups, participants believed in the importance and necessity of awareness programmes. However, their awareness of the availability of such programmes only increased with the increase in educational level.

Given the fact that different governmental bodies in Oman (e.g. Ministry of Health and Public Authority of Consumer Protection) claimed that they had disseminated a large number of educational leaflets, posters and publications, this thesis has shown that these educational materials were not being received by household women, and that these leaflets and educational materials had not reached the target population. During the conducting of this research, there was an attempt to explore the range of educational material published by the government. After several visits to many departments in the Ministry of Health, the researcher learned that they had only printed less than 40 copies of each educational material and that they were currently out of copies. This department was the one responsible for distributing educational materials to health centres in the capital city of Muscat. On another visit to a health educator in a health centre in Muscat, the educator told the researcher that she has to design educational material and pay to print them from her own pockets since the Ministry did not provide them with enough, and sometimes not with any, leaflets or awareness publications.

Another reason for the lack of apparent success of these poster and leaflet campaigns might be that consumers, who were motivated by their habits and routines, paid less attention to available

information (Ronteltap et al., 2011). It is important to understand how people think and what forms their behaviours toward food. Such an importance has been highlighted in the many studies that have sought to have an insight into the people's perceptions (see for example: Migotto et al., 2007; Van Rijswijk and Frewer, 2008; Maxwell, 1996).

All participants in the discussion groups shared the knowledge of the role of health workers in delivering nutritional information to pregnant women, mothers and people with diet-related diseases. However, as their educational level increased, participants could make detailed comments on the quality of the service that was provided and suggested ways to improve the programmes. They also showed a high sense of awareness with regards to means of communication with people to deliver such information; they discussed programmes given in health centres, suggested improved media content and also discussed the use of schools and mosques to target more people. The study also showed that women shared the desire to have better knowledge not only at their household level, but also at a societal level. This desire was clear in all groups of the study and was improved with educational level. However, only rural interviewees with low income levels were more resistant to learning new information related to food issues. This might have been due to their involvement in house duties and other chores that restrained their time and energy to pursue their advancement in knowledge.

Another reason for their reluctance to change might be attributed to the fact that these women perceived a change in their food habits to be a challenge to their income status, as new food habits might require a change in their food choices and purchasing bills that were beyond their income limits. This finding can be supported by research which asserts that low income women are less attentive or concerned with the nutrition of their children and they have a certain

reluctance towards having additional information as this would have implications for their budget (e.g. see Jain et al., 2001).

### **5.3 Conclusion**

This chapter explored the sources of information on which Omani women relied to gain their food-related knowledge and the range of training and educational programmes that were provided for them with the view that this information would help in understanding the motive and the drive behind food practices and awareness of Omani women pertaining to food safety, nutrition and food security. Results demonstrated that media (i.e. TV and radio) in addition to family were considered as principal sources of food related information. Results also highlighted the absence of the influence of effective training programmes designed by the government as participants mentioned that they had not received any such interventions from the government.

## **6 Discussion and conclusions**

### **6.1 Introduction**

The aim of research was to gain an in-depth understanding of women's participation and role in ensuring household food security in Oman.

As identified in the research findings, the situation in Oman is similar to many other nations in the world; women play an essential role in the provision of food and in safeguarding the food security of their households. National culture and tradition as well as educational levels are identified as primary factors contributing to the knowledge and practices which women adhere to in areas pertaining to food safety, nutrition and safety.

This chapter summarises the main findings of the research in addition to outlining the main implications, recommendations and limitations of the research.

### **6.2 Recapitulation of findings and relationship with previous research**

This study shows that, since 1970, Omani women have made remarkable progress in terms of participation in all areas of life and have made considerable advancement towards greater equality side by side with their male counterparts (See Chapter 1, section 1.1.8). However, little is known of their role in ensuring household food security at the consumption/utilisation level.

Addressing the following research questions has directed the main thrust of this research.

1. What is the current role of Omani women regarding the issue of food security within the household? (regarding food purchase, storage, preparation and consumption)
2. Who is responsible for food-related decision making in the household?
3. What sources of information/ services/ help do women receive related to food issues?

In general, the participants of this research showed a significant tendency towards providing their families and children with sufficient, safe and most nutritious food according to their own perceptions of adequacy, safety and nutrition. The results showed that women were empowered at the level of their households to make decisions related to food purchase and preparation. However, urban respondents from the capital city of Oman showed greater awareness and perception of food safety and nutrition than rural participants; this could be because of the level of increased income and education in the urban setting. In addition, factors of age, income and education have been considerably more influential for participants from an urban background than for those from a more rural setting which was more governed by habits and traditional practices. Urban participants were more open to new choices in comparison to participants from the rural regions. Musaiger (1996) attributed this to the cultural difference between the two regions. He explained that in the urban region (Muscat), people originated from mixed ethnic groups of Asian or African culture in addition to the indigenous people with an Arabian cultural background. In contrast, people in Sohar, a rural region, were mainly from one ethnic tribal group. This diversity in urban population makes the difference in terms of willingness to change habits and follow new patterns in addition to the nature of their occupations in the capital city, whilst the tribal background of the rural people in this study tended to engender a more conservative or traditionalist outlook with a certain degree of caution or reluctance to taking up new ideas.

It was also observed that education played a role in improving women's perceptions of food safety and proper nutrition. Women with higher education level also showed a more pronounced tendency to make changes that might be different or new to their traditions of

family and community. This was also noticed with the age factors as younger women were more open to change. Moreover, middle income urban participants were more open to change than either high or low income women. This might have been the case because women of high and low income were mostly of older age, with lower education levels and were housewives. On the other hand, middle income women were usually degree holders and working in jobs where they were more skilled and exposed to new information and ideas.

In comparison, education and age factors did not have a noticeable influence on the perception and practices of rural participants. However, rural participants with higher income showed greater perception and awareness. This study showed that higher income households in the rural area were more open to adopting healthier choices.

### **6.2.1 "The Psychology of Crowds"**

It is worthwhile highlighting, at this point, that the results of this research could be compared with the findings of Gustave Le Bon in his book entitled *The Psychology of the Crowds* that was first published in 1895 (Le Bon, 2009) (see chapter 2, section 2.3.2). In this research, participants of different ages, income and educational levels and ethnic groups were allowed to share their views on different food matters. The results revealed that in some cases, especially within a rural context, many of the commonly used demographic characteristics were found not to have affected women's behaviour towards food. Even among highly educated participants, traditions and habits inherited from extended families and society remained the main drivers behind their food decisions. If it is assumed that the rural context in the current research, for example, resembled that of the crowd in Le Bon's study, and the characteristics of rural participants resembled those of the participants in Le Bon's study, then results could be justified

based on Le Bon's theory. During interviews that were held for the purpose of this study, even highly educated participants with access to knowledge and information on proper food handling and consumption would rather follow the norms of their society than to implement the knowledge that was available to them. Le Bon claimed that as the number of individuals increased in a crowd, so did their sense of power (Le Bon, 2009). Their quantity equipped them with power that enabled the individual to follow the instincts of the crowd. Not only was this phenomenon attributable to the sense of power, but also because following the crowd tended to take away personal responsibility from the individuals. If a woman was following the norms of her society in regards to how she fed her family, she would then hold no personal responsibility for her decisions. Thus, following the crowd not only provided her with power but also with security. Following the crowd gave individuals a higher sense of self-esteem and security as personal responsibility tended to be diffused and this gave individuals more empowerment as part of the crowd (Le Bon, 2009).

This attempt to relate the findings of this research and Le Bon's theory on the psychology of crowds is an attempt to gain a more in-depth understanding of the context of the research. Thus, if the assumption that the population of the research was behaving in a similar manner to the crowd described in Le Bon's theory, one would not only understand but also be able to correct the gap in the awareness of women. According to the results of the fifth chapter, the main source of information for participants pertaining to food issues was the family. Family traditions, norms and habits came first before all other available and accessible sources of information. It is worth looking at the population of the study as a crowd that is governed by norms and values that empower its members. Even if a participant is aware of the benefit of a new food habit to herself and family, it will still be difficult to give up the old habit, which relates her to the society, in

favour of taking up the new one. The personal benefit which might be available to an individual does not withstand the power of the crowd (Le Bon, 2009). Therefore, if the gap of awareness is to be reduced, one should understand how these norms of the crowds are formed and attempt to replace them with new and more beneficial norms that can have similar power. Instead of targeting individual women and members of the society with new information using modern and scientific means, programmes should aim to target the society or population of women as a whole or united crowd. These programmes should not present solid information but link them with the values most honoured by their recipients.

### **6.3 Limitations**

In general, any research is bound to encounter challenges which could affect the quality of the information gathered. Some of the specific challenges faced in carrying out this research included:

- It was very difficult to reach some geographical areas where the study community lived because of the distance of these places.
- Some participants tend to hide or change information once the recorder was switched on to record the interview. Others insisted on having the interview in the company of their family members and friends but then felt reluctant to share information.
- Many participants tended to cancel the interview when the researcher reached their house with no given reasons. The researcher recognises that participants were within their rights to withdraw from the interviews. Nevertheless, this was a challenge and a limitation to the research.
- The lack of secondary sources and references relevant to the problem or issue that is the subject of the research, which makes searching for sources very time consuming. The search for sources took a very long time and effort. Such a search for other sources was necessary to build the theoretical framework and database required to address the research problem.
- The difficulty of accessing some information that could be accessed only through contacting governmental officials and the delay in receiving requested information (a cultural issue). Some information and/or documents took more than two years to be collected despite multiple attempts to contact the source via phone, email and even personal visits to the establishment.

## **6.4 Implications**

The first main contribution of this research is that it provides empirical data relevant to the role of women in Oman with respect to household food security and to their knowledge pertaining to food safety and nutrition. This information is essential given the fact that there is no other comparable study in the Omani context except for the work of Musaiger and the study by the Public Authority of Consumer Protection (see literature review, section 2.5, page 81). This also applies to neighbouring countries to Oman with similar food security issues (e.g. Arab gulf countries – GCC).

A second implication stemmed from the uniqueness of the data on the sources of information and knowledge available for women on subjects of food safety, nutrition and food security and women's access to the available educational programmes provided by the government in Oman. This study, being an exploratory and interpretive one, raises a number of opportunities in terms of policy and theoretical research.

## 6.5 Recommendations

Future research into household food security in Oman should usefully focus, in particular, on the following issues:

- Studying food products that are most frequently purchased and consumed by households and the frequency of consuming restaurant foods (either by dining out or by ordering home delivered and/or take away food).
- Expanding the current research by including observation as a research tool to further investigate food related practices within Omani households in greater depth.
- Expanding the research to include a larger sample drawn from all governorates of Oman as each region/ governorate tends to adopt their own food-related traditions.
- Investigating foods prepared for special occasions (religious events, mirage, birth, death, etc.) and preparation, consumption and food waste disposal practices that often accompany these events in addition to cultural beliefs surrounding them to further understand the impact of culture on food habits in Oman.
- Investigating the effect of the social media on food-related knowledge among Omani women and evaluating food-related information distributed by social media since results of this research found that social media is considered, by participants, as a valuable source of information.
- Studying the role of national media in increasing the level of awareness of women in Oman pertaining to food safety, nutrition and food security issues.
- Studying the effect of available food-related educational programmes on the awareness of Omani women and their food related practices within their households.

- Expanding the research to study the role of Omani men in food security both at the household and government level.
- Studying the effect of foreign domestic labour on household food security and food habits in Oman.

## **6.6 Autobiographical reflection**

As I reflect and look back over the process of conducting this research, I came to realise that every aspect of this work has provided me with valuable experiences through both the knowledge that I acquired and/or the challenges that I faced down the PhD path. Although when I was originally granted the scholarship in food security, I did not have any idea as to what food security was, I can now, after five years of work, claim that I know more on the subject than what I hoped for; and although the journey was challenging and frustrating in most of its aspects, I realise that I enjoyed doing my own research in a topic that I chose.

My favorite part of the research was conducting interviews with women and with government officials. Interviewing women participants did not only provide me with the data necessary to answer the research questions but also helped me to reflect on my own life within the society and to understand my students in a better way (I work as a biology lecturer in a technical college in Muscat – Capital City of Oman). Knowing how people make their decisions, choices and acquire their knowledge has helped me to plan my future career and academic projects with a new perspective. It also allowed me to reflect on my own food choices in a healthier and more sustainable and sensible way. Moreover, I also enjoyed collecting data via the online discussion groups and was able to observe how women in my country were using social media to overcome social and geographical restraints to participate in a study and how this media was affecting their lives. Interacting with participants through interviews and online discussion groups also allowed

me to gain an in-depth understanding of women's hopes and fears. Not only has this been beneficial to my academic development and career in food security in Oman, but it has also proven to be most valuable in terms of helping me to become a more accomplished author for children's books and a better member of Omani society.

Interviewing government officials and seeking secondary data introduced me to valuable connections and provided me with useful information pertaining to national food security that I would not have been able to gain without undertaking this research.

I started this PhD journey knowing nothing, not only about food security but also about the research process. Studying a national issue in a university abroad was the most challenging aspect of this research. Yet, it was also the most rewarding. Learning how to formulate research questions and different research methods and tools was not an easy task. Writing the thesis, however, was the most challenging. The process of delivering the information in a foreign language for a foreign audience with a different perspective than my mother language took a long time and many incomplete drafts that were frustrating for both my supervisors and for me personally. This, and also conversations and discussions with other international students in the university, made me realise more the effect of culture not only on our simple everyday tasks, such as preparing our meals, but also on our thinking and the way we deliver these thoughts in a written form even at an academic level.

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## 8 APPENDIX I

### 8.1 Glossary

Food Safety (سلامة الغذاء)	“The assurance that food will not cause harm to the consumer and covers contamination by chemical and biological agents and concerns about inherent food nature”, (WHO, 2014b)
Proper Nutrition (التغذية السليمة الصحية)	“Nutrition is the intake of food considered in relation to body’s dietary needs. Good and/or proper nutrition is an adequate, well balanced diet combined with regular physical activity” (WHO, 2014a)
Food Pyramid (الهرم الغذائي)	“A way of showing a healthy diet graphically, by grouping foods and showing the amounts of each group that should be eaten each day, based on nutritional recommendations, as steps in a pyramid. Originally developed in the USA in 1992, and now adopted in many countries, with differences to allow for different national patterns of diet” (Bender, 2005).
Food Serving (الحصة الغذائية)	“A standard unit used in dietary guidelines for the amount of a particular food, or amount of a food type typically consumed in a meal or snack (portion)” (Bender, 2005)

## 9 Appendix II

### 9.1 Consent form for government bodies' interviews

**Household Food Security in Oman: The Role of Women Consumers**

**Interviewer: Abeer**

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#### CONSENT FORM FOR GOVERNMENT BODIES' INTERVIEWS

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Please indicate by ticking the appropriate boxes below, if you consent to being interviewed and how you would prefer the data to be processed. Please also sign your name, position, and date the form, in the spaces provided.

#### **Project Involvement (please tick all that apply)**

- I agree/d to be interviewed for the project as titled above.
- The project was explained to me and I was given the opportunity to ask questions about it.
- I agree/d to the interview being recorded.

#### **Interview record (please tick one)**

- I may be identified in reports made available outside the research team and in publications. My words can be quoted.
- I may not be identified in reports made available outside the research team, nor in any publications. My words may be quoted provided that they are anonymised.
- I may not be identified in reports made available outside the research team, nor in any publications. My words may not be quoted.

Name of Participant

Position

Signature

Date

## 9.2 Topic guide for Government interviews

### Topic Guide for Interviews of Government

**(Answers will be recorded using a Dictaphone)**

1. What does “Food Security” mean to you? Or to your organization
2. Based on this definition, what is the current status of food security in Oman?
3. How could food security be improved in Oman?
4. Do you consider food waste as a major issue in Oman?
5. Do you consider nutritional aspects are well met within the Omani population?
6. What are your views on:
  - climate change
  - Urbanization, and
  - Change in consumption behavior's impacts on food supply and demand in Oman?
7. Are there any threats that you foresee that could be considered as issues for the future of Oman’s food system?
8. Do you think that women in Oman can play a major role in improving food security?

## **10 Appendix III**

### **10.1 Sample of verbal consent given to households and their guardians**

This research is titled: Household food security in Oman: the role of women consumers. At this stage, the research aims to examine the awareness of women regarding different food issues especially at the utilisation level and the effect of related knowledge/information/training programmes available to them (if any).

The process will involve a recorded interview with you (female head of the household). The recording will enable me to take effective notes, however if you wish the session should not be recorded please inform me and I shall stop the recording.

I will be the person responsible for undertaking the interview with you. No male person (of any age) will accompany me at any time or come into contact with female participants and/or households at any time.

If you agree to take part in this research I can go ahead with the interview. In the event you decide halfway not to continue with the sharing of data please feel free to opt out at any time. The information you will provide are confidential and your personal details will be anonymised. Records will be analyzed and information obtained will be used without referring to names or other personal details of the participants. All data files will be securely saved and stored by me during the research and safely destroyed after the completion of the research. I will be the only one having access to voice recorded files of the interviews and they will not be published as voice files in any way. No photos will be taken during the observation or any other time.

If you wish to know more about the outcome of the research as a result of the data that you have shared, I will be more than happy to contact you with the feedback the way that is most convenient to you (either by mail or email).

Thank you for your co-operation.

## 10.2 Sample of Household interview question guide

Interview questions (Answers will be recorded using a dictaphone)

### Food Supply:

Where do you usually get your food from?

(farm only – market only – both farm and market – gifts and barter – farm, market, gifts and barter – other)

Do you find all the food you want in the market?

(Yes - No – Sometimes)

Do you face any difficulties (financial, physical and/or social) getting the food you need and/or want from the market?

(Yes - No – Sometimes)

If yes (or sometimes), what are they?

Who does the shopping at your house?

(wife – husband – son – daughter – housekeeper – others)

How often do you shop?

(once a week – more than once a week – once a month – more than once a month)

Do you plan your meals before shopping?

(Yes - No – Sometimes)

Do you (as a household unit) check your kitchen cupboard (or food store, fridge, etc.) before setting out for shopping?

(Yes - No – Sometimes)

If yes, who does that?

(wife – husband – son – daughter – housekeeper – others)

Do you (as a household unit) prepare a shopping list before shopping?

(Yes - No – Sometimes – I don't know what shopping list is)

If yes, who does that?

(wife – husband – son – daughter – housekeeper – others)

Before buying food products, do you check:

“Best before use” and “expiry date”?

(Yes - No – Sometimes - I don't know it)

Nutrition facts on nutrition label?

(Yes - No – Sometimes - I don't know it)

Food ingredients?

(Yes - No – Sometimes - I don't know it)

What determines your choices of food products in the market?

(Price/ or price vs. quantity/ Quality (specify: nutrition value and/or taste, brand name, origin, etc.))

### Food Safety Perception

What does food safety mean to you?

Do you think that food safety is important? Why?

What do microorganisms mean to you?

How do you maintain food safety in your household?

### Food Preparation and cooking

Who decides what food to be prepared at home? And why?

Who is responsible for kitchen keeping?

### Nutrition Perception

How do you define proper nutrition?

How do you insure proper nutrition for all members of the household?

### Food Waste

What do you normally do with food leftovers?

(keep them for later use – feed to domestic animals – give to the poor - dispose all leftovers)

What do you consider as food waste?

(inedible parts of food – spoiled food – leftovers)

What do you normally do with food waste?

(throw in bin with others wastes – feed to animals)

### Food Security

Did you hear about Food Security before?

(Yes - No - I don't know it)

If yes,

What do you know about it?

Do you think women have any role in food Security? And why?

### Training and Educational Programmes

Where from do you get your knowledge about food purchase, preparation, safety and nutrition?

(parents and old members of the family – partner – friends – media – school – health centre – others)

Have you received any training or educational courses or programmes on these issues?

( yes – no)

Do you think that such programmes are important?

( yes – no – I don't know)

If yes, why?

### **10.3 Sample of Verbal Consent Given to Focus and/or Discussion groups' participants**

This research is titled: Food security in Oman: the role of women. At this stage, the research aims to examine how much do Omani women contribute in decision making at the household level and how this can affect their role in household food security.

Methods used will involve focus groups or online discussion groups on WhatsApp with women from different parts of Oman. All focus and/or discussion groups will be held by me. No male person (of any age) will accompany me at any time or come into contact with female participants at any time.

In case you agreed to participate and then changed your mind, you and any other participant are free to withdraw from the research at any time. All files will be securely saved and stored by me during the research and deleted and/or destroyed once the research is done. I will be the only one having access to the files of the focus and/or discussion groups and they will not be published in their original form in any way. Records will be analyzed and information obtained will be used without referring to names or other personal details of the participants. This applies to all data obtained from focus and/or discussion groups. No personal data will be shared during the discussion or any other time.

In case that you or any other participant requested/ needed to get feedback after I complete the research, I will be more than happy to contact you with the feedback the way that is most convenient to you (either by mail or email).

### **10.4 Sample of focus group question and discussion guide**

- Views on food safety, nutrition and food security.
  - Views about who should decide these issues at both government and household levels? And why?
  - Role played by women in achieving food safety, nutrition and food security?
  - Level of awareness of these concepts (food safety, nutrition and food security).
  - Whether women and men participants have authority to take any key decisions
  - Key challenges faced by women in decision making regarding food issues at both government and household levels..
  - Whether there are any training and awareness programmes provided to women about these aspects (food safety, nutrition and food security).
  - Who are the key providers of these training programmes?
  - Do participants in focus groups consider these programmes very important?
10. Any specific programmes which are considered as important by the focus group members.
11. Key expectations from the training programmes they undertake

## 11 Appendix IV: Questionnaire Sample

Department of Environment  
University of York  
United Kingdom

قسم البيئة  
جامعة يورك  
المملكة المتحدة

### Questionnaire

On:

Awareness and perception of food safety, nutrition and food security among Omani Women

### استبانة

حول:

وعي وإدراك المرأة العمانية لمسائل سلامة الغذاء والتغذية والأمن الغذائي

Dear Household head,

This questionnaire is a part of a PhD research on the Role of Women in Food Security in Oman. It aims to explore the range of costumes and beliefs that women have on food purchase, preparation and consumption.

I hope that this questionnaire would not take more than # minutes of your time. If you have any question regarding the purpose of the research or if you needed any clarification on the questions, please contact me on my number: #####  
(Calls only from Sun to Thu: 8 am to 5 pm  
WhatsApp from Sun to Thu: any time)

If you wish to take part in this study, please keep this questionnaire ready for collection by --/--/--.

Please Note: All information provided by you will be treated confidentially.

**Researcher: Abeer Ali**

عزيزتي ربة المنزل،

هذه الاستبانة هي جزء من بحث عن دور المرأة في الأمن الغذائي في سلطنة عمان للحصول على درجة الدكتوراة. وهي تهدف لمعرفة المعتقدات والعادات التي تمارسها النساء في مجال شراء الأغذية وإعدادها وتناولها.

أمل أن هذه الاستبانة لن تأخذ أكثر من ( ) دقائق من وقتك، وإن كان لديك أي سؤال عن أهداف البحث أو لتوضيح أي سؤال من الأسئلة في الاستبانة، أرجو

التواصل معي على رقم هاتف #####

(للاتصال: من الأحد إلى الخميس: 8 ص إلى 5 م

الواتس اب: من الأحد إلى الخميس: في أي وقت)

إذا كنت تريدين المشاركة في هذه الدراسة، أرجو أن اجيبي عن الأسئلة لتكون جاهزة لإعادتها بتاريخ --/--/--

--1

ملاحظة: جميع المعلومات والمشاركات ستعامل بسرية تامة ولن يتم الاطلاع عليها الا من قبل الباحثة لأغراض

الدراسة فقط



<p>The questionnaire is consisted of 15 multiple choice and 6 open ended questions.</p> <p>In addition, 5 feedback questions are provided on page 10.</p>	<p>تتكون هذه الاستبانة من 15 سؤال اختيار من متعدد و6 أسئلة مفتوحة.</p> <p>إضافة إلى ذلك، يوجد في صفحة 10 عدد 5 من الأسئلة عن ملاحظتك بخصوص الاستبانة وانطباعاتك العام.</p>
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الرجاء تعبئة الجدول التالي قبل البدء في الإجابة عن أسئلة الاستبانة، هذه المعلومات مطلوبة لفرز الإجابات وسيتم استعمالها لتحليل نتائج الدراسة فقط.

Please fill the following table before you start answering the questionnaire. This information is needed in sorting out the results and will only be used in the analysis of the study.

<b>Age</b> (of household female head)	-----	العمر (لربة المنزل)
<b>Educational level</b> (example: primary school, secondary school, college/ university degree, etc.)	-----	المستوى التعليمي (مثال: ابتدائي، اعدادي، ثانوي، بكالوريوس .. إلخ)
<b>Employment status</b>	-----	الوضع الوظيفي
<b>Total monthly income</b> (of the household)	-----	مجموع الدخل الشهري للعائلة
<b>Wilayat</b>	-----	الولاية
<b>City or Village</b>	-----	المدينة أو القرية

<b>A: Multiple Choice Questions</b>	أ: أسئلة الاختيار من متعدد
<b>Instructions:</b>	تعليمات:
• Please select the most suitable answer to	• اختاري الإجابة المناسبة لك إما بوضع دائرة حولها أو

<p>you by circling the desirable option or writing the symbol (√) in the small box next to it.</p> <ul style="list-style-type: none"> <li>• Questions that end with (Choose all that apply) can have more than one answer.</li> <li>• If you choose to answer with (other), this means that your answer is not listed within the options provided. Please write your answers in the space provided.</li> <li>• There are no right or wrong answers, please choose the option that is the most appropriate according to your ideas and food habits.</li> </ul>	<p>بكتابة الرمز (√) في المربع الصغير بجانب الإجابة.</p> <ul style="list-style-type: none"> <li>• الأسئلة التي تنتهي بـ (اختاري كل ما يناسب)، يمكن أن تجيب عليها بأكثر من إجابة واحدة.</li> <li>• إذا قمت باختيار (آخر) أو (أخرى)، فهذا يعني أن إجابتك ليست من ضمن الخيارات المكتوبة، اكتب إجابتك الخاصة في المكان المخصص إذا أمكن.</li> <li>• ليس هنالك إجابة صحيحة أو إجابة خاطئة، لذا لا تتردد في اختيار أقرب الإجابات لأفكارك وعاداتك الغذائية.</li> </ul>
---	---

<p>1. في منزلي، نحضر (أو نشتري) الطعام عادةً من: (اختاري كل ما يناسب):</p>			
<p><b>1. I usually get my food from: (Choose all that apply)</b></p>			
Farm	المزرعة	الهدايا والتبادل مع الآخرين	Gift and barter
Market	السوق (والسوبرماركت)	مصادر أخرى	Other source
<p>2. أستطيع إيجاد كل الطعام الذي أريده من المصادر التي اخترتها في السؤال السابق. <b>2. I can find all the food I want from the sources I identified in the above question.</b></p>			
Yes	نعم	No	لا
Sometimes			أحياناً

3. عندما نتسوق من أجل الطعام، فإنني غالباً ما أواجه التحديات أو الصعوبات التالية: (اختاري كل ما يناسب)	
<b>3. When shopping for food, I usually face the following challenges/ difficulties: (Choose all that apply)</b>	
أسعار الأغذية مرتفعة، وهي أكثر من ميزانيتي	Prices for food commodities are higher than what I can afford
السوبرماركت الذي أتسوق منه بعيد عن منزلي	Supermarkets are located away from my house
لا أملك سيارة تأخذني إلى السوق	I don't have a car to take me to the market
لا أستطيع الذهاب إلى السوق بدون زوجي	I can't go to the market without my husband
لا أجد كل ما أريد في السوق	I can't find all I want in the market
محلات السوبرماركت دائماً مزدحمة في الوقت الذي أتسوق فيه	Supermarkets are always crowded at the time I do my main food shopping
لا أواجه أي صعوبات أو تحديات	I don't face any challenges/ difficulties
<b>4. في منزلي ، التسوق للطعام هو مهمة:</b>	
<b>4. In my house, food shopping is done by:</b>	
الابن	Me (the wife) أنا (الزوجة)
الابنة	Husband الزوج
أنا (الزوجة) وزوجي	Housekeeper ربة المنزل
Me (wife) & husband	Other (specify?) _____
<b>5. في منزلي ، نقوم بالتسوق الرئيسي للغذاء (الراشني):</b>	
<b>5. In my house, main shopping is usually done:</b>	
مرة في الشهر	مرة في الأسبوع
Once a month	Once a week
وقت آخر (حددي الإجابة)	مرتين في الشهر
Other (specify?) _____	Twice a month
<b>6. قبل التسوق، عادةً نقوم بـ:</b> (اختاري كل ما يناسب)	
<b>6. Before shopping, we usually:</b>	
نخطط للوجبات التي سنأكلها خلال الأسبوع أو الشهر	Plan our meals for the week/ month
نفحص ما تبقى في خزانات المطبخ/ الثلاجة/ أو مخزن الطعام	Check our kitchen cupboard/ food store/ fridge
نكتب قائمة بالمشتريات	Write a shopping list
لا نحتاج لأي من هذا	We don't need any of this

7. قبل شراء منتجات الغذاء، نقوم بفحص:			
<b>7. Before buying food products, we usually check:</b>			
تاريخ الصلاحية والانتهاه			
<b>(Best before use) and (Expiry date)</b>			
Yes	نعم	No	لا
Sometimes	أحياناً	لا أعرف معنى هذه المصطلحات I don't know the meaning of these terms	
المعلومات الغذائية على ملصق المنتج			
<b>Nutrition facts on nutritional label</b>			
Yes	نعم	No	لا
Sometimes	أحياناً	لا أعرف معنى هذه المصطلحات I don't know the meaning of these terms	
مكونات الأغذية			
<b>Food ingredients</b>			
Yes	نعم	No	لا
Sometimes	أحياناً	لا أعرف معنى هذه المصطلحات I don't know the meaning of this term	
8. عندما شراء منتجات الغذاء، فنحن غالباً نهتم لـ:			
<b>8. When shopping for food, we are usually concerned with:</b>			
Price	السعر	السعر مقابل الكمية	Price vs. quantity
Nutrition value	القيمة الغذائية	الطعم	Taste
Brand	الاسم التجاري	بلد المنشأ أو الصنع	Country of origin
لا شيء مما ذكر، نحن نشترى ما اعتدنا عليه كل مرة Nothing of the above, I usually buy what I am used to buy every time.			
9. في منزلي، _____ من يقرر ما هو نوع الطعام الذي نحضره (أو نطبخه) للأسرة. (أكمل العبارة بما يناسب من الخيارات)			
<b>9. In my household, _____ decide what food is to be prepared for the family. (complete the sentence by choosing one of the following):</b>			
I (myself)	أنا بنفسى	زوجى	My husband
Me and my husband	أنا وزوجى	أبنائى	My children
The whole family	العائلة كلها	شخص آخر (حددي الإجابة)	Other (specify?) _____

<b>10. In my household, food leftovers are:</b>			
تُحفظ للأكل في وقت لاحق Kept for later use		تُعطى للفقراء/ المحتاجين Given to the poor	
تُستخدم كطعام للحيوانات Fed to domestic animals		تُرمى مع المخلفات الأخرى Disposed to the bin	
في العادة لا يتبقى لدي أي طعام زائد بعد الوجبة I usually don't have any food left over.			
<b>11. In my household, food waste includes: (Choose all that apply)</b>			
أجزاء الطعام غير قابلة للأكل (مثل القشور والعظام وغيرها) Inedible parts of food		الطعام الفاسد Spoiled food	
Leftovers		بقايا الطعام المطبوخ Leftovers	
<b>12. In my household, food waste is usually: (Choose all that apply)</b>			
ترمى في القمامة مع باقي المخلفات Thrown in bin with other wastes		تستخدم كطعام للحيوانات Fed to the animals	
طريقة أخرى؟ (أكتب الطريقة) Other (specify?) _____			
<b>13. I get my knowledge about food (purchase, preparation, safety and nutrition) from: (Choose all that apply)</b>			
الوالدين وأفراد العائلة الكبار في السن Parents and old members of the family		الزوج Husband	
المركز الصحي Health center		المدرسة School	
الأصدقاء Friends		التلفزيون والإذاعة Television and radio	
إنترنت Internet		مصادر أخرى (حددي) Other (specify?) _____	

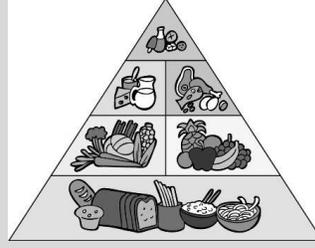
<p>14. تلقيت من قبل دورة تعليمية / أو حضرت محاضرة / أو استلمت معلومات ونشرات في مواضيع سلامة الغذاء والغذاء الصحي وعادات التسوق الصحيحة.</p> <p><b>14. I did receive training/ educational courses and/or leaflets and publications on food purchase, preparation, safety and nutrition.</b></p>			
Yes		No	
<p>15. أرغب في أن أتعلم في دورة تعليمية / أو محاضرة / أو استلم معلومات ونشرات في مواضيع سلامة الغذاء والغذاء الصحي وعادات التسوق الصحيحة.</p> <p><b>15. I want to receive training on food purchase, preparation, safety and nutrition.</b></p>			
Yes, why?		No, why?	
-----		-----	
-----		-----	
-----		-----	
-----		-----	
-----		-----	
-----		-----	

<b>B: Open ended questions</b>	<b>أ: الأسئلة المفتوحة</b>
<b>Instructions:</b> <ul style="list-style-type: none"> <li>The following questions are open ended questions where options of answers are not provided. Thereby, answers need to be written by you unless otherwise specified.</li> </ul>	<b>تعليمات:</b> <ul style="list-style-type: none"> <li>الأسئلة التالية هي أسئلة مفتوحة، أي أنها لا تحتوي على خيارات لإجابات، لذا عليك كتابة الإجابة عنها بنفسك إلا إذا تواجد الخيار أسفل السؤال.</li> </ul>

<b>16. ما يعني مصطلح (سلامة الغذاء) بالنسبة لك؟</b>	
<b>16. What does (Food Safety) mean to you?</b>	
I didn't hear about this term before.	لم أسمع بهذا المصطلح من قبل
I heard about this term before, but not really sure about its meaning.	سمعت بهذا المصطلح من قبل لكنني لست متأكدة من أنني أفهم معناه
<b>17. ما الذي تقومين به في مطبخك ومع طعامك لتكوني متأكدة من أنه سليم (نظيف وآمن)؟</b>	
<b>17. How do you insure that the food prepared in your house is safe?</b>	

18. هل يمكنك تمييز أو معرفة ما في هذه الصور؟

18. Can you recognize these objects?



No

لا

Yes,

نعم

اسم العنصر الموجود في الصورة: (name(s) of object(s)) : \_\_\_\_\_

وهو يستخدم في: (and the uses are:) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

19. ماذا يعني لك مصطلح (التغذية الصحية أو الصحيحة) ؟

19. What does (Proper Nutrition) mean to you?

I didn't hear about this term before.

لم أسمع بهذا المصطلح من قبل

I heard about this term before, but not really sure about its meaning.

سمعت بهذا المصطلح من قبل لكنني لست متأكدة من أنني أفهم معناه

20. How do you insure that food prepared in your household is nutritious?

20. كيف تتأكد من أن الطعام الذي يُعد في منزلك صحي؟

21. ما الذي تعرفينه عن (الأمن الغذائي) ؟

21. What do you know about food security?

I didn't hear about food security before.	لم أسمع بهذا المصطلح من قبل
I heard about this term before, but not really sure about its meaning.	سمعت بهذا المصطلح من قبل لكنني لست متأكدة من أنني أفهم معناه

⌘⌘ نهاية أسئلة الاستبانة ⌘⌘  
⌘⌘ End of Questionnaire Questions ⌘⌘

Feedback questions (Choose the most appropriate answer)	أسئلة حول انطباعاتك وملاحظاتك حول الاستبانة (اختاري الإجابة التي تعبر عنك)			
1. كانت الأسئلة والإجابات واضحة وسهلة القراءة				
1. Questions and answers' options were clear and easy to read				
لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
Strongly disagree	- disagree	- neither agree nor disagree	- agree	- strongly agree
2. طول الاستبانة مناسب بالنسبة لي.				
2. The questionnaire was of a convenient length for me.				
لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
Strongly disagree	- disagree	- neither agree nor disagree	- agree	- strongly agree
3. قمت بالإجابة عن الأسئلة بمساعدة:				
3. I completed the questionnaire with the help of:				
لا أحد - زوجي - ابنتي - ابني - صديقتي - أحد أقاربي - شخص آخر				
No one - husband - daughter - son - friend - other				
4. أحببت المشاركة في هذه الدراسة وأحب المشاركة في دراسات مشابهة مستقبلاً.				
4. I liked being part of this study and I would like to participate in similar studies in the future.				
لا	نعم			
Yes	No			
5. أحب أن يتم التواصل معي وإخباري بنتائج هذه الدراسة عند انتهائها.				
5. I would like to be informed about the results of this research when it is done				
لا	نعم			
Yes	No			

⌘⌘ شكراً جزيلاً لك ، أقدر لك تعاونك معي ⌘⌘ Thank you for your cooperation ⌘⌘