A study to examine the contribution of support workers to the delivery and outcomes of community rehabilitation and intermediate care services in England

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Summary of Thesis

This study aimed to identify and measure the contribution of support workers to the delivery and outcomes of older peoples' community rehabilitation and intermediate care services in England.

Several methodologies were employed including a literature review, cross sectional study, prospective longitudinal study and qualitative semi-structured interviews.

The cross sectional study generated data from 186 teams and 327 staff; the prospective study generated 1890 patient records, 680 patient satisfaction responses and 300 staff responses from 20 teams; and the qualitative study collected data from interviews with 150 staff from 10 teams.

Results demonstrate that over 80% of teams employ support workers and that support workers are more likely to be utilised in larger teams who cater for clients with 'medium' levels of care need and who provide care predominantly in the home. Support workers on average deliver between 30 to 40% of direct patient care and spend on average less time per patient contact than qualified professionals.

There was little evidence to conclusively demonstrate an association between the proportion of care delivered by support workers and the severity of health and social needs of patients. Equally although there was a trend to suggest greater proportions of support workers within a team is associated with greater

proportions of care being undertaken by support workers, this was also statistically insignificant.

A greater proportion of care delivered by support workers and a greater proportion of support workers within a team were both significantly associated with improved patient outcomes (as measured by EQ-5D and TOMS) but had no impact on service outcomes (length of stay).

Support workers as a group were more likely to report an intention to leave their profession and significantly lower levels of autonomy than qualified staff. Support workers also identified issues around poor career progression and training opportunities and inadequate skill utilisation.

Support workers tend to carry out more 'hands on' care as opposed to the qualified practitioner role of assessment and care planning, develop more of a 'friendship' with clients and may be responsible for delivering more repetitive rehabilitative therapy. These qualities may partially explain why support worker input was found to enhance patient outcomes.

This research shows that there is potential for support workers and qualified professionals alike to be utilised more effectively within community rehabilitation and intermediate care services.

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Glossary of Terms

ADL	Activities of daily living
Allied Health Professional (AHP)	Allied health professional refers to professions aligned to medicine, excluding nurses. These professions include: Arts Therapists, Chiropodists, Dietitians, Occupational Therapists, Orthoptists, Paramedics, Physiotherapists, Prosthetists and Orthotists, Psychologists, Psychotherapists, Radiographers and Speech and Language Therapists.
Assistant Practitioner	Skills for Health defines the role as: 'Probably studying for foundation degree. Some of their remit will involve them in delivering protocol-based clinical care that had previously been in the remit of registered professionals, under the direction and supervision of a state registered practitioner'.
Care provider	Any person employed in formal care delivery for a service user, either professionally trained staff or non professional staff.
CRT	Community Rehabilitation Team
CRAICS	Community Rehabilitation and Intermediate Care Services
Education	A formal process, normally undertaken by tertiary institutions, which leads to a qualification that is normally a prerequisite for entry to a health profession.
Extended scope practitioner	Practitioners with special interests are GPs, nurses, therapists and other health professionals who develop an additional expertise which enables them to expand their clinical practise in a defined area.
EQ-5D	A generic, patient-reported, standardised instrument to measure health status or health-related quality of life
GMC	General Medical Council
HCA	Health Care Assistant (usually aligned to nursing)
HPC	Health Professions Council
HSC	Health Service circular – Department of Health policy guidance document for health services
Intermediate care	Services that aim to prevent avoidable admission to and facilitate discharge from the hospital setting whilst preventing admission to long term residential and nursing care.
Interprofessional working	Team collaboration which involves coordination of expertise to optimise the care of the service user. Processes such as evaluation or development of a plan of care done jointly, with professionals of different disciplines pooling their knowledge in an independent manner (Thylefors et al., 2005).
IPE	Inter-professional education
LAC	Local Authority Circular – Department of Health policy guidance document for local authorities
MDT	Multidisciplinary Team

Multidisciplinary	A group of practitioners with different training who meet regularly to coordinate their work providing services to one or more service users in a defined area. Each team member brings expertise to address problems separately.
NHS	National Health Service
NMC	Nursing and Midwifery Council
NSF	National Service Framework
NLU	Nurse Led Unit
NVIVO	Software package for qualitative data analysis
NVQ	National Vocational Qualification
PCG	Primary Care Group
PCT	Primary Care Trust
Professional	An individual belonging to a group which has a clear definition of the elements of work over which the individual has autonomy or control; legislative recognition of the profession by the state, protecting the profession from encroachment by another profession and ownership over an exclusive body of knowledge and skills and a code of ethics that protects their legitimacy.
QALY	Quality Adjusted Life Years
RCT	Randomised Controlled Trial
Role	A function designed to achieve a defined output or outcome.
Role substitution	The ability of a worker from one discipline to adopt the roles of a worker from another discipline.
SAP	Single Assessment Process
Service user	A recipient of health or social care services. Depending on the context, the service user may include the family and / or carers of the person directly receiving the service.
Skill	A level of knowledge or competence that is required to successfully perform a work-related function or role.
Skill mix	Can refer to the mix of disciplines involved in care, the mix of skills within a disciplinary group or the skills possessed by an individual worker.
Support worker	An individual who works with professionally qualified staff who may have health &/or social care training such as National Vocational Qualifications (NVQ) but who do not have tertiary or equivalent qualifications and who do not have legislative recognition of professional status by the state. Titles included under this category include: Technical instructors, Rehabilitation assistants, Social work assistants, Physiotherapy assistants, Rehabilitation technicians, Psychology assistants, Occupational Therapy technicians, Carers, Intermediate care technicians, Care management assistants, Therapy assistant, Technician & Home Enablers.
TOMS	Therapy Outcomes Measures
Training	A learning process that is used to augment vocationally acquired skills or to upgrade and

	enhance skills obtained through prior educational experience.
UK	United Kingdom
USA	United States of America
WDQ	Workforce Dynamics Questionnaire
Workforce Configuration	The combination of skill mix, training, delegation, substitution and specialization and role overlap
Workforce development	Activities that increase the capacity of individuals to participate effectively in the workplace. It incorporates components of workforce planning, education and training and management.
Workforce planning	A component of workforce development that aims to ensure that there are sufficient staff with the appropriate skills to deliver quality care to patients and secondly, to predict and plan for the future workforce needs.
WTE	Whole Time Equivalent

1 Thesis Overview

1.1 Introduction

The aim of this research is to evaluate the contribution of support workers to the delivery and outcomes of older peoples' intermediate care and community rehabilitation services. It represents a unique contribution to a larger study examining the costs and outcomes of workforce flexibility in older peoples' intermediate care and community rehabilitation services.

The research has been undertaken in the context of older peoples' Community Rehabilitation and Intermediate Care Services (CRAICS) in England.

A variety of methods have been employed to examine the support workforce in CRAICS. The key approaches have included:

- A detailed literature review;
- A cross sectional survey of 186 older peoples' community and intermediate care teams, which captures details about the staffing and service configurations as well as the completion of the Workforce Dynamics Questionnaire by 327 staff from 36 teams;
- A prospective study of 20 older peoples' community and intermediate care teams involving data collection of patient, staff and service level data; and
- Qualitative data collection involving focus groups with a selection of the teams involved in the prospective study

1.2 Objectives of the research

The objective of the research is to compile a description of the factors that enhance patient, staff and service outcomes when support workers are involved in delivering rehabilitative care to older people in the community.

1.3 Rationale for the research

Community services for older people are an important setting in which to examine the support worker role and impact. It is well documented that most developed countries have an ageing population (Tomassini et al., 2004). This change in demography has fuelled many government policies that have influenced the way services for older people are organised and delivered.

The nature, location and models of care have shifted from hospital based, clinically dominated services to coordinated multidisciplinary management of chronic illness and disease, delivered away from hospitals and into communities and peoples' own homes (Department of Health, 2001c, Department of Health, 2002e, Howe, 1999).

These changes are encapsulated by the growth and development of intermediate care and community rehabilitation services in England, often been described as 'those services that assist the transition from medical dependence to personal independence, focusing on the restoration of self care abilities' (Department of Health, 2001c).

Community rehabilitation and intermediate care services are often complex. Staff within these teams manage a continuum of health conditions and social issues and operate at the interface of numerous agencies, settings and professional groups. These services therefore require workforce and team structures that can reflect and respond to this complexity (Nancarrow, 2004c). It is in this setting that flexible workforce models have been adopted, encapsulated by role sharing, multi and interdisciplinary team working and the utilisation of support workers who work across professional divides (Nancarrow et al., 2005b, Ottley et al., 2004). In many ways the support worker role in CRAICS incorporates and embodies most aspects of flexible working principles and workforce change policies that have been introduced by the government.

Although some of the workforce practises utilised in CRAICS have resulted from the structure of the services themselves (Martin et al., 2005), national workforce policies that have specifically promoted new roles, new ways of working and multidisciplinary team working (Department of Health, 2002f, Department of Health, 2003a, Department of Health, 2004d, Department of Health, 2004b) have also potentially had an impact on the organisation of the CRAICS workforce.

A particular focus of workforce reform has been the promotion of growth in numbers of assistants and support workers (Saks and Allsop, 2007, Wanless, 2002) and expansion of their roles (Wanless, 2002) in order to meet future demands from a growing and ageing population and to account for a shortfall in professionally qualified practitioners. Support workers are viewed as an economically effective way to deliver 'safe and skilled' care whilst at the same time enabling the professional workforce to expand and 'upskill' to provide more services (Foster, 2006).

The support worker role is therefore seen as pivotal to enabling professionals to carry out more complex tasks (Atkinson, 1993, Audit Commission, 2000, Kennerly, 1989, NHS Modernisation Agency, Stanmore et al., 2005a) through support workers maintaining or even increasing the capacity of care previously delivered by these professionals (Benson and Smith, 2006, Pullenayegum et al., 2005, Stanmore et al., 2005a).

These views, as well as much of the literature exploring worker substitution, remain largely contextual, unsubstantiated or contradictory (Buchan, 2006). As such there remains much ambiguity over the extent and nature of the contribution that support workers make to the delivery and outcomes of care, particularly as part of multidisciplinary teams in the community (Buchan et al., 2001, Buchan and Dal Poz, 2002, Chang, 1995,

Chang et al., 1998, Jenkins Clarke and Carr Hill, 2003, Nancarrow et al., 2005b, Sibbald et al., 2004).

Despite the dearth in evidence, support workers are increasingly part of the skill mix responsible for delivering community and intermediate care services to older people in the United Kingdom (Nancarrow et al., 2005c, Vaughan and Lathlean, 1999, Vaughan et al., 1999).

This research therefore aims to provide new knowledge around the contribution support workers make to the delivery of care within older people's community rehabilitation and intermediate care teams and the impact this contribution has on patient, staff and service outcomes. The ultimate aim of the study is to compile a description of the factors that may enhance patient, service or staff outcomes when support workers are involved in delivering care to older people in the community.

1.4 Ethics

This thesis uses data collected as part of a three year study examining the impact of workforce flexibility on the costs and outcomes of older peoples' services for which NHS ethical approval was sought and gained in 2006 (06/Q1606/132). The ethics approval letters are in Appendix 1.

The preparation of the NHS ethics submission including finalising the protocol and all required forms and information sheets for the study was predominantly carried out by myself and supported by the chief investigator Susan Nancarrow. The NHS ethics approval 06/Q1606/132 includes approval for this thesis to utilise the data collected from the above study.

Ethics approval was also sought from Social Services. The preparation and submission of the social services ethics documentation was again carried out by myself and supported by

Susan Nancarrow. Approval was received in January 2007 (DW/NK) (Appendix 1).

1.5 Contribution and differentiation

My research adds a unique contribution to a larger study which examined the impact of workforce flexibility on the costs and outcomes of older peoples' services. The following information illustrates the breakdown of contributions I made to the larger research project and how this research endeavours to answer questions which are separate from the intention of the larger study.

1.5.1 Contribution

I was employed as a research associate for the duration of the study. My role primarily consisted of project management, to ensure smooth running of the project and adherence to the study protocol and funding body requirements. I was solely responsible for the day to day running of the project and as such was the main point of contact for all teams participating in the project. This involved organising and delivering around eighty percent of the team training, troubleshooting any queries from teams, organising and distributing all study resources, chasing missing data, and preparing, submitting and updating all ethics and governance applications.

In addition to administrative duties, my role involved preparation of all study materials including the analysis and construction the service proforma, literature review, policy review, interview transcripts and data collection forms.

I was primarily responsible for overseeing and inputting the data, data cleaning and I played a key role in the analysis of all data collected in the study, apart from one health economics component which does not form part of this thesis. As such I was a main contributor to the preparation of the final report.

Table 1-1 illustrates the breakdown of contributions I made to the research project. The second column details the contributors to each item and are in order of level of contribution made (AM are my initials and are in bold).

Table 1-1 Contribution to research

ITEM	CONTRIBUTORS*
1. ETHICS AND GOVERNANCE	
NHS Ethics protocol	**AM**, SN, PE, CG, SP
NHS Ethics submission	**AM**, SN
NHS Research Governance preparation & submission	**AM**, CG, SN
Social Services Ethics submission	SN, **AM**
2. TEAM RECRUITMENT, TRAINING & FOLLOW-UP	
Team training	**AM**, AJ, SN, PE, CG
Team Recruitment	**AM**, SN, PE, CG
Team follow-up	**AM,** CG, SN, PE
3. ADMINISTRATION	
Service proforma construction & distribution	**AM,** SN
Health record/data collection form construction & distribution	**AM**, SN, PE, CG
Information sheet construction & distribution	**AM**, SN, PE, CG
Staff Consent	**AM**, AJ, SN, PE, CG
4. FOCUS GROUPS AND INTERVIEWS	
Construction of interview schedules	**AM**, SN
Team focus groups	AJ, **AM** , PE, SN
Extended role interviews	**AM**, SN
Interviews with support workers & Managers	**AM**, SN
5. DATA ENTRY & ANALYSIS	
Qualitative data analysis – all transcripts	**AM,** AMC, SN, CM

Qualitative data analysis support workers	**AM**
Data entry	**AM**, EH, CG
Data cleaning	**AM**, MB, SN
Database construction	CG, **AM**
Patient level data analysis	MB, SN, **AM**, SD, CG
Service level data analysis	MB, SN, **AM**, JF
Staff level data analysis	SN, **AM,** MB
6. LITERATURE SEARCH, REVIEW & WRITE UP	
Policy	**AM**
Skill mix and workforce	JB, SN, **AM**, AB
Support workers	**AM**
Intermediate care service structure	**AM**, SN
CRAICS skill mix	SN, **AM**
7. FINAL REPORT WRITE UP	SN, **AM**, MB, SD, CM, PE, SP

*IN ORDER OF CONTRIBUTION

1.5.2 Differentiation

I have utilised the wide-ranging skill mix and workforce data collected in the main study to answer questions which are separate from the intention of the main study. The main study did not focus on any particular staffing group nor did it attempt to explain particular results through systematic review of the literature pertaining to different staffing groups. Although I have used the research structure, data and some results from the broader study, the research questions for this study were derived by myself from a comprehensive review of the literature pertaining to support workers and thus separate this work from the other.

Furthermore in order that all my research questions were thoroughly answered, further analysis and interpretation of the data from the broader study was carried out by myself.

I have utilised the results derived from the main study to answer only one of my research questions: How does the contribution of support workers impact on patient, staff and service outcomes? For this, I must acknowledge directly the statistical input of Mr Mike Bradburn who contributed substantially to the statistical analysis for this question.

1.6 Definitions and terminology

Workforce literature is often complex and utilises many different terms and definitions. As such I felt it was important to define the following terms for the purpose of this research. A full glossary of terms can be found in the glossary at the beginning of this thesis (pages x-xii).

Professionally qualified

Professionally qualified refers to all staff with formal tertiary or equivalent qualifications. This includes health and social services professionals who have gained bachelor degrees or equivalent diplomas in their field. This does not include staff with National Vocational Qualifications (NVQs). In terms of the Agenda for Change pay banding, a professionally qualified worker is generally employed within bands 5-9.

Support worker

Support worker includes all workers who work with professionally qualified staff who may, but do not necessarily, have health or social care training such as National Vocational Qualifications (NVQs) but who do not have tertiary or equivalent qualifications. In terms of the Agenda for Change pay banding, a support worker is generally employed within bands 1-4. Band 5 and above generally requires tertiary qualifications (with the exception of Occupational Therapy).

For the purpose of this research, support workers include:

- Assistants to professional groups (physiotherapy, occupational therapy, social work, nursing etc)
- Generic assistants (who work across professional groups)
- Technical Instructors
- Health Care Workers
- Home helpers/enablers/carers and social services support staff

Allied health professional

Allied health professional refers to professions aligned to medicine, excluding nurses ,who are primarily governed by the Health Professions Council. These professions include: Arts Therapists, Chiropodists, Dietitians, Occupational Therapists, Orthoptists, Paramedics, Physiotherapists, Prosthetists and Orthotists, Psychologists, Psychotherapists, Radiographers and Speech and Language Therapists.

Source: http://www.hpc-uk.org/aboutregistration/professions/

Multidisciplinary

Multidisciplinary is a term used in health to describe a treatment planning approach or team that includes a number of doctors and other health professionals.

Multidisciplinary working is defined by the NSF for Long Term Conditions as a group of different professionals working alongside one another towards a common goal (Department of Health, 2005a). Thylefors and colleagues (2005) add that multidisciplinary refers to a team or collaborative process where members of different disciplines assess or treat patients independently and then share the information with each other.

For the purpose of this research, multidisciplinary refers to teams comprising any combination of the following: doctors, allied health professionals, nurses, support workers, social workers or social care workers.

Recently there has been a shift towards interdisciplinary or interprofessional working as opposed to working in more traditional multidisciplinary teams.

Interdiciplinary / interprofessional

Interdiciplinary or interprofessional, according to Thylefors et al (2005) refers to a 'deeper level of collaboration in which processes such as evaluation or development of a plan of care is done jointly, with professionals of different disciplines pooling their knowledge in an independent manner'. Lind and Skarvad (1997) argue that interdisciplinary teams have integrated roles whereas multidisciplinary teams have differentiated roles.

Skill mix

Can refer to:

- The mix of skills, competencies or activities required for each job (Buchan et al., 2001, Buchan and Calman, 2004, Buchan and Dal Poz, 2002, Sibbald et al., 2004, Nancarrow and Mountain, 2002b);
- The ratio of senior to junior grade staff within a single discipline (Sibbald et al., 2004);
- The mix of different types of staff or occupations in a team or organization (Buchan and Calman, 2004, Sibbald et al., 2004, Nancarrow and Mountain, 2002b); and/or

- The mix of posts or grades of staff (Buchan and Calman, 2004, Sibbald et al., 2004).

This thesis utilises a combination of all these definitions. In particular this research examines the mix of posts or grades of staff within and across teams, the mix of different types of staff in teams and to some extent the mix of skills/roles required for each job.

1.7 The structure of the thesis

This thesis is presented in nine sections. The following section (section two) looks at the context in which the research is set. The third section looks at literature pertaining to support workers followed by section four which uses this information to develop and outline the research questions. Section five summarises the methods utilised within the research however further specifics of the methods are outlined under each separate results sections. The sixth section gives the results of each component of the research including the cross sectional study, prospective study and qualitative data. The seventh section discusses the results of the study and identifies research challenges and limitations. The final two sections discuss policy and practise implications of the research and draw conclusions.

2 Context

2.1 Introduction

The purpose of this section is to establish the context in which support workers are utilised within the broader workforce and within older peoples' community and intermediate care services. Workforce is only one, albeit important, component of any health service structure. However, the workforce is situated within a wider organisational and political context. This section therefore looks at the broader United Kingdom (UK) policy context and how this has contributed to the shape and formation of CRAICS and support workers. Current CRAICS structure, function and workforce are also discussed.

2.2 The policy context

National policy is a recognised major driver of health care reform and change in the United Kingdom (Buchan and Calman, 2004). Following the general election of 1997, a ten year programme of modernisation for health and social care was outlined (Department of Health, 1997a, Department of Health, 1998a). The modernisation programme stipulated the need for high quality, person centred care that extended across health and social care boundaries. The reforms involved modernisation of every level of management and service delivery, from systems of health and social care financing to service commissioning, staff career and education reforms. Of particular interest to this study were the modernisation reforms concerned with older people's services and the workforce.

2.2.1 Changing demographics and the policy context

The UK population is ageing. Not only are a greater proportion of the older population living longer, they are also experiencing a greater proportion of their life disability free (Mor, 2005, Evandrou, 2005). This compression of morbidity means that the current population experience most of their disability in their older age (aged 75 and over) (Fries, 2000). Older people are therefore the key users of health and social care services in the UK. People

aged 65 and over, comprising 16 percent of the population, account for almost 50 percent of total spending on hospital and community health services in England (Office for National Statistics, 2005).

The burden of a growing ageing population on health and social care and subsequent need to plan for this change in demography was addressed by the government following the general election of 1997. In their ten year programme of modernisation for health and social care (Department of Health, 1997a, Department of Health, 1998a) reforms and modernisation of every level of management and service delivery were outlined. These reforms, together with the size of investment required in both capital and human resources were expressed within the NHS Plan (Department of Health, 2000e), published three years into the government's first term. The details of service improvement at specialty level were set out in National Service Frameworks.

Of particular importance to older people's services were the policies that encouraged the shift in delivery of services away from acute hospitals to primary and community care centres and services (Department of Health, 2006b, Department of Health, 2001d) and subsequently allowed for growth and development of community based rehabilitation services for older people.

By reducing the acute hospital remit to specialist treatment and diagnostic functions and building the scope of primary and community services, the government believed access to and the capacity of services would be enhanced (Department of Health, 2001g). In addition this movement of care into and establishment of services in the community was hoped to facilitate smoother transitions from hospital to home for older people, in particular the development of 'intermediate care' services.

Intermediate care has been described as 'those services that assist the transition from medical dependence to personal

independence, focusing on the restoration of self care abilities' (Department of Health, 2001c). These services evolved in the context of the NHS Plan to provide services closer to home that transcend established health and social care boundaries. They have often been proposed as one solution to some inextricable NHS problems such as delayed discharges, long waiting times and unnecessary long term care admissions (Audit Commission, 1997, Audit Commission, 2000, Department of Health, 2000d).

As such, the use of community rehabilitation and intermediate care services as a way to 'ease' the burden of acute hospital admissions has subsequently become a policy imperative for all those involved in the commissioning and provision of care for older people.

Although many intermediate care initiatives are not new, developing on the back of community rehabilitation schemes established after the 1990 Community Care Act, the introduction of financial incentives after the general election of 1997 and service guidance in the form of National Service Frameworks, amongst others, has led to the current iteration of what is now called intermediate care.

Since the advent of Intermediate Care, the UK has seen a massive growth in the number and type of services for older people managing a continuum of health and social issues in a variety of ways (Martin et al., 2004, Godfrey et al., 2005). Recent policy guidance encouraging more streamlined care for older people in the community will potentially see these services further grow and change in shape (Department of Health, 2008).

2.3 Community rehabilitation and intermediate care services

Despite the government guidance around the introduction of intermediate care (Department of Health, 1997, Department of Health, 2001b, Department of Health, 2001c, Department of Health, 2005a, Department of Health, 2006b), it is evident from a

number of national reviews and studies, that the introduction of these services has been open to a wide range of interpretations (Barton et al., 2005a, Godfrey et al., 2005).

Many of the existing models or taxonomies that have been used to describe CRAICS focus either on one attribute of the service, such as the purpose of the service, or a mixture of attributes. The original health service circular (HSC/LAC 2001/01) provided guidance based on an array of service settings, structures and functions. For example *Rapid Response* teams were advised to prevent avoidable acute admissions by providing rapid assessment and access to 24 hour short-term nursing/therapy support in the patient's home or 'step-up' facilities.

National evaluations of intermediate care however consider intermediate care as a constellation of complementary services, defined by their unique combination of purposes, functions, content and structure (Martin et al., 2004, Godfrey et al., 2005) . The Leeds National Evaluation of intermediate care investigated, in detail, 5 case study sites to define intermediate care, identifying four main dimensions of intermediate care (Godfrey et al., 2005):

- Service type, content and location;
- bridging or integrative mechanisms to route people appropriately into and out of intermediate care;
- systems to ensure access to those who may benefit;
- and skilled multiprofessional staff in partnerships and engaging with specialist expertise.

As with intermediate care, the term 'community rehabilitation' can not be used as a standalone term to describe a specific type of service due to the enormous variation in service structure (Enderby and Wade, 2001, Geddes and Chamberlain, 2001, Wade, 2003).

It is clear that despite the terminology used in government documents and guidance, it is difficult to clearly categorise any

intermediate care or community rehabilitation service according to a particular function, setting or purpose. Equally, the diversity in these services prevents the development of a robust evidence base of outcomes (Carpenter et al., 2002, Martin et al., 2004, Melis et al., 2004).

It was therefore considered important for this research to utilise an approach that captured the richness of variation in service configuration that is community rehabilitation and intermediate care within a reproducible framework that enables comparison. A service proforma was developed as part of the broader study which utilised a template approach to explore the way intermediate care services have been described across 17 key documents, evaluations and reports to develop a service description template (Nancarrow et al., 2008b).

The service proforma has been further detailed in the methods section (6.3.2) however a summary of the following domains formed the basis of the final service proforma created for service comparison and evaluation:

- Context
- Reason for the service
- Service users
- Access to the service
- Service structure
- The organisation of care

2.3.1 Skill mix in CRAICS

It is likely that the interpretation of policy, structure and function of CRAICS has had a great deal of influence on the way these services are staffed. Intermediate care services have diverse models of staffing. Typically intermediate care teams are multidisciplinary (Cohen et al., 2004, Enderby and Wade, 2001, Griffiths et al., 2004a, Griffiths, 2002, Jones et al., 1999, Nancarrow, 2004a, Parker, 2006, Rudd et al., 1997, Shield, 1998,

Vaughan and Lathlean, 1999, Wiles et al., 2003) even when labelled 'nurse led unit' or 'GP led unit'.

They are likely to include input from physiotherapy, occupational therapy and therapy assistants (Enderby and Wade, 2001, Parker, 2006). A wide range of other staff may be involved in the delivery of intermediate care however this varies greatly across the different services (Vaughan and Lathlean, 1999). There is no evidence about the 'best way' to staff an intermediate care service (Nancarrow et al., 2006), and staffing is likely to depend on the setting and purpose of the service (Parker, 2006).

There is some evidence of the scope of employment and deployment of support workers in CRAICS. A survey sent to over 145 community rehabilitation teams in the UK in 1998/1999 found that non-professionally qualified assistant staff who worked with a specific profession were used by 22% of the teams, whereas generic assistant staff supporting the whole team were available to 39-40% of the teams. A further 38% of the teams had no assistant staff (Enderby and Wade, 2001).

A more recent survey of 33 intermediate care services conducted in 2003 demonstrated a total of 794 number of support workers and 386 qualified staff were employed in total. The variation however in numbers across different services was large (Nancarrow et al., 2005b). For example one team employed 18 professionally qualified staff and 200 support workers (a ratio of 0.09 qualified to support), whereas another employed 45 qualified staff and 11 support workers (a ratio of 4.09 qualified to support). Therefore when the ratio of professionally qualified staff to support workers was calculated for each service, the mean ratio of professionally qualified staff to support workers across all 33 services was 0.95 (range = 0–4.09, SD = 1.05).

The extent to which explicit workforce policy has shaped the current workforce providing older peoples' services is yet to be evaluated however the growth and transformation of older people's services coincided with widespread workforce change and policy directives.

2.3.2 Workforce change and the policy context

Some of these workforce changes have resulted from the new ways of delivering older people's services, but it is likely that the CRAICS workforce has also been influenced by national workforce policies that specifically promote new roles, new ways of working, new systems of regulation, and the need to comply with European directives.

In 2001, the Wanless report investigated and projected the future health trends and resources that would be required over the next two decades to deliver health care in the UK (Wanless, 2002). The report outlined there would be a substantial increase in the demand for health care workers stating:

Overall … the health care workforce might need to increase by almost 300,000 over the next 20 years. The rates of increase are not uniform across the different staff groups (Para 5.46, Page 88)

The need for substantial progress on skill mix before the end of the decade to avoid capacity constraints (Para 5.57) was considered paramount. As such, the report recommended a significant change in the skill mix of the health care workforce emphasising the need for much greater growth in numbers of nurse, allied health practitioners and support workers and expansion of their roles.

As well as skill mix, further key reports identified other weaknesses in the NHS and social care workforce including an ageing workforce with insufficient availability of 'younger' recruits, poor pay and career structures, inflexibility of professional staff to share roles and training and education weaknesses (Department of Health, 1999, Department of Health, 2000a, Select Committee on Health, 1999). Table 2-1 summarises these key workforce problems.

Table 2-1 Problems identified within the health and social care workforce

- Ageing workforce with smaller pool of younger recruits
- Widespread fragmentation and lack of workforce planning
- Training and education weaknesses
- Poor career and pay structures
- Poor employment conditions
- Inadequate and unbalanced workforce numbers and skill mix
- Inadequate clinical governance and regulation structures
- Limitations imposed on medical practitioner working hours - introduction of the European Working Time Directive

The NHS Plan (Department of Health, 2000e) and the NHS Improvement plan (Department of Health, 2004c) were the two key documents which outlined ways to address these findings and recommendations. These documents set out plans to expand the workforce, by increasing the number of training places available for health care staff, recruiting more staff, retaining and

attracting staff through a new pay system, improving the working lives of staff and enhancing accountability of practitioners through professional regulation (Department of Health, 2000a).

New roles and new ways of working were developed through introduction of nurse and therapist consultant posts (Department of Health, 2000b, Department of Health, 2000e, Department of Health, 2000c) and by encouraging nurses, midwives, therapists and support staff to undertake a wider range of clinical tasks (Department of Health, 2000b, Department of Health, 2000e, Department of Health, 2000c, Department of Health, 2005b).

Working in multidisciplinary, inter-professional, multi-skilled teams (Department of Health, 2000e, Department of Health, 2000c, Department of Health, 2006b) was also mandated as was the introduction of inter-professional undergraduate education introduced to enhance role understanding and role efficiency (Department of Health, Department of Health, 2000e, Department of Health, 2006b).

All staff without professional qualification were required to have access to training to a national standard (Department of Health, 2000e, Department of Health, 2000f, Department of Health, 2000a, Department of Health, 2001e) and all staff were to have greater access to training for new roles (Department of Health, 2000e, Department of Health, 2000f, Department of Health, 2001e).

It was anticipated the combination of pay reform with greater flexibility of roles and responsibilities, additional training and development of new roles would allow for the transfer of specialist medical and GP workload to nurses and allied health professionals and in turn the transfer of nurse and therapist workload to support staff (Department of Health, 2002a). In addition, by encouraging flexibility of roles it was felt the contribution of staff to patient care could be maximised (Department of Health,

2000a). It was also expected that these changes would encourage greater recruitment and retention of staff.

2.3.3 Policy and support workers

The investment in community rehabilitation and intermediate care services for older people has encouraged growth in the number and type of multiskilled teams providing these services (Vaughan and Lathleen 1999, Nancarrow et al 2005). In many ways the demand for these services along with their structure, setting and clientele has driven the need for flexible working and has created an environment where the development of new roles and working across professional boundaries is vital to their success.

Although assistants aligned to nursing, social work and allied health disciplines have been working within older peoples' care for many years (Ellis et al., 1998, Enderby and Wade, 2001, Nancarrow and Mountain, 2002b, Stokes and Warden, 2004, Vaughan et al., 1999) the role of generic support workers, who support more than one discipline to deliver care in the community, has been endorsed as a means of increasing the flexibility and efficiency of the workforce in meeting patient and service needs (The Audit Commission 2000, Shield et al 2005).

The development and expansion of the support worker role has been a focus of national workforce policies that have aimed to reform education and training and pay and career structures (Department of Health, 2000a, Department of Health, 2000c, Department of Health, 2001e, Department of Health, 2004e).

The introduction of pay reform, Agenda for Change (Department of Health, 2001a), has been cited as a way to enable and encourage the development of more generic support worker roles. The shift away from a separate professional grading system combined with enhanced and more flexible training and education opportunities has been promoted as a way to open up career pathways for support staff to pursue and to enable more generic,

non-professionally aligned support roles to develop and be rewarded (Department of Health, 2003a, Department of Health, 2003b, Department of Health, 2004a).

Furthermore, the role of the generic support worker in older peoples' community and intermediate care has been further encouraged under the government sponsored schemes such as 'The Accelerated Development Programme' (ADP) and 'National Practitioner Programme' (NPP).

The ADP for support workers in intermediate care helped to introduce a range of cross-disciplinary roles such as rehabilitation assistants, home care support workers and early discharge workers in intermediate care settings (Nancarrow et al 2005).

The National Practitioner Programme (NPP), introduced in 2004/5, developed various new and extended health care practitioner roles which include assistant practitioners in community and intermediate care (NHS Modernisation Agency).

The assistant practitioner status is seen as a 'bridge' for support staff to progress into the registered practitioner levels, undertaking a range of duties previously reserved for registered staff and working with a large degree of autonomy (NHS Modernisation Agency). An assistant practitioner is defined as a qualified professional who, after training, can operate at a higher or broader level of responsibility and autonomy than previously (NHS Modernisation Agency).

Many trusts are utilising training pathways such as Foundation Degrees, introduced in the government's Modernisation plans, to introduce these roles. Indeed some trusts are commissioning greater numbers of Foundation Degree places at higher educational institutions than traditional allied health and nursing places (Assistant Practitioner Conference 14th March 2006).

A further influence on the development and growth of the generic support workforce is the economic and financial drive for efficiency and sustainability currently faced by all NHS trusts and organisations as a result of several government policies (Department of Health, 2002d, Department of Health, 2002b). On the current pay spine, support workers are paid significantly less than registered practitioners (NHS Employers).

The range of government strategies and intentions described above, and summarised below in table 2-2, such as foundation degrees and greater access to vocational training have been endorsed as a way to ensure support staff who are a less expensive but legitimate and safe way to increase the capacity of workforce to deliver services to older people. Hence as older people's services strive to meet the demands of a growing and ageing population within increasingly tighter budgets, the employment of support staff is potentially perceived as a legitimate and 'economically viable' way to deliver more services to a greater number of patients.

Table 2-2 Summary of policy directives and intentions regarding support workers

Directive / strategy	Intention
Recruit more support staff	• Expand the workforce to cater for future service demand • Overcome difficulties recruiting qualified staff • Financially viable way to expand services
Introduce new support worker roles	• Enable career progression for support workers • Greater retention of support workers and qualified practitioners • Deliver particular aspects of care so as to enable nurse and allied health practitioners to take on specialist skills transferred from medical staff • Deliver particular aspects of care to enable nurses and allied health practitioners to 'focus' their skills and knowledge more effectively • Enhance service capacity
Greater access to qualifications and training	• Enable career progression • Greater retention of staff • Ensure patient safety and quality of care • Equip support staff with the skills to take on wider range of clinical tasks
Improved pay and career system	• Enhance career progression prospects for support staff • A system to reward support staff for enhanced responsibility • Greater retention of staff
New training programmes and qualifications	• Enable career progression • Enable greater levels of autnomy

It remains to be demonstrated however whether the addition of support workers to the skill mix or even substitution of support workers for qualified professionals is indeed 'economically viable' and/or effective in increasing service capacity and whether or not the government strategies outlined above have had any impact on support worker skill and competency.

2.4 Workforce and skill mix research

Buchan and Dal Poz (2002) in their review of the evidence for skill mix change acknowledge that there cannot be a prescribed, universal ideal mix of health care personnel, that skill mix is largely context specific.

There are many factors that can influence outcomes when roles, the mix of skills or staff change. Buchan and Dal Poz highlight many studies often use grades, job titles/professional titles or qualifications as a proxy for roles (Buchan and Dal Poz, 2002).

This is also noted by Nancarrow & Borthwick who draw attention to assumptions underpinning much of the 'substitution' debate, that is, can nurses be substitutes for doctors or support workers for therapists. The authors explain there is a perception that many professional roles are integral parts of a whole occupation or professional title, rather than activities that can be devolved to any person who has sufficient training (Nancarrow and Borthwick, 2005).

Evaluation therefore of substituting 'doctors' for 'nurses' or 'support workers' for 'physiotherapists' without accounting for or defining the intricacies and subtleties involved in skill transfer and role overlap risks exclusion of fundamental aspects of workforce change. This notion applies to conclusions drawn from meta-analyses / literature reviews and large scale multi site datasets. On the other hand many of these intricacies are context specific and when evaluated accordingly may not be generalisable to other contexts or settings as in conclusions made from localised case studies of role change or role overlap (Buchan, 2006).

Another key factor to consider when interpreting or using results from skill mix studies is the outcome measure utilised. The evidence base pertaining to the workforce demonstrates a range of different measures of outcome to assess the relative merits of different skill mixes. As Buchan points out, the purpose of

measuring change will have a direct bearing on which indicators or outcome measures are likely to be most relevant (Buchan, 2006). As such, it is important to consider the purpose of using different outcome measures. Main purposes could include:

- *routine monitoring* - periodic checks on the ratio of different types of staff.
- *performance indicators* - systematic monitoring of staffing indicators such as turnover, satisfaction and absenteeism to support performance management or benchmarking.
- *evaluation* - examination of the relationship between staffing levels or mix and organisational attributes or outcomes.

As discussed earlier, the other key issue to consider is what is meant by "staffing level" or "skill mix" and as such the indicator(s) used for "staffing" in different studies and systems vary, and can include:

- Actual staffing numbers
- The number of funded staffing posts
- Staffing hours
- Staffing costs (either average or actual) and/or
- Staff mix

(Nancarrow et al., 2006, Sibbald et al., 2004, Buchan and Dal Poz, 2002, Buchan, 2006)

I feel it is important to note here that the majority of care or patient outcome indicators are derived from the acute sector/secondary care, rather than primary care or intermediate care environments (Buchan, 2006, Buchan and Dal Poz, 2002, Nancarrow et al., 2008d). This means that the current scope for evidence based evaluation of staffing, skill mix and outcomes in settings such as CRAICS is less advanced than in acute care and requires more setting-specific outcome indicators than those offered in acute care.

Buchan and Dal Poz state "Skill mix of the health and social care workforce is both a determinant of and determined by organizational and system context" (Buchan and Dal Poz, 2002). For example development of new roles is largely system specific and quite often due to a shortage of doctors/professions (Buchan, 2006, Buchan and Dal Poz, 2002) which in turn is largely influenced by cultural, professional and organizational differences (Buchan, 2006, Buchan and Dal Poz, 2002, Nancarrow and Borthwick, 2005).

As such, much of the literature evaluates the impact of only one dimension of workforce change such as differences in or alterations in skill mix, introduction of a new role or the introduction of case conferences or ward rounds. Many studies do not account for the contribution of other organisational factors such as the dynamics involved with multidisciplinary team working, intensity of care delivered or positive work environments.

Indeed the Structure-Process-Outcome model, which has been used to examine outcomes related to differences in how care is provided and organised (Hoenig et al., 2000, Sheaff et al., 2003, Marshall, 2004, Geddes and Chamberlain, 2001), demonstrates the importance of the interrelatedness of health care structure and process on outcomes.

Marshall (2004) for example explored the process and interventions used within stroke rehabilitation, identifying the core components that comprised the *therapy* delivered by physiotherapists and occupational therapists (Marshall, 2004) . These components were then used to form a taxonomy which describes therapy in terms of the activity undertaken and the process used to perform it. Marshall argues the taxonomy can be used to identify which processes of the therapy itself may be having an effect on outcome. Such research amplifies the

complexity of factors that may contribute to the impact of staff input on outcomes.

Measuring the impact of any workforce change is therefore highly reliant on the intervention studied, the corresponding workforce or skill mix definitions used by the researcher, the context of the research and the chosen methodology. As such the evidence base is considerably heterogeneous. With these limitations in mind, the following section analyses the literature pertaining to support workers.

3 Literature review

3.1 Introduction

This section identifies and reviews the existing literature pertaining to support workers across all health and social care settings. It includes an analysis of the role of support workers in CRAICS and how this role has been reported to differ to qualified professionals. The search strategy and methods of identifying relevant literature are described below.

3.2 Search strategy

Peer reviewed databases including AHMED, CINAHL, EMBASE, MEDLINE, British Nursing Index, PsychINFO and Social Science Citations Index were searched as well as governmental databases including Kings Fund and Department of Health Data.

Key words to perform the literature search were identified from existing support worker and allied health literature and surveys. These are described in detail in Appendix 5. In addition a separate search of Medline and CINAHL was performed to identify which professions were associated with support worker terms e.g. 'radiographer' and 'assistant'. The process of identifying all key words used in the search is detailed in Appendix 6. Secondary search terms of role skill, competency, task, duty, duties, impact, outcome and work were utilised to narrow the evidence base in order to specifically examine support worker roles in CRAICS. Table 3-1 shows the final search terms utilised for support workers.

The search strategies outlined above were utilised to identify evidence directly pertaining to support workers in CRAICS. Inclusiveness was checked by comparing the results of the literature search against a list of known literature and references utilized within these papers, including a systematic review of support workers (Nancarrow, 2003, Nancarrow, 2004b, Nancarrow, 2004c, Nancarrow et al., 2005c, Nancarrow and Mackey, 2005, Nancarrow and Mountain, 2002a, Griffiths et al.,

2004b, Hek et al., 2004, Kumar et al., 2006, Ottley et al., 2004, Ottley et al., 2005).

3.2.1 Inclusion and exclusion criteria

Papers were included in this review if they examined any aspect relating to support workers across any health or social care setting. Papers were excluded if they did not directly examine support workers, roles or outcomes. In addition I felt that literature pertaining to support workers in dentistry, paediatrics and ophthalmology could not be easily compared with more nursing, social care and therapy support worker literature and therefore excluded them from this review. Furthermore, exploration of literature pertaining to 'Carers' and 'technicians' highlighted that these terms were not related to support workers and were therefore also excluded.

Table 3-1 Key support worker search terms

Key search terms		
Generic worker	Support worker	Psychology assistant
Lay health workers	Technician	Psychology technician
Assistant Practitioner	Independent sector carers	Dietitian / Dietry / Dietetic assistant
Practitioner	Intermediate care assistants	Dietitian technician
Nurses Aide	OT Technical assessor	Podiatry assistant
Ancillary	Voluntary sector care workers	Nursing assistant
Auxiliary	Home care assistants	Nurse support worker
Home health aides	Home enablers	Nursing / Nurses aide
Health Care Assistant	Care staff	Nursing technician
Intermediate care technician	Carer	Nurse auxiliary
Rehabilitation assistant	Intermediate care technician	Social work technician
Social work assistant	Rehabilitation technician	Assistant social worker
Therapy assistant	Rehabilitation technical instructor	Radiography assistant
Technical instructor	Social work assistant	Radiography assistant practitioner
C Grade rehab support worker	Technical assistant	Speech & language therapy assistant
C grade support worker	Falls assistant	Speech & language therapy support worker
Care assistant	OT technician	Speech-pathologist assistant
Care management assistant	OT support worker	Speech-language pathology assistant
Clerical assistant	Physiotherapy / physical therapy technician	Chiropody assistant
Community care assistant	Physiotherapy auxiliary	Pharmacy / pharmacist assistant
Community support worker	Assistant therapist	Pharmacy support worker
Enabling assistant	Allied Health Assistant (Australian)	Foot care assistant
Grade B nurse rehabilitation assistant	Assistant in Nursing (Australian)	Ambulance care assistant
Community rehabilitation assistant	Occupational therapy assistant practitioner	Imaging support worker (Radiography)
OT assistant	Physiotherapy / physical therapy assistant	OT technical instructor

3.3 Results

Initial database searching in 2005/6 identified a total of 627 articles which contained any combination of the key words utilised in the search. I included articles in the review if they detailed any aspect of support worker roles, skills or tasks and/or measured outcomes. All settings were included in the search. Articles were excluded if they were opinion or if they did not directly relate to support workers.

Of the 627 articles identified I considered 130 relevant and as such included them in the analysis. Fourteen of these articles could not be obtained leaving a total of 116 papers included in the analysis. I conducted a further search in 2008 to update the literature base where 4 further articles were identified and included. A summary of key points from all included papers can be found in Appendix 4. A total of 25 papers identified in this literature search were directly relevant to community and intermediate care services and have been included in the results section.

3.3.1 The nature of the literature

The literature examining support workers is extremely diverse. The majority of the literature is qualitative in nature exploring attitudes towards assistant roles or the roles themselves within localised case studies. Descriptive audits, case studies and surveys/questionnaires were also dominant. There are some large scale multi-site data set studies which examine nursing assistant roles within nursing skill mix in acute care and nursing homes. The majority of the literature explores nursing assistants, followed by generic assistants. The dominant setting is acute hospitals followed by community, nursing/residential homes and intermediate care. Table 3-2 further details this information.

The literature covered a broad spectrum of topics around the deployment of support workers within health and social care

settings. Table 3-3 outlines the type of literature and the area explored. The majority of the literature explored staff perceptions of the support worker role when a new role was introduced or when an existing support worker role was modified or expanded. Other dominant areas of research included descriptive information about what tasks support workers are allocated; opinion or discussion around accountability, training and competency; and demographic data about the support worker workforce and staff satisfaction.

Table 3-2 Retrieved publications

	Number of publications
Research paradigm	
Qualitative research	42
Survey / Questionnaire	17
Descriptive / Case studies	27
RCT / Controlled trial	3
Mixed methods	5
Literature and systematic reviews	4
Narrative, commentary and position statements	21
Other (e.g. theory)	1
Total	120
Geographical origin	
United Kingdom	92
United States of America	8
Canada	4
Australia	3
Hong Kong	3
Ireland	2
South Africa	2
Sweden	1
Norway	1
Professional Group	
Nursing	60
Midwifery	4
Mental Health	4
Non-Profession related/Generic	18
Physiotherapy	9
Occupational therapy	9
Social work / social care	3
Podiatry	3
Dietetics	3
Radiography	1
Speech and Language	1
Lay Health Workers	1
Setting*	
Hospital	28
A&E	1
Intensive/critical care	8
Maternity	4
Rehabilitation ward	2
Community	25
Primary care (GP)	3
Nursing/residential homes	12

*May have covered several settings

Table 3-3 topics covered within the literature

Research Paradigm	Areas explored
Background	Workforce climate- staffing / skills shortages Why introduce new roles and workers / assistants
Interventions	Cost analysis Activity analysis RCTs – one worker Vs another
Qualitative	Role definition / differences Factors shaping role Perception of roles Evaluation of training & education programmes Nature and impact of delegation and/or supervision The role in a team situation Professional boundaries Staff satisfaction Impact of introducing role on role of other staff (role overlap)
Descriptive	Introduction of a new role Introduction of training strategy Introduction of a new service Survey of role characteristics/specifics Survey of numbers, demographics, pay
Position statements	Regulation Ethics Training and education Need for new roles
Literature reviews / systematic reviews	Staffing of services Effectiveness of skill mix
Theoretical / sociological	Sociology of the professions / workforce Geography / setting and the effect on the workforce Professional and service implications of changing roles

3.3.2 Demographics

Support workers are a growing and diverse group of practitioners in health and social care in the UK. A recent survey of every NHS trust, health authority, local authority social service department and other public, voluntary and private sector organizations across the UK identified the number of support staff utilized in these settings is greater than one million. The authors conclude that this number exceeds the numbers of practitioners belonging to the largest professional groups within healthcare (Saks and Allsop, 2007).

Over 300 job titles were also identified to describe support workers. These included "unqualified workers within clinical or therapeutic teams such as physiotherapy assistants; autonomous

but unregulated practitioners within emerging professions like operating department practitioners; workers providing front-line support for patients, users or carers in the community and in their own homes, such as community rehabilitation assistants; workers providing support to service users in group care settings like care assistants; and support workers employed directly by service users, sometimes called personal assistants" (p170). Given this level of variation in title, it is not surprising then that the literature pertaining to support workers is so heterogeneous.

Saks and Allsop (2007) also demonstrated that the support worker workforce is predominantly female, low paid, and carries out a range of tasks with a plethora of job titles. These findings are supported by other smaller studies (Kessler et al., 2005, Taché and Chapman, 2006, Thornley, 2000, Ellis et al., 1998).

Kessler et al (2005), in their survey and qualitative analysis of social work assistants, Health Care Assistants[1] (HCAs) and teaching assistants, identified that assistants typically reflected the demographics of the community significantly more than professionally qualified staff. This was replicated in the high proportion of assistants with minority ethnic backgrounds and was particularly true for HCAs.

I consider this to be a very important finding. There is some indication within the literature that the local background and 'grass roots nature' of support workers may account for differences in the way qualified and support workers have been observed to undertake client-practitioner relationships (Brown et al., 2003, Hart et al., 2005, Mackey and Nancarrow, 2004). These differences have been attributed on occasion to subsequent improvements in patient outcomes (Kennedy et al., 1999, Si et al., 2006). This 'unique' rapport between support workers and clients has also been shown to be superior to qualified

[1] Health Care Assistant generally refers to a support worker who assists nursing staff

practitioners and/or valued more by clients (Keeney et al., 2005b, Mackey and Nancarrow, 2004, Meek, 1998, Brown et al., 2003).

3.3.3 Training and supervision

To date, although there have been recommendations for nationalised standards for training and regulation (Department of Health, 2004d), there remains no statutory duty for support workers to have any training. More often than not, support worker training is considered to be the responsibility of the employer, health care trust or local authority which, as expressed by McKenna et al (2004), has lead to a plethora of informal or makeshift training programmes.

This is reflected in the evidence base where literature takes the form of discussion papers, namely by professional associations, providing opinion on what levels of training, competence and supervision support workers should have (Ashby et al., 2003, Thomas and Davies, 2005, Ford and McIntyre, 2004, Ford, 2004, Bates, 2004) or descriptive case studies of local training and competency programmes (Aubry et al., 2005, McGloin and Knowles, 2005, Shield et al., 2006, Sutton et al., 2004). The effectiveness or impact of training programmes and/or competencies on outcomes such as support worker performance and patient outcomes is however largely unevaluated (McKenna et al., 2004).

Despite discussion around supervision, I found there to be little consensus within the literature on what should be included in supervision, what the 'optimum' levels of supervision should be or the extent to which measures of quality and patient protection are applied when support workers are utilised to deliver care (Saks and Allsop, 2007). Yet there is some evidence indicating supervision and training can have an impact on patient satisfaction and worker confidence and knowledge (Hancock et al., 2005, Miskella and Avis, 1998, Spilsbury and Meyer, 2005).

In CRAICS literature for example the training of support workers across health and social care professions is perceived by both qualified practitioners and support workers as a means to improve confidence in picking up and reporting changes in physical health and improved communication with health care providers (Hek et al., 2004, Rolfe et al., 1999, Stevenson, 2000).

It seems however that the effectiveness of translating training and supervision into practise is heavily dependent on workplace factors such as patient dependency, relationships with professionally qualified colleagues, the type and setting of care and staffing levels (Hancock et al., 2005, Knight et al., 2004, Ellis and Connell, 2001, Spilsbury and Meyer, 2005).

There is evidence for example that where staffing levels are low, support staff undertake roles that qualified professionals would normally classify as outside support worker remit (Carr and Pearson, 2005, Ellis and Connell, 2001, Spilsbury and Meyer, 2004). This is further compounded by evidence that shortages of qualified staff and staffing re-structuring are directly associated with reduced levels of support worker supervision (Ellis and Connell, 2001).

Furthermore qualitative research conducted into the supervision of physiotherapy assistants (Ellis and Connell, 2001) found that over a five year period although supervision levels had decreased, the technical difficulty of tasks had increased implying assistants were undertaking more difficult tasks without access to greater levels of supervision. Other research demonstrates there is little commonality in tasks performed by generic rehabilitation assistants working across several types of care settings despite access to the same training (Knight et al., 2004).

The importance of experience in developing support worker skills, knowledge and competence has also been highlighted (Doumanov and Rugg, 2003) in particular where generic support workers are required to have broad enough experience to be a competent 'jack of all trades' (Hek et al., 2004, Rolfe et al., 1999). Levels of experience have also been linked to improved length of stay. A large prospective observational study examined the relationship between nurse staffing levels and other staffing characteristics and patient functional gain in 54 rehabilitation facilities in the USA (Nelson et al., 2007). The authors found length of stay to be significantly correlated with RN years of rehabilitation experience ($p=0.0029$) and non-RN years of rehabilitation experience ($p=0.0012$).

Interestingly I identified two instances in the literature which indicated formal training and qualifications among support workers are not always perceived as necessary by clients. Rather in some cases it is competency to deliver the required care that is valued (Mackey and Nancarrow, 2004, Meek, 1998). In addition although there is a patient preference for staff to have the skills and knowledge to be able to advocate for them (Shield et al., 2006), it is quite often the personal qualities such as communication and empathy skills that are potentially more valued. These qualities may well be inherently found in the support workforce due to their less formal and less technical approach to care. As Mackey and Nancarrow (2004) highlight in their study of occupational therapy assistant practitioners, it may well be the lack of formal tertiary education that enhances these attributes.

The importance of education and training however cannot be underestimated when it comes to adverse patient outcomes. Researchers evaluated the results of a questionnaire sent to home care aid personnel in Sweden which assessed the extent of aides engaged in medication administration (Axelsson and

Elmstahl, 2002, Axelsson and Elmstahl, 2004). It was found that education levels had a direct impact on scores for answers to questions around administration of drugs, indications for certain drugs, adverse effects and symptoms. Out of the 341 responses, 95% of home care aides participated in drug administration yet only 55% gave correct or partially correct answers to questions about administration of common drugs.

These findings compound that fact that I found an alarming lack of research evaluating the impact levels of education and training of support staff has on patient outcomes. This concern is further fuelled by a body of nursing literature that demonstrates increases in adverse events when the skill mix of nursing staff is diluted too far with support workers (Buchan and Dal Poz, 2002, Bond et al., 1999, Lankshear et al., 2005, Needleman et al., 2002, Si et al., 2006). Although it cannot be directly assumed from these studies that it is the difference in the level of education and skill of support staff to qualified staff that may cause poorer patient outcomes, it is an area of study that warrants further investigation.

I feel I can confidently conclude from the literature that there is a very fine balance between enhancing the flow and transfer of skill and knowledge from education and training into practise; having the 'right' contextual mix of staffing and supervision levels in place to allow support staff to utilise these skills; and preserving the intrinsic attributes support workers bring to the delivery of care. It is also worth noting that there is little or no research examining the impact the combination of these factors has on patient, service or staff outcomes.

3.3.4 Delegation

The level of training and perceived level of competency of a support worker has also been shown to have an impact on the

extent and types of tasks that are delegated by qualified peers. Indeed the delegation of tasks to support workers is a complex and multifaceted process.

The evidence base shows delegation of work to assistants can depend on any number of factors including the qualified professional's personal assessment or judgment of the assistant's experience and competency levels and the level of trust developed with the assistant (Ellis and Connell, 2001, Hek et al., 2004, Hancock et al., 2005, Ormandy et al., 2004, Mackey and Nancarrow, 2004, Mackey and Nancarrow, 2005b, Stanmore and Waterman, 2007, Spilsbury and Meyer, 2005); the qualified professional's confidence in, own level of experience and clarity in their own role (Baldwin et al., 2003, Bowman et al., 2003, Chang and Lam, 1997, Perry et al., 2003b, Warne and McAndrew, 2004, Johnson et al., 2004, McKenna et al., 2004); or indeed by pragmatic, convenience-driven decisions such as who was available to respond to the particular patient need (Carr and Pearson, 2005).

There is also some evidence to suggest qualified professionals find it difficult to delegate tasks to assistants due to their professional accountability (Mackey, 2004, Mackey and Nancarrow, 2005a, Duffin, 2003, Johnson et al., 2004, Storey, 2005, Wainwright, 2002). As Storey (2005) points out, at present, support workers in health care are not subject to professional registration and are therefore not professionally accountable.

I have included this level of detail about delegation to portray the many variables that can influence what tasks are delegated to support workers and when. The importance of examining the process of delegation is highlighted by evidence that appropriate, structured delegation of tasks to support workers by qualified professionals can improve both practitioner efficiency and overall service efficiency (Saunders, 1996, Saunders, 1998).

The key elements of delegation leading to these outcomes were identified as identification of tasks to be delegated, training assistants to be competent carrying out the tasks, performance coaching of assistants by physiotherapists, physiotherapist training in the delegation process and supportive close working relationships (Saunders, 1996). The author notes that the physiotherapist to assistant ratio also reflected the level and success of delegation. The control site had 12 physiotherapists to one assistant, a ratio resulting in the assistant's time being inadequate to carry out even the peripheral support work. The ratio of one physiotherapist to one assistant was found to be insufficient to occupy the assistant fully. The author suggests that for general musculoskeletal services a ratio of two physiotherapists to one assistant is optimal (1998).

Reinforcing the importance of 'good' delegation practise, is a literature review of the role of support workers in the nursing home sector in the UK which demonstrated very few differences between the roles of support workers and Registered Nurses. The authors attributed this to poor delegation of duties (Perry et al., 2003a). Poor delegation of duties between different staff grades may also go some way to explain the findings of Jenkins-Clark and Carr-Hill (2003) whose large UK multi-site analysis of nursing and support staff workload and activity data found that there was on average little difference in the types of tasks undertaken by different staff grades.

3.3.5 Predictors of support worker involvement in care

Very few papers have been found in this review that analyse service or patient level factors that are associated with the involvement of support workers in delivering care. I would surmise that the reason for this is that configurations of skill mix and staffing, particularly in CRAICS, have been derived from historical staffing patterns rather than analysis of service capacity

or patient need (Bailey, 2005). Although there are examples in the literature of acute hospital staffing algorithms, there are no such tools for CRAICS. We have to draw conclusions about support worker utilisation therefore from data derived from staffing patterns across several different services.

It seems likely from the small amount of literature available that the size and grade mix within a team (or service) and the setting where care is delivered are factors that may influence the utilisation of support workers. Farndon & Nancarrow (2004) report services that employed foot care assistants tended to employ large numbers of podiatrists and podiatrists in these services were more likely to have senior roles. Another paper identified that there is a higher ratio of support workers to physiotherapists in community settings than rehabilitation centres or hospitals in Canada (Loomis et al., 1997).

However as Jenkins-Clarke and Carr-Hill (2003) found, the speciality of the ward (paediatrics, orthopaedics etc) and patient severity did not consistently have a large impact on the division of labour between support and qualified staff. These findings are also supported by other smaller studies (Thomas and Davies, 2005).

3.3.6 Why utilise support workers?

Perhaps the most revealing information extracted from this review is the incongruity that seems to exist between the reasons given for utilising support workers and the evidence base to support them.

There are a number of assumptions as to how the inclusion of support workers in the skill mix or substitution of qualified staff with support workers may be used enhance service outcomes and as I have highlighted in section 2.1 'the policy context', many of

these assumptions have been translated into policy directives in the UK. The evidence to support such suppositions however is largely lacking or contradictory.

This raised concern for me given both policy and the evidence base cite the main reason for utilising support workers is to enhance the capacity of the service, whether that be through increasing the actual numbers of staff available to treat clients or through the delegation of tasks to support staff to 'free up' professional time.

Thornley (2000) for example articulates, through a series of national questionnaires and in-depth interviews with managers and human resource managers in the UK, that HCAs are primarily employed for cost effectiveness, flexibility in working hours and deployment and also as a response to nursing shortages. Managers reported the introduction of HCAs as a 'necessary and vital response to resource constraints and to the declining availability of enrolled, student and registered nursing staff on the wards or in the community' p453. These findings are supported by other research around support workers conducted outside the UK (Rhéaume, 2002, Russell and Kanny, 1998, Taché and Chapman, 2006).

Stanmore and Waterman (2007) who evaluated the introduction of thirty generic support workers across three organisations in the UK cite reasons for their introduction as increasing rehabilitation activity in the community and expansion of service hours and capacity to facilitate earlier discharges from care. It was also proposed the generic role would help reduce the different numbers of staff treating patients and enable more effective use of therapists 'as they would be able to concentrate more on assessments and complex treatment by allocating prescribed treatment plans to the assistants' (p752).

A number of small scale descriptive studies also demonstrate staff *perceive* the introduction of 'new' support worker roles increases availability for trained staff to perform more complex tasks, increases consultations performed by qualified staff and/or increases the availability for appointments and service expansion (Mackey, 2004, Reid, 2004, Russell and Kanny, 1998, Steele and Wright, 2001, Taylor and Birch, 2004).

Qualified professionals are also reported to perceive the introduction of support worker roles as a means to enable them to spend more time with patients and/or deliver more complex care (Anderson, 1997, Keeney et al., 2005a, Leigh, 2003, Saunders, 1998, Taylor and Birch, 2004, Thornley, 2000, Bowman et al., 2003, Reid, 2004) and to work more efficiently/see more clients (Saunders, 1998, Wainwright, 2002, Ormandy et al., 2004, Mackey and Nancarrow, 2004).

As I will demonstrate in the next section, there is limited empirical evidence to verify these perceptions.

3.3.7 Service outcomes

Buchan and Dal Poz (2002) summarise in their review of skill mix evidence, the pattern of findings on qualified nurse / unqualified nursing assistant (support worker) mix is quite varied indicating the use of less qualified nursing staff (support workers) will not be effective in all situations.

Jenkins-Clarke & Carr-Hill (2003) aptly demonstrate the incongruity in the assumption that support workers facilitate improved workforce efficiency in their analysis of the activity and workload of 5208 nurses, clinical support staff and non-clinical support staff over a 10 year period (1991-2000) from 19 hospitals in the UK using the data collected from a nursing administration database. The authors found qualified nurses do not spend more time on direct care when there are more staff from other staffing groups present (clinical support workers and

non-clinical support workers) or when other staff groups undertake more time on overheads / non-direct care.

Morrel et al (2000) also show little impact of support workers on service outcomes. In their randomised controlled trial the authors found there were increased costs and no difference in NHS service usage when support workers were introduced to provide additional postnatal care on top of usual midwifery care (compared to midwife care alone).

Research by Nelson et al (2007) as described earlier demonstrated the proportion of qualified nursing hours per patient day in rehabilitation facilities in the USA significantly correlated with patient length of stay. They also found the greatest predictor of length of stay was the percentage of RNs certified in rehabilitation such that for every 6% increase in certified RNs on the unit, the average LOS decreased by 1 day. This relationship has also been described in another large scale multi-site study that showed the greater proportion of hours of care per day provided by registered nurses can reduce length of stay (Needleman et al., 2002).

There is however some evidence from small scale evaluations that support workers do impact on service outcomes. Si et al. (2006) for example found that adherence to diabetes services rose with increasing numbers of Aboriginal Health Workers (AHWs)/1000 residents and that people in health centres with 10 or more AHWs/1000 residents received more diabetes services than those in health centres with fewer than five AHWs/1000 residents.

Harrison and Nixon (2002) found in their small descriptive study that analysed the self-reported diary logs of nursing activity over 7 day period in an intensive care unit in England that registered nurses spent 3% of their time on non-nursing activities when HCAs were working the same shift. Non-nursing activities carried

out by nurses however doubled to 6% during night shifts when HCAs did not work.

Although I found there to be a general perception within the literature that support workers are utilised to increase service provision and efficiency within CRAICS (Hart et al., 2005, Rolfe et al., 1999, Stanmore et al., 2005a, Stanmore and Waterman, 2007, Stevenson, 2000), and government policy has reinforced these perceptions, there have been no studies directly evaluating this.

There has been one controlled trial comparing service outcomes such as prevention of institutionalization, hospital readmission and length of stay when receiving 'usual community care' or six weeks of rehabilitation in a health and social care facility (Trappes-Lomax et al., 2006). Although the impact of support worker contribution to care is not directly measured, direct care in the intervention facility is provided by generic rehabilitation assistants after a treatment plan is devised by a qualified practitioner. Usual care on the other hand is provided primarily by individual community based qualified practitioners such as district nurses or physiotherapists.

The study did not show any difference between groups for any outcome measure except length of stay at a community hospital for which the intervention group was superior. There was no information however regarding intensity of treatment given to patients in either group, the division of labour or roles of the staff involved.

3.3.8 Patient outcomes

Whilst the reasons for utilising support workers are generally to do with the benefits to services such as enhancing service capacity or improving workforce efficiency. Notably missing from

these ‘reasons’ for utilising support workers is the patient perspective, that is, the purpose of utilising support workers is rarely considered important to patient outcomes. As such, I believe the value of what seems like the ‘unique’ contribution support workers make to the delivery of care has been largely ignored in policy and the evidence base despite there being good evidence to demonstrate that support workers can have a positive influence on patient wellbeing and in some cases patient functional status.

It has been shown that patient satisfaction is highly correlated with specific aspects of care such as courtesy, compassion, promptness, and giving of instructions (Bostrom et al., 1994). These are all roles that support workers undertake regularly and indeed may be areas where support workers have superior skills to qualified staff (Brown et al., 2003, Hek et al., 2004).

Brandon & Morris (2002) demonstrated through interviews with service users, relatives, managers and support workers from three separate mental health agencies in England that service users perceived support workers as vital to their recovery through provision of emotional and practical support, advocacy and companionship.

These findings are also supported by Meek (1998) who evaluated the role of the HCA within a community mental health care team in England. Structured interviews were conducted with 14 service users to elicit their views of the role of the assistant within the team. HCAs were perceived by service users to have superior client-centred approach to counselling and were considered effective communicators despite having no formal training or qualifications. Patients found HCAs more approachable, less intimidating and more receptive than doctors and felt more comfortable disclosing or giving information to a HCA. Patients also reported a more intimate relationship was formed with HCAs. This may be partially explained by another study that evaluated

patient perceptions of assistant practitioners in occupational therapy. Service users reported that assistant practitioners could identify better with themselves due to less complex language used .

Meek (1998) also found that patients highly valued HCAs having time to spend with them and reported the presence of a HCA was as significant as any other 'therapy' employed. Mackey and Nancarrow (2004) also found that although service users could not differentiate between qualified and unqualified staff, they valued having a staff member spend more time with them on a regular basis, which was facilitated through the introduction of assistant practitioners.

Similarly Kennedy et al (1999) descriptively evaluated the introduction of community nutrition assistants (CNAs) to assist with food and health needs of disadvantaged areas within a town in northern England. The evaluation sought to compare the efficiency and cost effectiveness of community dietitians to CNAs in achieving changes in the determinants of food consumption in disadvantaged areas and to identify cost savings and benefits to the NHS. Interviews and focus groups were conducted with nutritionists, food advisors, CNAs and service users. Compared to other food advisors CNAs were perceived by service users to be more accessible, approachable and contactable and were able to access typically hard to reach groups such as homeless, young mothers and the elderly. CNAs also demonstrated superior local knowledge of the neighborhood. In terms of the impact made on changing determinates of food consumption, more than half the service users interviewed had made changes to their eating, shopping and cooking habits and felt these changes would not have happened without the help of the CNA.

Within the CRAICS literature, Brown et al (2003) conducted over 200 interviews with older people receiving health and social care in the community and found that satisfaction with service provision related highly to the relationship with care providers. Service users reported strong bonds between themselves and their home care workers, seeing their regular carers as part of their 'family'. The importance of this relationship to the older people was highlighted when asked about the most important sources of support. As well as naming their family, neighbours and friends, people identified home care staff as the most important group of service providers, particularly where personal care was being provided.

Hart et al (2005) had similar findings and proposes the generic support workers' local background and insight into how social interaction and addressing social issues can counteract the social isolation that older people often feel may partially explain their successful rapport with clients. In addition, support workers themselves perceived the social elements of time and talking have a great impact on patient outcomes.

An evaluation of the introduction of new 'generic' workers, which integrated a Health Care Assistant (HCA) role with a social services community care assistant role reports similar findings (Hek et al., 2004). Service users felt generic workers had important role in promoting mental health and listening to them, particularly when they were feeling low or depressed. They also valued time given to promote independence in personal care, hygiene and dressing and reminding about medications.

Indeed a study utilising non-participant observation of a team of generic rehabilitation workers in rural England for a 7 month period report there were perceptions among all staff that their initial role would be dominated by physical dimensions of

rehabilitation, however in practise the psychosocial features of rehabilitation such as counselling and listening actually dominated the generic support role (Stevenson, 2000). Stanmore (2005) also reports patients expressed the social contact provided by support workers was an important part of meeting rehabilitation goals. In fact there is evidence to suggest that this is a two way process. The ability to maintain relationships with clients and families and the opportunity to participate in improving the quality of life of clients have been reported as key variables that also enhance support worker job satisfaction (Ryan et al., 2003).

All these findings are enhanced by a study examining factors reported by older people as important for their life satisfaction during and after rehabilitation (Åberg et al., 2005). The study demonstrates regaining independence and life satisfaction is primarily dependent on the ability to care for one's own body, ability to walk alone and ability to keep in touch with others. In light of these findings, it is not surprising support worker intervention is so highly valued by older people when it is these activities support workers primarily help older people to regain.

Following on from this, although limited, there is some evidence to show that support workers can also enhance patient function. A randomised controlled trial to evaluate increased intensity of physiotherapy treatment of arm function after stroke compared routine physiotherapy input with additional input provided by either a qualified physiotherapist or a physiotherapy assistant. Patients 1-5 weeks post stroke were randomized to routine physiotherapy or routine physiotherapy plus additional 2 hours of arm therapy with either a physiotherapist or physiotherapy assistant. The first study in the series concludes that there was no detectable benefit to acute stroke patients receiving additional therapy for the upper limb whether administered by a physiotherapist or assistant (Lincoln et al., 1999). The authors acknowledge however that the patients receiving input tended to

be more severe and therefore had more limited recovery prospects irrespective of the intensity of intervention.

The second study in the series however conducted post-hoc subgroup analysis on results from the original trial to ascertain any differences in outcome between groups of patients who received therapy from the physiotherapist or physiotherapy assistant (Parry et al., 1999b). The groups were then subdivided according to severity of initial arm impairment and compared. In more severe patients, no benefits of additional treatment were detected. In less severe patients, significant benefits were found in those who completed treatment with the assistant. These results however may be attributable to the *nature* of the therapy delivered.

Of particular interest however was the analysis of the difference in intervention delivered by the two practitioners, they found the assistant spent a greater proportion of treatment time practising active movements and functional activities with patients whereas the qualified physiotherapist spent a considerable proportion of treatment time teaching and encouraging patients to perform self-practise activities between sessions (Parry et al., 1999a).

Although this research shows some support for improved outcomes when therapy is delivered by a support worker, I feel it reinforces the difficulty in teasing out the possible reasons why this may be the case. For example the outcomes may be attributable more to *what* and *how much* intervention is delivered rather than *who* delivers it.

The impact of skill substitution of support workers for nurses on patient outcomes and the optimal skill mix of registered nurses and support workers however remains under debate, despite being one of the largest bodies of workforce literature (Buchan,

2006, Buchan and Dal Poz, 2002). This does not apply however to CRIACS, where at the time of writing, there had been no empirical evaluations of the impact of support workers on patient outcomes in this setting.

As Buchan and Dal Poz demonstrate in their review of the evidence for skill mix in the health care workforce there are examples of studies which report cost and quality improvements in the "after" phase of introducing or increasing the use of care assistants, whilst other studies suggest either that no overall savings or improvements have been made, or that there have been significant negative effects (Buchan and Dal Poz, 2002).

A study by Needleman et al (2002) which analysed datasets from over 700 hospitals across the USA demonstrated that greater numbers of registered nurse hours were associated with lower adverse outcomes (such as lower rates of urine infections). This did not follow for support workers, where they found no association between greater numbers of nursing support workers utilized per day or higher proportions of support worker hours and lower rates of adverse outcomes. Instead they found that high numbers of licensed practical nurses[2] correlated with higher levels of complications. As the authors acknowledge, it is possible that the outcomes for which they found significant associations for registered nurses may be more sensitive to the contribution that the skills and education of registered nurses make to patient care.

Indeed Zimmerman (2000) reinforces this argument in her analysis of the evidence involved in the substitution debate. She comments that although historically institutions have argued support workers were necessary for lower-level tasks so that registered nurses would have time to meet the higher-level

[2] Licenced practise nurses generally have more training than certified nursing assistants, and less training than registered nurses

patient needs, there is evidence not only that a higher ratio of registered nurses to non–registered nurses in the staff skill mix improves the patient care outcomes but more importantly the registered nurse hours of care per patient per day may be among the most meaningful figures in influencing the quality of patient care.

Bond et al (1999) examined the effects of staffing in 80% of America's acute care hospitals. After adjusting for patient characteristics and severity of illness, the authors demonstrated mortality rates decreased as staffing level per occupied bed increased for medical residents, registered nurses, registered pharmacists, medical technologists, and total hospital personnel. Mortality rates however increased as staffing level per occupied bed increased for hospital administrators and licensed practical-vocational nurses.

A recent systematic review of international evidence for nurse staffing and health care outcomes demonstrated consistent results showing significant inverse relationship between RN staffing levels and mortality rates however use of support workers tends not to demonstrate a link with improved outcomes (Lankshear et al., 2005).

On a smaller scale, a mixed methods study examining the relationship between employment of Aboriginal Health Workers (AHWs) and delivery of diabetes care found that although adherence to delivery of diabetes services rose progressively with increasing numbers of AHWs/1000 residents, there was no independent association between employment of AHWs and control of diabetes predictors such as HbA1c levels or blood pressure as measured by audit of clinical records of 185 randomly selected indigenous people receiving care (Si et al., 2006).

Morrell et al (2000) conducted a randomised controlled trial to assess if additional postnatal support provided by community postnatal support workers had a positive effect on women's general health and NHS costs in England. All women recruited to the study received postnatal care from midwives and the intervention group were randomized to 10 additional visits by support workers for up to three hours per day for the first 28 days.

At six weeks and six months there was no significant difference between the two groups for quality of life (measured by SF-36), health outcomes or breast feeding rates. It is important to note that not all women in the intervention group received 10 visits, with most women receiving 6, and the length of visits varied dramatically ranging from 10 to 375 minutes. It is also worth noting that without further analysis of the roles undertaken by the two groups, this study may have inadvertently assessed the impact of increasing the intensity of input rather than the impact of a particular type of worker.

3.3.9 Staff outcomes

As described earlier, there are vast numbers of support workers working in health and social care in the UK. It is not surprising then that a proportion of the evidence base is devoted to assessing staff outcomes where support workers are involved in delivering care.

There is evidence to suggest that support workers may be exposed to higher rates of injury in skilled nursing facilities where staffing levels are inadequate (of all grades of nursing staff), where there is poor teamwork and communication with peers and colleagues and/or high levels of physical workload (Sofie et al., 2003). Psychological stressors to which support workers are exposed include high levels of responsibility and the need to

prioritize demands from nurses, residents, and families (Sofie et al., 2003).

Role ambiguity has also been demonstrated as a precursor to burnout among support workers in residential homes and burnout has also been associated with organisational aspects such as unrealistic expectations from the service (Blumenthal et al., 1998). In addition, a further study of how different practise areas impact on work demands and conditions for nursing aides in the USA demonstrated the main problems for aides working in nursing homes or homes for the aged are lack of positive challenges and frequent exposure to role conflicts (Eriksen, 2006).

Conversely there is evidence from qualitative research that high levels of job satisfaction among support staff in residential facilities can be enhanced by good organisational support, day-to-day autonomy, the ability to maintain relationships with clients and families and the feeling they were improving the quality of life of their clients (Ryan et al., 2003).

There is also evidence to suggest that qualified professionals are satisfied with the care that support workers deliver (Chang and Lam, 1997, McLaughlin et al., 2000), however this is confounded by concerns around accountability, professional protectivism, competency levels of support staff and lack of formal regulation (Mackey, 2004, Mackey and Nancarrow, 2005a, Saks and Allsop, 2007).

Higher rates of turnover and poor retention among support workers has been linked to lack of stable work relationships; insufficient and discontinuous training; lack of a clear division of roles among health care professionals; and limited opportunities for career progression may influence retention (Si et al., 2006).

Castle and Engberg (2006) undertook a cross sectional study to explore the factors affecting staff turnover in nursing homes in the US. Their study found that nursing home staff are particularly sensitive to workload, with an increasing workload increasing staff turnover. The authors suggest that introducing higher than mandated minimum staffing levels in nursing homes could reduce staff turnover, although this is likely to increase costs. The study also found that nursing staff are sensitive to the quality of the facility, with high turnover associated with low quality.

Similarly support workers have been reported to feel their career advancement is limited and that acquisition of competencies does not necessarily translate to higher pay unless they become qualified or registered practitioners (Ellis et al., 1998, Farndon and Nancarrow, 2003, Kessler et al., 2005). There is also some evidence to suggest support workers represent a more stable workforce, being less likely to leave their employer or role than their qualified peers (Kessler et al., 2005).

Specifically within CRAICS, only one qualitative study examined job satisfaction in intermediate care (Nancarrow, 2007). Overall, professional and support staff reported high levels of job satisfaction, due to: the enabling philosophy of care; higher levels of autonomy; the setting of care; and the teams within which the workers were employed. For most disciplines, intermediate care facilitated the application of existing skills in a different way; enhancing some skills, while restricting the use of others. Barriers to career development opportunities were attributed to the relative recency of intermediate care services, small size of the services and lack of clear career structures. Non-hierarchical management structures limits management career development opportunities, instead, there is a need to enhance professional growth opportunities through the use of consultant posts and specialization within intermediate care.

Other than Nancarrow's research, the evaluation of the impact of support worker roles within community settings on staff has mainly been in the form of qualitative evaluations of the role from qualified practitioner and support worker perspectives (Duffin, 2003, Mackey and Nancarrow, 2005a, Griffiths et al., 2004b, Stanmore et al., 2005a, Stanmore and Waterman, 2007).

The research evaluating qualified professional attitudes towards introduction of new support worker roles quite often refers to periods of instability and confusion over roles (Anderson, 1997, Spilsbury and Meyer, 2005, Daykin and Clarke, 2000, Cattrell et al., 2005, Lindsay, 2004, Mackey and Nancarrow, 2005a) and that practitioners often felt bereavement at loss of parts of their role or devaluing/erosion of their role (Daykin and Clarke, 2000, McCartney et al., 2005, Saunders, 1998, Spilsbury and Meyer, 2005).

Studies have also shown qualified staff perceive that their role became less involved with direct patient care when support workers were introduced (Keeney et al., 2005a), that they would have greater workload to accommodate a supervisory role to support the new workers (Kessler et al., 2005) and felt that the quality of care may be compromised (McLaughlin et al., 2000).

Equally within the literature, support workers have been asked for their perceptions of their role. Support workers are reported to view their role as primarily to deliver direct patient care (Brandon and Morris, 2002, Workman, 1996, Schulman-Green et al., 2005) and to provide patients with support through listening and/or communication (Workman, 1996).

Support workers perceive that they have greater time to spend with patients than their qualified peers (Thornley, 2003, Workman, 1996) and often find it difficult to determine the

difference between their role and qualified professional roles (Wazakili and Mpoufu, 2000).

Ormandy et al (2004) measured perceptions of both support and professional staff in critical care before and after the introduction of senior health care support workers. All staff perceived communication was a vital component of success of introducing the role as well as trust between qualified and support staff and personality of support staff.

The broader health and social care literature contains evidence around how organisational factors can impact on team, staff, service and patient outcomes. Although my research focuses on support workers, CRIACS are generally multidisciplinary teams of practitioners that include support workers. I therefore felt it was appropriate to consider some of this literature for the purpose of this thesis.

There is evidence for example that staff outcomes can be influenced by the work environment. Supportive management styles, clinical career opportunities, planned orientation of staff, supervisor support, work-group cohesion, variety of work, autonomy, organizational constraint and promotional opportunities and an emphasis on in-service/continuing education can improve job satisfaction and retention rates (Kramer and Schmalenberg, 2003, Aiken et al., 2002, Kovner et al., 2006).

Autonomy in nursing roles (Kovner et al., 2006, Kramer and Schmalenberg, 2003, Rafferty et al., 2001) and working in innovative roles such as extended Allied Health Professional roles (Collins et al., 2000) can also lead to job satisfaction. A large scale qualitative study consulting over 7000 NHS staff regarding how multidisciplinary team working contributes to quality, efficiency and innovation in health care demonstrated poorly coordinated and disorganised team leadership within

multidisciplinary teams can lead to low levels of staff participation, low commitment to quality, poor team member mental health and low levels of effectiveness and innovation (Borrill et al., 1999).

3.4 Support worker role in CRAICS

This section of the literature review focuses specifically on research evaluating the role of support workers within community rehabilitation and intermediate care teams in the United Kingdom. Literature was identified from the search strategy described above in section 3.1.

3.4.1 The support worker role

The literature examining the role of support workers within community rehabilitation and intermediate care services demonstrates a plethora of roles undertaken. The following tables (3-4 and 3-5) summarise the varying types of roles undertaken by support workers in community rehabilitation and intermediate care services as reported in the literature.

Factors influencing the way support worker roles are shaped and defined are detailed in the following section (3.4.3). Specifically in CRAICS however, there is evidence from qualitative research that generic rehabilitation assistants use a broader range of skills in the community compared to acute ward settings (Stanmore and Waterman, 2007). These skills include promotion of patient independence and social recovery.

This is also supported by Nancarrow (2005) who analysed the roles of support workers in two different types of intermediate care teams. One team provided short term 'rapid response' care to older people, the other provided longer 'hospital at home' care provision. Nancarrow argues the support worker roles differed between these two teams for several reasons, one being because

of the length of time of the intervention. She explains the longer the duration of care provision, the more opportunity there was for tasks to be delegated to support workers and hence greater variation in roles. Joint visits between support workers and qualified professionals as well as the complexity of tasks required within the provision of care also influenced support worker roles.

Table 3-4 Direct care roles

Role	Detail of role
Rehabilitation	• Encourage clients to adhere to rehabilitation programme (Nancarrow et al., 2005b, Godfrey et al., 2005, Stanmore and Waterman, 2007) • Conduct / supervise individual exercise programmes (Pullenayegum et al., 2005, Nancarrow et al., 2005b, Ellis et al., 1998, Knight et al., 2004, Stanmore and Waterman, 2007) • Practise & instruct practical tasks e.g. transfers, sit to stand, washing & dressing (Knight et al., 2004, Hempel, 2006) • Teach client how to mobilise/perform task (Pullenayegum et al., 2005) • Correct posture (Knight et al., 2004) • Assist with exercise classes (Ellis et al., 1998) • Take exercise classes (Hempel, 2006) • Swallowing assessment (Hempel, 2006) • Prescribe/fit walking aids (Hempel, 2006) • Teach client how to use aids (Hempel, 2006) • Splinting (Hempel, 2006) • Initial hand assessments (Nancarrow et al., 2005b)
Personal care	• Meal preparation (Pullenayegum et al., 2005, Hek et al., 2004) • Dressing clients (Pullenayegum et al., 2005, Knight et al., 2004, Hek et al., 2004) • Washing clients (Hek et al., 2004) • Feeding (Hek et al., 2004) • Grooming (Nancarrow et al., 2005b, Hempel, 2006)
Medical/nursing	• Basic wound care (Hek et al., 2004) • Diabetes care (Hek et al., 2004) • Skin and foot care (Hek et al., 2004) • Apply ointments (Nancarrow et al., 2005b, Hek et al., 2004) • Medication management / administration (Hancock et al., 2005) • Record and monitor BP, Glucose, etc.(Hek et al., 2004) • Dress leg ulcers (Hempel, 2006) • Catheterisation (Hempel, 2006) • Removing stitches (Hek et al., 2004, Godfrey et al., 2005)
Emotional support	• Listen and talk to clients (Hek et al., 2004, Godfrey et al., 2005) • Provide support and comfort (Hek et al., 2004) • Promote mental health (Brown et al., 2003, Hek et al., 2004) • Build a relationship with client (Pullenayegum et al., 2005)
Equipment	• Adjust and measure aids (Stanmore and Waterman, 2007) • Prepare equipment (Pullenayegum et al., 2005, Nancarrow et al., 2005b, Stanmore and Waterman, 2007) • Teach use of aids (Knight et al., 2004) • Make aids (e.g. splints)(Pullenayegum et al.,

	2005)
Therapeutic intervention	• Massage(Pullenayegum et al., 2005) • Apply stretches (Ellis et al., 1998) • Apply traction / heat (Knight et al., 2004)
Leisure support	• Pub lunch, visit art gallery, play board games (Godfrey et al., 2005) • Quizzes, darts, creative work (Knight et al., 2004)
Social support	• Take patient to shop to buy ingredients/shopping (Nancarrow et al., 2005b) • Finance management (Shield, 1998, Stanmore and Waterman, 2007)

Table 3-5 Other roles

Indirect care roles
Assist with treatment planning/review care programmes (Stanmore and Waterman, 2007)
Prepare and maintain environments for clinical procedures (Ellis et al., 1998, Shield, 1998)
Obtain a history (Godfrey et al., 2005)
Organise GP visits (Shield, 1998, Stanmore and Waterman, 2007)
Monitor progress (Ellis et al., 1998, Knight et al., 2004)
Attend ward rounds/case conferences (Hempel, 2006, Stanmore and Waterman, 2007)
Health promotion (Chang, 1995)
Contacting and informing relatives (Perry et al., 2003b)
Escort patients (Stanmore and Waterman, 2007)
Feedback to professionals (Benson and Smith, 2006)
Refer to other professionals (Nancarrow et al., 2005b)
Administrative roles
General administrative duties (Knight et al., 2004, Ellis et al., 1998) (Spilsbury and Meyer, 2004, Chang, 1995, Hancock et al., 2005) (Knight et al., 2004)
Organise appointments & classes (Knight et al., 2004, Stanmore and Waterman, 2007)
Write in notes/retrieve and store information (Chang, 1995)
Admission & discharge process (Ellis et al., 1998, Knight et al., 2004)
House keeping (Spilsbury and Meyer, 2004, Chang, 1995, Hancock et al., 2005) (Ottley et al., 2005, Stanmore et al., 2005b, Ottley et al., 2004)
Other
Encourage cross agency working / cross boundary working (Ottley et al., 2005, Stanmore et al., 2005b)
Continuity of care (Benson and Smith, 2006) (Griffiths et al., 2004a, Stanmore and Waterman, 2007)
Support professionals (Stanmore et al., 2005b)
Promote interdisciplinary communication (Pullenayegum et al., 2005, Stanmore and Waterman, 2007) (Enderby and Wade, 2001, Vaughan et al., 1999, Barton et al., 2005b, Godfrey et al., 2005, Nancarrow, 2004b)

3.4.2 Professionally qualified Vs support worker roles

The national job profiles for physiotherapy, occupational therapy, community nurse, social worker, generic therapist, home carers, speech and language therapy and podiatry were reviewed. The selection of these job profiles for review was based on literature describing the skill mix of CAICS (Barton et al., 2005b, Enderby

and Wade, 2001, Godfrey et al., 2005, Nancarrow et al., 2005b, Vaughan et al., 1999).

I then compared these profiles to the literature examining support worker roles (identified above in Tables 3-4 and 3-5) to ascertain where the difference in role lay between professionally qualified practitioners and support workers. An excel spreadsheet was used to identify the terminology utilised in the NHS job profiles and in the literature (Appendix 4) into terms used to describe support roles and those to describe qualified roles. Five a-priori themes, utilised by NHS job profiles, were then used to analyse where the differences lay between support and qualified professionals. These included: communication skills; analytical skills; patient care; freedom to act; and emotional effort. Table 3-6 details the results of the analysis under these a-priori headings.

In summary, the main differences I identified between qualified professional roles and support worker roles appeared to be the 'freedom' to carry out assessments and diagnosis; planning treatment or establishing/progressing care pathways; and the delivery or communication of sensitive information. These are all considered qualified roles. Support workers tended to be restricted to specific client types or groups (e.g stroke patients) and specific settings (e.g. stroke wards / community rehabilitation) whereas qualified professionals were not restricted in their practise by client type or setting. There were less clear differences between roles for the exact nature and type of treatment that can be delivered by either practitioner; adaptation and progression of treatment; history taking; and educating clients.

In addition, several articles within the evidence base talk of the psychosocial elements of care provision such as 'time', 'friendship' and 'listening' as essential parts of rehabilitation and the support

worker role (Åberg et al., 2005, Brown et al., 2003, Hart et al., 2005, Hek et al., 2004, Mackey and Nancarrow, 2005a, Stevenson, 2000). These elements of therapy were not addressed within the NHS national job profiles but should be acknowledged as an important element of the support worker role.

Whether or not these elements of care can be used to separate qualified and support worker roles is debateable. For example it is argued that these attributes should not be confused with the role of 'caring' which is viewed as intrinsic to both support and qualified staff roles (O'Dowd, 2004). I found it obvious however from the evidence base that support workers seem to have a greater degree of time to develop friendships and listen to clients than their qualified peers.

Table 3-6 Qualified Vs support roles

Factor	Professionally qualified	Support worker
Communication	• Communicates *condition related information* to clients • Communicates on *highly sensitive issues* • Communicates *sensitive information* concerning patients medical condition	• *Exchanges* information with patients & relatives • Communicates *factual* information to clients
Analytical skills	• Skills for *assessing & diagnosing* conditions • Treatment for a range of conditions • Assesses risk and needs of clients, determines a course of action • Judgments on problems requiring investigation	• Assess client's response to treatment • Judge when to progress • Judgment on modifications to suit client
Patient care	• Assess, plan, implement & evaluate clinical care of patients	• Plans and provides programmes of therapeutic activities within framework established by professionally qualified staff • Facilitates group therapy sessions • Provides individual support • Acts on own initiative in providing personal care in the community • Provides delegated care
Freedom to act	• Autonomous practitioner • Works within codes of practise and professional guidelines	• Follows procedures and treatment plans • May work alone • Supervision required
Emotional effort	• Impart unwelcome news (e.g. rehabilitation prospects)	• Supports patients

3.4.3 Factors shaping the support worker role

As demonstrated above, there is much variation in support worker roles. Another important part of the evidence base pertaining to support worker roles is therefore research examining the factors that have contributed to role variation. Table 3-7 summarises factors I have identified from the literature that contribute to differences in support worker roles.

As discussed earlier, Hancock et al (2005) undertook a qualitative evaluation of HCA roles after the introduction of an educational training programme. A range of personal and contextual factors including professional-support staff relationships, hierarchy, staffing levels, experience, responsibility, patient dependency, attitudes and values were considered more influential than training in dictating the variation in tasks undertaken after the training programme.

Another evaluation of the role of generic rehabilitation assistants working across several types of care found that nursing tasks tended to be performed only by teams working on wards and some assistants spent nearly a fifth of their time on administrative duties while others spent 95% of their time on therapeutic interventions (Knight et al., 2004). The authors hypothesize such variation is attributable the nature of the tasks required, differences in team focus, structure and process and also tasks of a more sophisticated level are beyond what could be easily delegated to assistants.

Table 3-7 factors shaping support worker roles

Factor	Examples in the literature
Setting	• Support workers working as sole practitioner in clients' homes develop more autonomous roles (Loomis et al., 1997) • Activities undertaken by physiotherapy assistants differed in hospital settings and community settings (Benson and Smith, 2006)
Staff types	• Assistants in a therapeutic environment tend to pick up & practise more therapy type skills (Knight et al., 2004) • Nursing tasks tended to be performed only by support workers working on ward (Stanmore and Waterman, 2007) • There were marked differences in the Rehabilitation Assistant role, depending on the clinical speciality within their area of work (Baldwin, 2003).
Training and education	• Professionals control access to and content of training => variation in roles of support workers (Webb et al., 2004, McKenna et al., 2004) • Assistant roles have developed so differently due to localised employer regulation of training i.e. no national standards – locally developed (Farndon and Nancarrow, 2003) • Podiatry support worker roles limited due to limited education structures and supervisory limits (Knight et al., 2004)
Nature of the tasks & interventions	• Tasks of a more sophisticated level are beyond what could be easily delegated to assistants (Ormandy et al., 2004) • Each intensive care setting had certain tasks that they did or didn't delegate due to the nature of task / expertise required e.g. assist with intubation (Nancarrow, 2004b)

Delegation	• High level of clinical expertise of professional lead to low level of delegation to support worker and hence different roles (Johnson et al., 2004) • Role and activities of support workers dependent on how senior or how experienced nurses are lead to greater confidence in role and hence greater delegation (Baldwin, 2003) • Variability in the role of support workers due in part to the responsibility of the RN in assigning duties to individual support workers (Baldwin et al., 2003, Bowman et al., 2003, Chang and Lam, 1997, Perry et al., 2003b, Warne and McAndrew, 2004) • Ambiguity around qualified professional role and support worker role lead to variation in delegation practise and tasks assigned to support workers (Chang and Lam, 1997, Wazakili and Mpoufu, 2000) • Usefulness and roles of support workers is directly related to nurse skill and willingness to delegate (Saunders, 1996) • The most junior physiotherapist found it difficult to delegate duties (Chang, 1995) • Nursing seniority/rank sig differed in their opinion as to which roles support workers can/cannot undertake (Ellis and Connell, 2001, Hek et al., 2004, Hancock et al., 2005, Ormandy et al., 2004, Mackey and Nancarrow, 2004, Mackey and Nancarrow, 2005b, Stanmore and Waterman, 2007) • Relationship and trust levels with support worker leads to greater likelihood of tasks delegated (Baldwin et al., 2003, Spilsbury and Meyer, 2004, Mackey and Nancarrow, 2004) • Availability of more advanced roles for OT influenced delegation to assistant practitioners (Mackey and Nancarrow, 2004)
Staff numbers/staffing levels	• Qualified practitioner staffing levels directly dictate the extent and type of support worker duties/roles (Saunders, 1998) • Ratio of support worker to physiotherapist - 12 physiotherapists to one assistant resulted in the assistant's time being inadequate to carry out minimum levels of support work (Saunders, 1998)
Professional protectionism / ownership of tasks	• 'Physiotherapists like the satisfaction of hands on treatment and don't want to give this up to assistants.' (Mackey and Nancarrow, 2005a) • Occupational Therapists reluctant to delegate as did not want to lose satisfaction associated with treating patients (Fullbrook, 2004) • Nursing staff disillusioned with relinquishing care to HCAs (Wainwright, 2002, Chang, 1995, Hancock et al., 2005, Nancarrow and Mackey, 2005).

Accountability structures / Acceptance of responsibility	• Professionals reluctant to release tasks due to accountability to their patient (Hancock et al., 2005, Jenkins Clarke and Carr Hill, 2003)
Level of patient dependency	• More dependent clients have less support worker involvement (Doumanov and Rugg, 2003)
Qualified professional skill	• Support workers felt they were directed in their interventions by the clinical reasoning skills of their qualified colleagues (2006, Ashby et al., 2003, Webb et al., 2004, Storey, 2005, Ford, 2004)
Employer / state / professional body regulation	• Professional body position statements/national occupational standards on what support workers can and cannot undertake e.g. podiatry assistants cannot utilise a scalpel thus restricting their role (Saunders, 1996, Saunders, 1998)
Professional / management dedication to support role	• Delegation of tasks more successful if management and physiotherapists supported new role (Mackey and Nancarrow, 2004) • OT Assistant Practitioner role defined and influenced by practitioners and professional organisations who embrace the new role (2005)

3.5 Key points

3.5.1 Roles

- Roles vary with a variety of factors. Within CRAICS roles have been around to vary with setting (greater roles and skills in community vs ward) and length of care (greater length of care, more diversity in roles)
- Support worker roles may include:
    - Direct care: Rehabilitation, Personal care, Medical/nursing, Emotional support, Equipment, Therapeutic intervention, Leisure support and Social support
    - Indirect care: Assist with treatment planning/review care programmes, Prepare and maintain environments for clinical procedures, Obtain a history, Organise GP visits, Monitor progress, Attend ward rounds/case conferences, Health promotion, Contacting relatives, Escorting patients, Feedback to professionals, Refer to other professionals
    - Administrative roles: General administrative duties, Organise appointments & classes, Write in notes/retrieve and store information, Admission & discharge process and general house keeping
- Qualified professionals generally have the following attributes and therefore differ in their role to support workers as they have the freedom to assess and diagnose; freedom to treat a variety of patient types in any setting; undertake planning of treatment or establishing/progressing care pathways; are responsible for delivery or communication of sensitive information.
- Support workers tend to be restricted to specific client types or groups and settings
- There are less clear differences between roles for the exact nature and type of treatment that can be delivered by either practitioner;

adaptation and progression of treatment; history taking; and educating clients.

Tables 3-8 to 7-10 detail the key points from the literature pertaining to support workers across health and social care.

Table 3-8 Summary of patient outcomes

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
Patient outcomes (all literature)	Health status	Staffing mix / skill mix	Conflicting evidence - greater numbers of support workers/ greater support workers per bed (compared to qualified nursing or medical staff) may lead to greater mortality rates or higher levels of complications; no impact at all on reducing incidence of health complications; no impact on service utilisation	Needleman et al (2002) Zimmerman (1999) Bond et al (Lankshear et al., 2005) (Si et al., 2006). (Parry et al., 1999b)
		Substitution of physiotherapy assistant for physiotherapist in stroke care	Achieved better functional gains in mild stroke patients than qualified physiotherapist	(1998).
	Satisfaction	Service users find support workers more accessible, approachable and contactable		Meek (2005b) Keeney et al (Meek, 1998)
		HCAs perceived by service users to have superior client-centred approach to counselling to their qualified colleagues		(2002)
		Mental health service users found support workers offered vital emotional and practical support, advocacy and companionship.		Brandon & Morris (2000)

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
		The ability to identify caregivers (support worker vs qualified nurse)	Did not significantly predict patient satisfaction with nursing care scores	Lange et al (Nancarrow, 2004b, Ellis and Connell, 2001, Stanmore and Waterman, 2007)
		Level of support worker formal training/qualifications	Little impact on patient satisfaction as long as they were appropriately trained	Mackey and Nancarrow (2004)
Patient outcomes (CRAICS)	Support role	Satisfaction	Related to relationship with care providers	Brown et al (Åberg et al., 2005)
			Service users value psychosocial features of rehabilitation such as counselling, listening and social contact	Hek et al (2004)
			Service users value time given by support workers to promote independence in personal care, hygiene and dressing and reminding about medications	Hek et al (2004)
		Social contact provided by support workers	Important part in meeting rehabilitation goals	Stanmore (2005)
		Regaining independence and life satisfaction for older people	Dependent on the ability to care for one's own body, ability to walk alone and ability to keep in touch with others	(Hek et al., 2004, Rolfe et al., 1999, Stevenson, 2000)

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
	Demographics	Local background of support workers, their insight into how social interaction and addressing social issues	May counteract the social isolation that older people feel; may explain successful rapport with clients	Hart et al (2005)
	Knowledge and skills	Service users feel generic health and social care practitioners should have the ability to advocate for the patient and have specific knowledge relating to: common ailments; appropriate equipment; all other practitioner roles; medication; and local resources		Sheild et al (2006a)

Table 3-9 Summary of staff outcomes

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
Staff outcome	Shape of support worker roles	Community setting	Support staff more autonomous	(Saunders, 1998)
		Staffing numbers / levels	Less staff increases complexity of support roles	(Baldwin et al., 2003, Spilsbury and Meyer, 2004, Mackey and Nancarrow, 2004) (Benson and Smith, 2006)
		Staff types	More therapy staff leads to greater therapy role	(Knight et al., 2004) (Stanmore and Waterman, 2007) (2003)
	Safety	Staffing inadequacies of all grades of nursing staff, poor teamwork and communication with peers and colleagues and the high physical workload	Increased risk of injury	Sofie et al (2003)
		High levels of responsibility, the need to prioritize demands from nurses, residents, and families	High levels of support worker psychological and emotional stress	Sofie et al (Fowler, 2003)

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
	Retention and turnover	Lack of stable relationships; insufficient and discontinuous training; lack of a clear division of roles among health care professionals	Influence retention and performance of support workers	Si et al (2006)
		Limited opportunities for HCA career progression	Influence retention and performance of support workers	(Blumenthal et al., 1998)
	Job Satisfaction	Role ambiguity	Precursor to burnout	(Blumenthal et al., 1998)
		Unrealistic expectations of support workers from the service	Precursor to burnout	(Daykin and Clarke, 2000, McCartney et al., 2005, Saunders, 1998, Spilsbury and Meyer, 2005)
		Good organisational support	High levels of job satisfaction amongst support workers	Ryan et al (2003)
		Day-to-day autonomy	High levels of job satisfaction amongst support workers	Ryan et al (2003)
		The ability to maintain relationships with clients and families	High levels of job satisfaction amongst support workers	Ryan et al (2003)
		The feeling they (support workers) were improving the quality of life of their clients	High levels of job satisfaction amongst support workers	Ryan et al (2003)
	Role change / new roles	Communication and trust between qualified and support staff	Essential 'success' components of introducing support worker roles	Ormandy et al (2004)
		Qualified professionals perceive their role becomes less involved in patient care with the introduction of spt workers		(Keeney et al., 2005a)

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
		Qualified professionals require time for supervisory role of support staff		(Ellis and Connell, 2001)
	Supervision	Variation in the level and amount of supervision programmes	Link to variation in support worker ability and performance	Spilsbury & Meyer (2005)
		Amount of supervision provided and closeness of relationship between support and qualified staff	Does not always impact on the type or complexity of tasks support workers undertake	Ellis and Connell (2001)
		Supervision by qualified staff	Can provide role reassurance and emotional support	Miskella & Avis (1998)
		Low levels of supervision	Caused by: lack of qualified staff time, shortages of qualified staff, staffing re-structuring, setting of care (e.g. community) and the level of external training schemes attended	Ellis and Connell (2001) Spilsbury & Meyer (2005)
		Training of supervisors in supervision or task delegation	Little impact on support worker satisfaction with the level and content of supervision received	(Ellis and Connell, 2001)
		Higher levels of supervision	Support workers working in close proximity with the supervising practitioner	(Ellis et al., 1998, Farndon and Nancarrow, 2003, Kessler et al., 2005)
	Training	Training does not necessarily lead to greater career prospects		(Knight et al., 2004)

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
		Setting / context (type of team/ward), relationship between support and qualified staff and patient dependency may be more influential in determining support worker activities than attendance of training programmes		Hancock et al (2005) (Loomis et al., 1997).
Staff outcomes (CRAICS)	Training	Training support workers across health and social care	May improve confidence in picking up and reporting changes in physical health and improve communication with health care providers	(Doumanov and Rugg, 2003)
	Skills	Clinical reasoning skills of qualified staff are gained through formal education and professional practise		(Doumanov and Rugg, 2003)
		Support staff are directed in their interventions by the clinical reasoning skills of their qualified colleagues, using their work experience to improve their ability to perform the delegated duties		(Doumanov and Rugg, 2003)
		Not carrying out assessments	Reduced opportunity to improve clinical reasoning skills	(Doumanov and Rugg, 2003)

Table 3-10 Summary of service outcomes

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
Service outcomes	Utilisation of support workers	Services that employ large numbers of podiatrists and more senior podiatrists	More likely to employ podiatry assistants	Farndon & Nancarrow (2004)
		Community settings	Higher ratio of support workers to physiotherapists than rehabilitation centres or hospitals	(Thomas and Davies, 2005)
		Client dependency	More dependent clients *may* have less support worker involvement	Jenkins-Clark and Carr-Hill (2003) (2000)
	Skill mix	Qualified nurse / unqualified nursing assistant (support worker) mix	Varied and often conflicting	Buchan and Dal Poz (2002)
			Postnatal support workers increased service costs and did not influence NHS service usage	Morrell et al (Si et al., 2006)
		Use of support workers in Indigenous Australian diabetes care or community nutrition in the UK	Increased capacity of and adherence to particular types of services	(1999) Kennedy et al (Baldwin, 2003)
		Qualified nurses do not seem to spend more time on direct care when there are more staff from other staffing groups present		Jenkins-Clark and Carr-Hill (2003)
		There is little difference in the types of tasks undertaken by different staff grades		Jenkins-Clark and Carr-Hill (2003)

Outcome	*Theme*	*Dependent variable*	*Association*	*Ref*
		Poor delegation by qualified practitioners	May lead to poor differentiation in tasks undertaken by different level staff	(2003)
		Good delegation by qualified practitioners	May improve work activity, patient throughput and levels of support worker competence	(Saunders 1996, Saunders 1998)
Service outcomes (CRAICS)	Skill mix	Length of stay at a community hospital	May be reduced by support worker input	(Stevenson, 2001, Enderby and Stevenson, 2000)

4 Research Questions

4.1 Introduction

The review of the support worker literature and policy documents has highlighted several areas that I feel require further research. This section of my thesis uses the findings from the literature and policy reviews to inform the development of my research questions and overall research objectives.

4.2 Main themes from the literature and policy reviews

The evidence base demonstrates that support workers in health and social care are integral to service provision and are a growing community. Policy directives and the evidence base together cite service expansion/capacity and improving workforce efficiency as the main reasons for utilising support staff. While there is wide spread acknowledgement of this, little empirical evidence exists to support these reasons, particularly in CRAICS.

In particular there is a distinct lack of evidence within CRAICS to support whether or not the proportion of support workers within a team enables qualified staff to use their time more effectively (by seeing only complex patients for example), enables improved service outcomes (such as reducing length of stay or increasing turnover of clients) or indeed whether support workers undertake greater proportions of less complex care and again if this impacts on the use and efficiency of staff time. There is also little evidence to support the assumption within policy recommendations that increasing the pool of support workers will help to alleviate some of the problems associated with workforce shortages among qualified staff. In addition there is little information available regarding the current CRAICS workforce which reduces the ability of service managers, commissioners and policy makers to plan for future service demand (Department of Health, 2000a).

Furthermore, there is no evidence measuring the impact support worker contribution to care has on service, patient and/or staff outcomes in CRAICS and also the underlying organisational factors that may enhance these outcomes. There is therefore insufficient evidence available to

inform services, in particular CRAICS, of the best way to staff their service to enhance patient, staff and service outcomes.

As I have highlighted in the previous section, the concern with this is that there is evidence in the nursing literature that diluting the skill mix with support staff either has no impact on service and workforce outcomes or at worst may increase the incidence of adverse patient outcomes. I acknowledge the care delivered in acute hospital settings differs to the type of rehabilitative care delivered in most CRAICS and as such the results of such research cannot be directly translated into this setting. However there is no empirical evidence at all that measures the impact support workers have on patient, service or staff outcomes in CRAICS.

On the other hand there is some supporting evidence from qualitative and observational research that support worker contribution to care involves a large proportion of psychosocial care and support and it is these factors combined with what may be a 'unique' approach to care that can have a positive impact on patient outcomes in terms of satisfaction measures. Alternatively it could be that support workers deliver more intensive and repetitive rehabilitation or indeed a combination of these factors.

As Buchan and Dal Poz acknowledge, a fundamental flaw in many skill mix studies has been that very few examine role or skill, with most focusing on grade, job title or qualification and use these as a proxy for role (Buchan and Dal Poz, 2002). Although there is quite a lot of information in the evidence base describing support worker roles, I feel it is important to examine and define roles in this setting to enable more accurate interpretation of outcomes based on the titles 'support worker' and 'qualified professional'.

Using the evidence base and policy as a guide, I perceive there to be a large discrepancy between the perceived and actual benefits of utilising support workers in CRAICS. This is compounded by the lack of empirical evidence to refute or confirm these perceptions. Services and policy makers alike therefore have a very limited evidence base from which to

inform decisions about staffing and delivering care. Given the population and workforce is ageing and older people are increasingly utilising services like CRAICS, there is a need to ensure the workforce is as efficient as possible in delivering their services and that older people are receiving appropriate care. As such I feel the following research objectives and questions will add to the knowledge base and help to unravel some of these discrepancies.

4.3 Research Objectives

The overall research objective is therefore to use the current evidence base and results from this thesis to compile a description of the factors that enhance patient, staff and service outcomes when support workers are involved in delivering rehabilitative care to older people in the community.

4.4 Research questions

In order to realise the research objective I felt the following questions were appropriate:

1. Is the utilisation of support workers and proportion of direct care delivered by support workers in CRAICS related to any patient, team or organisational factors?

2. How and to what extent do support workers contribute to the delivery of care?

3. To what extent does support worker utilisation and contribution to care impact on patient, staff and service outcomes?

In order that these above questions can be addressed appropriately I felt the following research questions were also required:

4. How do support workers fit within current CRAICS workforce and service models? What does the current CRAICS support workforce look like?

5. What is the support worker role within CRAICS and how does this role differ from that of professionally qualified staff?

5 Methods

5.1 Introduction

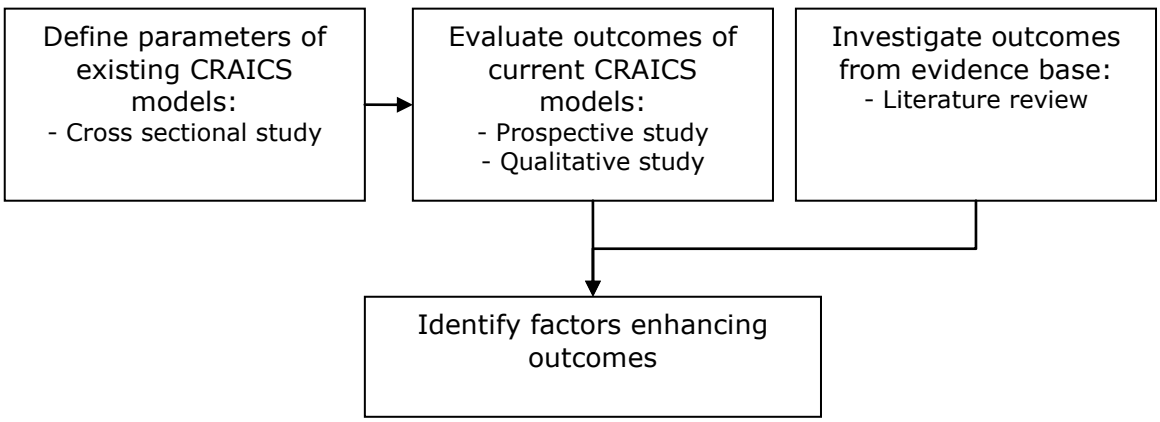
As I have described earlier in section 1.5 'contribution and differentiation', this research is part of a larger study examining the costs and outcomes associated with workforce dynamics in intermediate care and community rehabilitation teams. The following methods are described for this thesis however it is important to recognise that they sit within the broader study.

A summary of methods is presented here along with the rationale for each methodology employed. Methods and analysis strategies for each study are explicitly detailed under each study heading in the results section.

5.2 The overall research design

Cross sectional, prospective and qualitative studies were employed to answer the research questions. The overall design of the project is illustrated below in Figure 5-1. Each research question, corresponding source of data and research method is summarized in table 5-1. Below I have presented a summary of methods for each research question.

Figure 5-1 Overall research design



What is the support worker role within CRAICS and how does their role differ to professionally qualified staff?

Review of current literature and national guidance will be used to describe the roles of support workers in CRAICS and also to compare the differences between the roles of support workers and professionally qualified staff. Qualitative focus groups and interviews with qualified and support staff from teams participating in the prospective study (detailed below) will also used to examine this question.

How do support workers fit within current CRAICS workforce and service models? What does the current CRAICS support workforce look like?

A cross sectional study will be used to examine the extent of support worker involvement in community and intermediate care services and to define the current workforce and service models within CRAICS.

Services will be identified through the Community Rehabilitation Team Network and through a survey of Chief Executives of PCT and NHS trusts nationally.

Community and intermediate care teams (n=250) will be invited to complete a service proforma and their staff to complete a Workforce Dynamics Questionnaire (WDQ).

The 'service proforma', requests service level details looking at different components of health service organisation such as the service structure, staffing, team meetings etc. The WDQ requests information at a personal level from all staff including demographic details such as date of birth, length of time in post and pay banding.

The data derived from the cross sectional study service proforma and WDQ will then be used in the following ways:

- To describe how and to what extent support workers are utilised within older people's community rehabilitation and intermediate care services
- To describe the workforce and service variations in which support workers are embedded
- To describe the current demographic profile of support workers in CRAICS

The identification of information from this cross sectional study will then inform the next question.

What factors are related to the utilisation of support workers in community rehabilitation and intermediate care services in the UK?

This question examines two factors:

- The relationship between support worker utilisation and service configuration factors – for example are support workers more prevalent in teams with certain characteristics?; and
- The relationship between support worker utilisation and patient level data – for example are there any relationships between patient types/characteristics or patients with particular needs and support worker utilisation?

Service configuration factors will be sourced from the cross sectional study described above. Of interest is how the ratio of qualified professionals to support workers and/or number of support staff differs across teams according to:

- The number of referrals per year
- The number of qualified practitioners in the team
- The location of care provision and
- The level of care provided (at a service/team level).

Patient level factors will be sourced from a prospective study described below. Of interest is how support worker utilisation at patient level differs according to:

i) Patient level data (sourced from patient level records)

- Age
- Gender
- Level of care on admission
- Health status on admission

  EQ-5D score

  TOMS score (impairment, activity, wellbeing, participation)

ii) Team level data (sourced from service proforma)

- Ratio or proportion of qualified to support staff

A prospective longitudinal study will be conducted with 20 teams identified from the original cross sectional study to examine these factors as well as to measure outcomes.

For each team, in-depth data will be obtained on service configuration (using a more comprehensive version of the service proforma), and staff, patient and service outcomes will be measured.

Patient level data will be collected for each consecutive patient admitted to the 20 teams over a three month recruitment period. A patient's level of care need and health and wellbeing levels will be recorded for patients at the beginning and end of their care or after 3 months with the team. Level of care need will be assessed using the Level of Care tool and health and wellbeing using the Therapy Outcome Measure score (TOMS) and patient administered quality of life score (EQ5D). These outcome measures are detailed in full in the methods section of the prospective study (6.3.2).

Other relevant information recorded on admission and discharge will include age and gender and dates of admission and discharge.

In addition to this information, for every patient recruited to the study, an integrated health record will be completed for each client on which all health and health related contacts will be recorded by staff for the duration of the client's episode of care. The record will include the number of contacts, duration of each contact, the practitioner involved for each contact and the type of contact/input (direct or indirect). This record will allow me to analyse the extent of support worker contribution to care at a patient level.

How and to what extent do support workers contribute to the delivery of care?

This question specifically examines the proportion of direct patient care delivered by support workers and also the type of care delivered (face to face care or administrative). The aforementioned integrated record of staff contact from the prospective study will be used to examine this question. To contextualise this information, data from the literature review, focus group interviews with staff from teams and individual interviews with managers and support workers will also be used.

To what extent does support worker contribution to the delivery of care impact on patient, staff and service outcomes?

This question examines relationships between support worker utilisation/input and patient, staff and service outcomes. The aforementioned prospective study will again be used to examine this question. Of interest is:

i) How the proportion of care delivered by support workers (sourced from patient level data) impacts on the following outcomes and

ii) How the ratio of qualified to support staff in teams (sourced from the service proforma) impacts on these outcomes

Patient outcomes:

- Patient satisfaction with care
- Change in health status using the EQ-5D and TOMS

Service outcomes include:

- Length of stay of clients
- How staff time is utilised

Staff outcomes include:

- WDQ staff satisfaction
- WDQ intention to leave profession
- WDQ intention to leave employer

Length of stay information will be obtained from the health record admission and discharge dates. Staff outcomes will be obtained from the WDQ. The WDQ is a validated tool which was developed in the context of older people's services which explores the relationship between workforce structures (staffing and skill mix), the service organisation (team organisation and management) and staff outcomes (autonomy, role overlap, delegation, substitution and job satisfaction). Further information is available in the methods section of 'Prospective study results' (section 7.3).

Table 5-1 Summary sources of data

Research Objective	Data required	Source of data
1.Support worker roles	Peer reviewed literature	- English language peer reviewed literature, national policy and guidance documents
	Staff perspectives	- Focus groups with staff
2. Utilisation and demographics of support workers	Demographics	- Cross-sectional study (WDQ): age, employment status, length of service, pay band
	Service and workforce models / Numbers within teams & across CAICS	- Cross-sectional study (Service Proforma)
3. Factors influencing the utilisation of support workers	Patient admission health status	- Prospective study: admission TOM, Level of Care, EQ-5D
	Patient characteristics	- Prospective study: age
	Service configuration	- Prospective study and Cross sectional study (Service Proforma)
	Staff perspectives	- Focus groups with staff
4. How and to what extent support workers contribute to care	Intensity of contact	- Prospective study: All patient level contacts recorded by staff
	Type of input	- Focus groups and interviews with staff - Prospective study: record of staff contact
5. Extent to which support worker utilisation and contribution to care impacts outcomes		
	Satisfaction	
Staff outcomes	Intention to leave employer	- Prospective study (WDQ)
	Intention to leave profession	- Focus groups and interviews with staff
Service user outcomes	Patient satisfaction	- Prospective study (Validated patient satisfaction survey)
	Change in health status	- Prospective study (TOMs and EQ-5D measured at start and end of episode of care)
Service Outcomes	Length of stay	- Prospective study (Admission and discharge dates for each patient for each episode of care
	Staff time utilisation	- Prospective study: All patient level contacts recorded by staff

5.3 Rationale for the methodology

I must be implicit that the choice of methods for this research have been limited by the methodology used for the broader study. I have therefore detailed below the way in which each of the chosen methods compliment this research.

5.3.1 Cross sectional study

The principal aim of the cross sectional study is to develop a thorough picture of the extent of support worker utilisation and the current workforce models and service context in which support workers are utilised for the delivery of older peoples' intermediate care and community rehabilitation teams in England. I also anticipate that the results of the cross sectional study will lead to identification of service level factors that are associated with the utilisation of support workers.

The inherent reasons for conducting cross sectional studies are to enable rapid capture of current events in the community and to generate research hypotheses based on the information captured. There are cross sectional studies that have demonstrated support workers comprise a large percentage of the community rehabilitation and intermediate care workforce (Barton et al., 2005a, Enderby and Wade, 2001, Farndon and Nancarrow, 2003, Nancarrow et al., 2005b). These studies however are not current. Furthermore as I have identified in section 2 (context), community rehabilitation and intermediate care services are particularly sensitive to policy and broader NHS changes and as such are continually evolving. I consider it vital therefore to undertake a cross sectional study to enable an up to date picture to be painted of the support workforce and the current context they are situated in.

In addition, the choice of this methodology reflects that which has been used in other studies of intermediate care and support worker research (Enderby and Wade, 2001, Farndon and Nancarrow, 2003, Nancarrow et al., 2005b). A more up to date cross sectional study therefore enables

longitudinal comparisons to be drawn between these earlier studies and the results of this study.

Importantly, the use of a cross sectional study also allows for the remainder of the study to progress. The capture of details from a broad spectrum of teams by means of a cross sectional study provides the opportunity to select a sample of teams to participate in the prospective study.

5.3.2 Prospective study

The prospective study was chosen as a methodology so that detailed patient, staff and team level data across a range of teams could be obtained and utilised to analyse the contribution and relative impact of support workers to patient, staff and team outcomes.

The prospective study, as detailed earlier in section 5.2, comprises the collection of several different types of data using different data collection techniques from twenty community rehabilitation and intermediate care teams. The prospective study therefore encompasses the collection of patient level information for each patient admitted to these twenty services over a three month time period; one-off staff satisfaction data for all staff providing these services; staff activity data for each patient admitted to the service over a three month period; and one-off service data collection.

The choice of the three month data collection period for each patient, and also for staff activity data, was influenced by the results of the Leicester and Birmingham National evaluation of intermediate care. Their study demonstrated the median length of stay of an intermediate care patient is between 18-28 days (Barton et al., 2005a). Three months therefore allows for allows ample time for change in health status to be measured as well as the staff activity data to be collected for each patient's length of stay.

Collecting staffing activity data for each patient also enables more accurate analysis of the direct impact staffing activity has on patient outcomes and allows for analysis of patient level predictors for support staff involvement in care. This overcomes the limitations involved in demonstrating associations between staff input and patient outcomes when staffing activity data has been collected separately from patient data as is the case in a great deal of nursing workforce research (Buchan and Dal Poz, 2002, Jenkins-Clarke and Carr-Hill, 2003).

The recruitment of twenty teams for the study enables adequate patient level data to be collected and will give an indication of the team and organisational level factors that may be associated with enhanced patient, staff and team outcomes when support workers are utilised. The Birmingham and Leicester national evaluation of intermediate care was conducted over a similar time period to what is proposed for this research. Their study generated over 1000 patient records from 10 teams. From these records, sound statistical analysis was able to be conducted of patient change in health status (Barton et al., 2005a). Using this as a guide, it is envisaged that the inclusion of twenty teams will allow for around 2000 patient records to be collected. This amount of data should be sufficient to answer the research questions for this study and to draw reasonably strong conclusions. It must be acknowledged however that this number has not based on a statistically generated power estimate as this type of research and the research questions being asked are exploratory and novel in design.

As demonstrated in other research conducted in this setting (Enderby and Wade, 2000, Nancarrow et al., 2005a, Barton et al., 2005, Godfrey et al., 2005) there is marked diversity among these types of services particularly in skill mix. As such I feel the inclusion of twenty teams in the study will ideally provide enough variation to represent the current CRAICS workforce, but at the same time be enough teams to roughly group teams with particular workforce configurations together to see if there are any patterns in outcomes with particular workforce configurations. Again the

inclusion of twenty teams is not based on any statistical calculations for reasons described above.

5.3.3 Qualitative study

The choice of including qualitative research in the methodology was to gather an in-depth understanding of the dynamics of teams and what role support workers played in these dynamics.

Focus group interviews stimulate discussion and enable the researcher and participants to gain insights and to generate and shape ideas (Hollis, Openshaw & Goble, 2002). Qualitative research, in particular the Framework approach which has been used in this study, enables greater illumination, understanding and/or qualification of the issues being addressed in corresponding quantitative research (Ritchie and Spencer,1995).

As such the use of focus groups and individual interviews will augment the quantitative data that is generated in the prospective study. I feel it is particularly important to identify and explore potential reasons for results that may arise from the quantitative data and also to contextualise the quantitative results. The focus groups and interviews also enable identification, examination and qualification of issues that can not be empirically measured by the prospective study activity data or WDQ.

Every team participating in the prospective study will be invited to participate in a focus group. This will enable the juxtaposing of team level quantitative information with team member experience and perception of events. Individual semi-structured in depth interviews will also be conducted with a selection of service managers and individual support workers from different teams. Ideally the participation of managers and support workers from teams with varying support worker roles and numbers will be sought. This will allow for more in-depth analysis of the support worker role from both perspectives.

A sample of twenty individual interviews was used in the broader study to capture in-depth information from 'extended' and 'novel' role practitioners across all teams recruited to the prospective study. It was envisaged that this number would allow for capture adequate representation of extended and novel roles based on previous research of roles in this setting (Nancarrow, 2003, Nancarrow and Mountain, 2002b). I will utilise interview data from support workers and service managers only in this study and therefore the number of interviews will be dependent on the broader research project.

Interview schedules for the focus groups and individual interviews have been constructed following an in-depth review of the literature, previous research in the setting and through consultation with the broader research team, service managers, staff and service users.

5.4 Ethical considerations

5.4.1 Cross sectional study

There is a possibility that the proforma sent to teams for the purpose of the cross sectional study could be considered too time consuming to complete and or not immediately useful for services. To overcome these issues, the proforma was made as simple as possible to complete and from previous use we understood it would take no longer than 10 minutes to complete. This was detailed in the cover letter sent along with the proforma as well as how the information provided by teams would be used. So that teams felt their participation in the study was valued, a summary report of results from the proforma was sent to all participating teams.

Written consent will not be requested from teams participating in the cross sectional study. None of the information gained from staff or service managers will be of a sensitive nature. Returning of the completed questionnaires to the research team will be taken as consent to take part in the study. Teams who do not wish to participate will not be under any pressure to return their questionnaire, or can return a blank or incomplete

questionnaire. Team information will be anonymised, and no identifying information will be provided to the teams.

In addition the decision to participate in the WDQ was made by service managers or team leaders. There is an ethical consideration here in that there is potential for team leaders and managers to agree to participate without consulting their staff. This consideration was outlined in the covering letter sent to teams regarding the WDQ, requesting that service managers and team leaders consult their staff before agreeing to participate. Furthermore, in order that staff understood the information contained in the WDQ would remain confidential, a letter outlining the purpose of the study and what would happen to their information was given with each WDQ. Completion of the WDQ by staff was therefore taken as informed consent.

5.4.2 Prospective study

Participating teams will have been recruited by their managers. The information given to team managers stresses the importance of consulting their team before agreeing to participate in the study. We aim to minimize any risk of coercion for staff to participate in the study by the team manager by a requesting staff provide written consent to participate in the training day and also data collection. Staff will be sent copies of information sheets at least one week in advance of attending the training session so they have some time to consider their involvement.

Patient consent will not be obtained for the collection of data within the "Client / service user record pack", however patients will be provided with an information sheet which describes the study and the way that their data will be collected and used for the purpose of the study. The tools that the staff will be using (the EQ−5D and Therapy outcome measures) simply formalize the collection of information about health status and the setting of rehabilitation goals which are part of normal clinical practise for the professionals. As this information would be gathered in some form whether or not we were doing the research, providing anonymised data to the research team is acceptable under the Patient

Information Advisory Group (PIAG) guidelines. Patients will be given the option to "opt−out" if they do not want their data to be used in this way (in line with PIAG Guidelines). The PIAG document entitled "Information about Patients" states that "Patients only have an interest in how the information about them is handled if they can be personally identified by the information. When the information is anonymised, this interest ceases. Fully anonymised information can be used by health professionals and researchers without regard to the rights of the originating patients" (p6). As only anonymised data will be collected from patients using the "Client / service user record pack", this complies with the requirements of the PIAG for obtaining informed consent.

In addition, the time required by staff to obtain informed consent for each individual patient would make this approach unfeasible within the scale of the study. This approach also ensures the greatest level of inclusivity of the population groups who use intermediate care services. The same approach was used, and ethically approved as part of the Universities of Birmingham and Leicester National Evaluation of Intermediate Care (reference no 02/4/066). If a patient decides to opt−out, we will ask the care provider to return their form with "patient does not want to participate" written on the front page of the study, and the patient's information will not be included in the study.

Furthermore, the broader study has engaged service users in the design and proposed methods of implementing the research project. These service users did not identify or envisage any further ethical implications for patients.

5.4.3 Qualitative study

To ensure staff understand and consent to participating in the focus groups and individual interviews, written consent will be obtained form staff who are invited to participate in the focus group and the telephone interviews. Consent will involve acknowledgement that the focus groups and interviews will be recorded and transcribed and that verbatim quotes

may be used. Confidentially of participants and teams will be ensured through anonymising participant names and team details.

Consent to participate in the focus group will be obtained at the training session by the researchers. Consent to participate in the telephone interviews will be obtained in advance by mail. Staff will be sent copies of information sheets at least one week in advance of attending the training session so they have some time to consider their involvement.

One of the focus group questions involves requesting each participant to detail their role and identify any 'wishes' for the future (see Appendix 21). Should participants feel uncomfortable about answering this question, they will be advised within the interview that they are not obliged to answer. In addition in the event that sensitive information arises within the focus groups, participants will be advised at the beginning of the session that 'Chatham House' rules apply. What is discussed within the focus group is not to be relayed outside of the group.

5.4.4 Results of the thesis and dissemination

There is potential that the results of this thesis may be misinterpreted or used incorrectly. I will endeavour to present the results in a sensitive fashion, ensuring the results of each study are interpreted as a whole. This will apply to the dissemination of the results.

I feel it is important that the results of this thesis and indeed the broader study are disseminated appropriately and ethically. As such in conjunction with the broader study, I will endeavour to disseminate the results in the following ways:

- Submission of publications, editorials and opinion pieces to international peer reviewed journals
- Presentation at national and international conferences for which workforce change or the services needs of older people are relevant

- Presentation of workshops / briefings to the participating institutions during the research for consultation purposes and at the completion of the research
- A detailed report of results will be prepared for each participating team

6 Results & Analysis: Cross sectional study

6.1 Introduction

This section details the methods, analytical framework and results of the cross sectional study.

6.2 Review of research questions

A survey of older peoples' intermediate care and community rehabilitation teams in England was carried out in 2005/6.

The principle aim of the survey was to develop a thorough picture of the workforce models and service context in which support workers are utilised within older peoples' intermediate care and community rehabilitation services in England. The following questions were posed:

i) How do support workers fit within current CRAICS service and workforce models? What does the support workforce look like?

ii) Is the utilisation of support workers in CRAICS related to any team, patient or organisational factors?

6.3 Methods

Community rehabilitation and intermediate care teams across the UK were invited to complete two forms. The first, a service proforma, explored the organisational context for workforce variation. The second, Workforce Dynamics Questionnaire (WDQ), which explored staff, team and discipline level factors relating to the working environment.

6.3.1 Identification of services

Service proforma data were collected from two separate sources. The first was the Community Rehabilitation Team (CRT) Network, the second drew on an audit sent to chief executives of 484 PCT and NHS Trusts nationally. Both were circulated between late 2005 and early 2006 with two reminders.

The CRT Network [3] had a membership of 173 teams in 2005. This Network was chosen because it was one of the few existing networks of providers of community based rehabilitation and intermediate care services.

In addition, the Service Proforma was sent to the Chief Executives of 484 PCT and NHS Trusts nationally as part of a follow up study being conducted comparing home rehabilitation to day centre rehabilitation for the elderly (Parker, 2006). This survey aimed to establish the range of rehabilitation services provided for the elderly in Day Hospital and home based care.

Based on the information from the Service Proforma (which includes staffing details) copies of the second form, the Workforce Dynamics Questionnaire (WDQ), were sent to teams agreeing to participate.

6.3.2 Inclusion & Exclusion criteria

Services were eligible for inclusion in the cross-sectional study if they primarily delivered care to older people, defined as those aged over 65 years old. Services were excluded from the cross-sectional study if they did not provide services to older people.

6.3.3 Data collection tools

The Service Proforma was initially developed for and piloted in regional evaluations of intermediate care services (Nancarrow, 2004b, Nancarrow et al., 2005a), and was developed further through a comprehensive literature and policy review (Nancarrow et al., 2006). It provides contextual details of the service. The proforma requested information around different components of health service organization: Context, service and staffing structures. The service proforma also requested whether teams were interested in completing the WDQ.

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[3] Community Rehabilitation Team Network –The Community Therapists Network is the operating name of the Community Rehabilitation Team Network, Registered Charity Number: 1084039
http://www.communitytherapy.org.uk/

As described in detail below, the Workforce Dynamics Questionnaire (WDQ) is a questionnaire which is completed by staff to attempt to quantify the extent of worker flexibility within teams; identify the factors which positively and negatively effect worker flexibility; and determine the impact of worker flexibility on a range of staff outcomes. It also collects a range of demographic data such as age of respondents, grade, length of time with the service and type of employment (casual, session only, full / part time).

The WDQ arose as a result of an exploration of the impact of workforce flexibility on older peoples' community rehabilitation and intermediate care services (Nancarrow, 2003, Nancarrow, 2004b, Nancarrow, 2004c, Nancarrow et al., 2005a). For the purpose of answering this question only the demographic information was used and as such was separated from the 9 domains which measure workforce dynamics. These domains have been examined in the prospective study (section 7).

6.3.4 Description of the cross-sectional study methods

Teams were sent a covering letter providing details of the study along with a Service Proforma. If the team agreed to participate, the team leader was asked to complete and return the first form, the Service Proforma. Based on the information from the Service Proforma (which includes staffing details) copies of the second form, the Workforce Dynamics Questionnaire (WDQ), were sent to teams agreeing to participate. The WDQ was completed by each staff member and returned to the researcher via post. Written consent was not required from the community and intermediate care teams as the questionnaires did not contain any sensitive information. Receipt of completed questionnaires signified a willingness to take part in the study.

6.4 Analysis

Data were entered into SPSS Version 12.0. Data pertaining to service and workforce configuration was analysed descriptively.

Service and workforce configuration factors were then analysed for their relationship to support worker utilisation. As described in the methods section (5), of interest was how the ratio of qualified professionals to support workers and/or number of support staff differs across teams according to:

- The location of care provision
- The number of referrals per year
- The size of the population served
- The size of the team (number of qualified + support staff)
- The number of qualified practitioners in the team
- The level of care provided (at a service/team level)

Where location of care was of interest, results from the proforma were grouped into three locations: Home; Inpatient / residential (hospital inpatient, resource centre, community hospital); and Outpatient (hospital outpatient, community health service). A comparison of means using one way ANOVA was then performed using these groups of location, practitioner title (e.g. physiotherapist, nurse, support worker) and the ratio of support workers to qualified staff.

Further correlation analyses were performed to investigate the relationship between the remaining variables of interest:

- The number of referrals per year and the ratio of support to qualified staff
- The size of the team and the ratio of support to qualified staff
- The number of qualified practitioners and the number of support workers

- The size of the population and the ratio of support to qualified staff

A cluster analysis was then undertaken, with statistical input from Dr Jenny Freeman, to determine whether there were any patterns emerging regarding staffing variations across different types of teams. Cluster analysis is a useful tool when exploring patterns in multidimensional data. Cluster analysis groups variables by their distances apart from each other, that is 'near' items (with common traits) get clustered together. This process is then repeated until the researcher or statistician decides that the process is finished (Romesburg, 2004).

Six variables considered a priori to be important were included in the cluster analysis: number of referrals per year, duration of care, number of WTE qualified staff, number of WTE support staff, location of care and level of care provided.

Descriptive, one way ANOVA and cross tabulation analyses were also performed on the WDQ data to explore general demographic differences between support workers across teams and also to compare demographics between support and qualified staff. The demographic variables of interest included:

- Age
- Gender
- Length of time in current job
- Hours of employment
- Type of employment (part time, casual, full time)

6.5 Results

Results are presented under the following headings:

6.5.1 Response rates

i) Service Proforma

The overall response rate to the Service Proforma was 37% (n=243) (48% for the CRT network and 33% for the PCT chief executives); of these, a total of 186 (77%) of the responses were useable (Figure 6-1). Of the 186 responses, 15 teams returned Service Proforma without staffing data (8%). Forty teams, comprising 725 staff members, agreed to complete the WDQ.

Fifty-seven Service Proforma replies were excluded. Fourteen of the chief executive responses provided staffing information about the entire PCT and were therefore excluded as they could not be compared with the single team or service level responses. Other reasons for exclusion were: 7 surveys were marked 'returned to sender' due to team or contact no longer available; 29 surveys were returned blank; 5 were illegible; 2 did not wish to participate.

ii) Workforce Dynamics Questionnaire

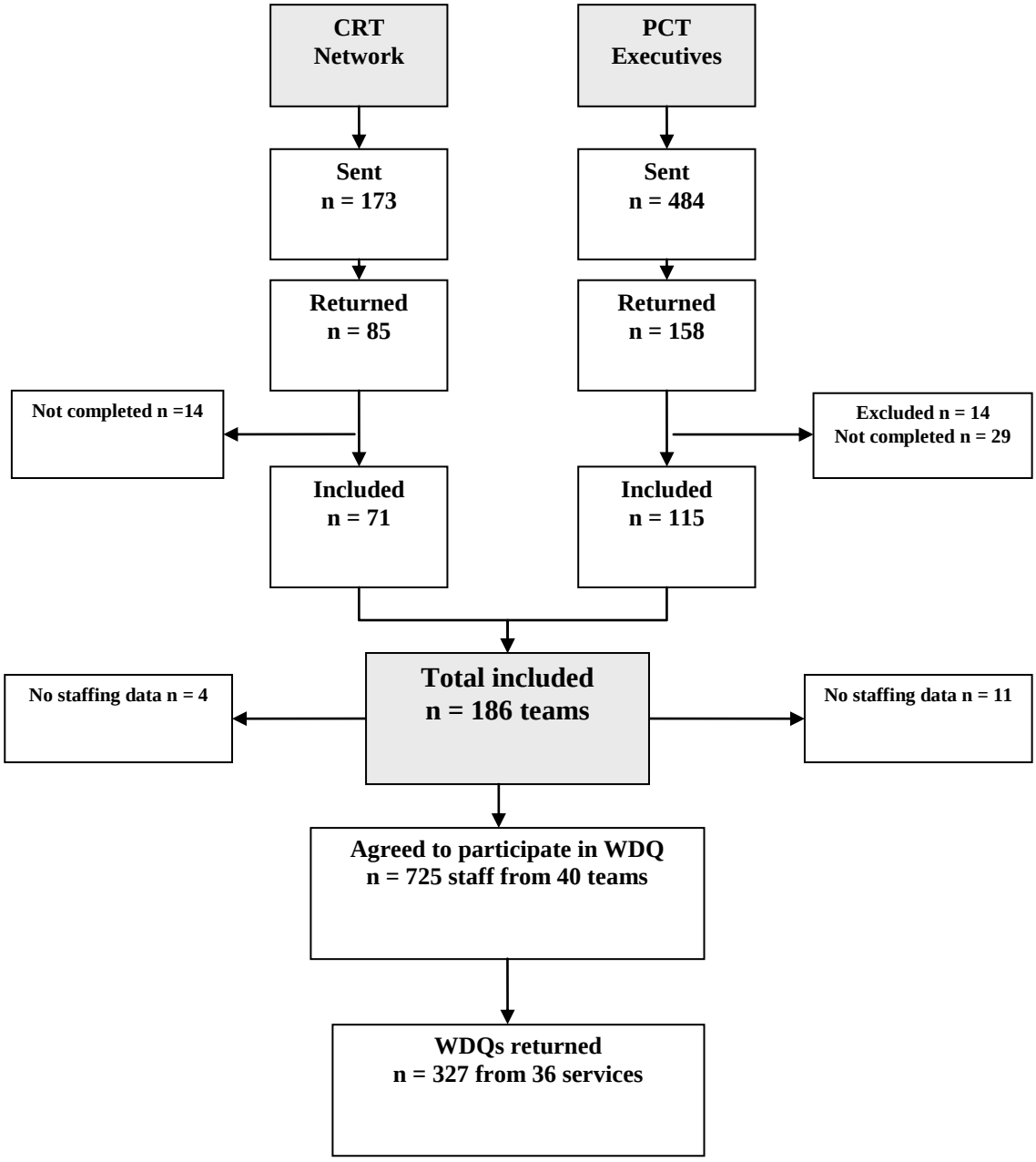
Forty teams, comprising 725 staff agreed to participate in the second stage of the survey involving the WDQ. After one reminder, WDQs were received from 327 staff from 36 teams generating an overall response rate of 45.1% (327/725 completed surveys returned) (Figure 6-1).

There was no statistical difference between the characteristics of those services that only completed the service proforma, and those that completed the WDQ, based on the duration of care, number of referrals per year, population size or ratio of support workers to qualified staff (Table 6-1).

Table 6-1 Comparison between services that did and did not complete the WDQ.

Service characteristics	Stage 1 only Mean (SD) n=32	Stage 1 & 2 -WDQ complete Mean (SD) n=36	Independent samples t test
Average duration of care	13.08 (22.15)	9.00 (8.85)	t(-0.92), p =0.361
No of referrals per year	1264.72 (2381.81)	553.03 (864.28)	t(-1.513), p=0.136
Population size	190584 (148228)	310818 (259257)	t(-1.75), p=0.090
Ratio of support workers to qualified staff	0.51 (0.49)	0.56 (0.95)	t(0.229), p=0.820

Figure 6-1 Response rates



6.5.2 Service characteristics

The service characteristics are summarised in Table 6-2. The majority of teams (83%) provide services in more than one location, predominantly the client's own home. Most teams are hosted by a single organisation (75%), the majority by PCTs (50%), and they serve rural, urban and mixed populations. The mean population served is 210,114 (SD 141846, range 1300 – 950000).

Respondents were asked to rank the levels of care provided by their organisation, from 1 – 8, according to the levels of patient need. The most commonly provided level of care was level 5, 'Intensive Rehabilitation' (36%) followed by levels 7 and 4, 'Medical care and rehabilitation' and 'Regular rehabilitation'.

Table 6-2 Summary of service characteristics & purpose

Service characteristics (n=186 unless otherwise indicated)		**%**
Primary location of care	Client's own home	68
	Hospital – inpatient	9
	Hospital – outpatient	7
	Resource centre	1
	Nursing Home	1
	Community hospital	7
	Community health?	5
	Other	2
Settings	>1 setting	83
	1 setting	17
Host organisation/s	PCT	50
	Acute	17
	Mental health	2
	Social services	3
	PCT and social services	13
	PCT and acute trust	6
	Social services and acute	1
	Other joint hosts	5
	Other single host	3
Population type	Urban	36
	Rural	23
	Mixed	37
	Other	4
Level of care (most frequently provided), n=120	Level 1 – Prevention and maintenance	12
	Level 2 – Convalescence/respite	2
	Level 3 – Slow stream rehabilitation	5
	Level 4 – Regular rehabilitation programme	17
	Level 5 – Intensive rehabilitation	36
	Level 6 – Specific treatment for acute and disabling condition	3
	Level 7 – Medical care and rehabilitation	17
	Level 8 – Rehabilitation for complex profound disabling condition	9

6.5.3 Staffing

There were extreme variations in staffing across the range of community rehabilitation and intermediate care services that responded to the audit (see Tables 6-3 & 6-4). The mean ratio of yearly referrals to WTE staff (excluding administrative staff) was 66.9 (SD 70.3), median 44.0 (range 2.9 - 385.4). The average age of staff was 42.45 (SD 10.09).

The majority of services employed at least one whole time equivalent occupational therapist, physiotherapist, support worker, administrator and nurse. Less than half of all teams employed one whole time equivalent social worker, speech and language therapist, geriatrician, dietician, psychologist or general medical practitioner. The staff most likely to be employed on a casual or sessional basis were dieticians followed by speech and language therapists, podiatrists, GPs, geriatricians and psychologists. In addition, demographic information from the WDQ indicates these teams utilise more senior than junior or middle grade qualified practitioners (Table 6-5) and the second largest group of employees are grade 'pre-registration'.

Table 6-3 WTE Staffing across teams

	Whole Time Equivalents (n=171)		
Variable	**None (%)**	**Less than 1 (%)**	**At least 1 (%)**
Occupational therapist	5.8	7	87.2
Physiotherapist	10.5	5.9	83.6
Support worker*	14	5.8	80.1
Administrative support	20.5	14.6	64.2
Nurse	31.6	5.3	63.2
Social worker	54.4	3.5	42.1
Speech and language therapist	59.6	19.3	26.1
Geriatrician / consultant	76.6	9.4	14
Other**	86.6	3.5	9.9
Dietician	78.6	12.3	9.4
General Practitioner / Medical	86.6	5.9	7.6
Psychologist	86	8.2	5.9
Mental Health practitioner[&]	95.3	0	4.7
Pharmacist	95.3	2.9	1.8
Podiatrist	92.4	7.6	0

* Technical instructors, Rehabilitation assistants, Social work assistants, Physiotherapy assistants, Rehabilitation technicians, Psychology assistants, Occupational Therapy technicians, Carers, Intermediate care technicians, Care management assistants, Intermediate care support worker, Technician, Falls assistant, Therapy assistant, Technical assistant, Technician, home enablers.

** Link Worker, Health assessor, Counsellor, Visual rehabilitation worker, Manager, Team leader, Psychotherapist, Liaison Officers, Care management assistant, Coordinator/Manger includes CCO, care coordinator, case manager, team manager, stroke coordinator

[&] CPNs, Community mental health nurses, Mental health nurses

Table 6-4 Staffing profile (n=171 unless otherwise stated)

	Mean (SD)	Median (range)
Number of:		
WTE staff employed per team*	18.2 (14.1)	14.2 (1.4 to 80)
WTE qualified staff employed[&]	10.6 (7.7)	8.1 (0.2 to 43.0)
WTE support staff employed	6.1 (7.5)	3.3 (0 to 40)
Different practitioners employed[£] (including session staff)	7.2 (2.9)	7 (1 to 15)
Ratio of:		
Support workers to qualified staff[$]	0.7 (0.8)	0.4 (0 to 5.6)
Referrals to WTE qualified professional staff (n=137)	108.5 (145.5)	70.1 (2.9 to 1216.7)
Referrals to WTE qualified + support staff[$] (less admin)(n=137)	66.9 (70.3)	44 (2.9 to 385.4)
Referrals to WTE support staff (n=120)	274.7 (519.9)	137.2 (10 to 5221.7)

* Includes administrative staff and support staff

& Excludes staff who work on a casual / session basis

£ Includes staff who work on a casual / session basis

$ Excludes administrative staff

Table 6-5 staff grade (n=302)

Grade	Percent
Pre registration	27.5
Junior qualified	5.3
Middle qualified	8.3
Senior qualified	38.4
Senior management	6.6
Administration	9.9
Other	4.0

6.5.4 Throughput

Teams were asked to identify how many referrals their team accepted each year. Teams accepted a mean of 940 referrals (SD 1331), median 600 (range 20 – 1300). The number of referrals per year was evenly spread with 18% of teams accepting <250 referrals/year, 24% of teams accepting between 250 and 500 referrals/year, 24% of teams accepting between 500 and 1000 refs/year and 35% accepting greater than 1000 referrals per year.

6.5.5 Relationship between staffing and location of care

There was some evidence of variations in staffing according to the primary setting of care provision (Table 6-6). Services that delivered care in the home reported higher numbers of support workers, physiotherapists and occupational therapists but fewer medical staff, including general practitioners and geriatricians ($P<0.05$) than inpatient or outpatient services. Inpatient services were likely to report higher numbers of nurses and a higher ratio of support workers to qualified staff ($p<0.05$). Inpatient teams were also more likely to have more frequent team meetings. Outpatient services reported the highest numbers of medical staff and geriatricians ($p<0.05$).

Table 6-6 Relationship between staffing and location of care

	Primary location of care		
	Client's home Mean (SD) n=112	Inpatient / residential[1] Mean (SD) n=21	Outpatient[2] Mean (SD) n= 19
Staff Characteristics			
Support workers*	5.6 (6.8)	4.9 (7.2)	3.4 (4.2)
Physiotherapists*	2.8 (2.8)	1.6 (2.0)	1.4 (1.9)
Occupational therapists*	2.8 (2.3)	1.6 (1.9)	1.7 (1.8)
Social workers	0.8 (1.4)	0.9 (2.2)	0.6 (1.5)
Podiatrists	0.0 (0.1)	0.0 (0.0)	0.1 (0.2)
Speech and language therapists	0.4 (0.6)	0.2 (0.5)	0.1 (0.3)
Nurses*	2.0 (2.8)	4.1 (6.3)	2.0 (2.4)
Dieticians	0.2 (0.4)	0.1 (0.3)	0.0 (0.1)
Psychologists	0.1 (0.3)	0.2 (0.5)	0.1 (0.3)
General practitioners / medics*	0.0 (0.1)	0.5 (1.1)	0.6 (2.3)
Geriatricians*	0.1 (0.4)	0.5 (1.2)	0.8 (1.4)
Medical staff*	0.1 (0.4)	1.1 (1.9)	1.4 (2.5)
Administrative support	1.3 (1.3)	0.8 (0.9)	1.2 (1.2)
Mental health nurses	0.1 (0.3)	0.0 (0.0)	0.0 (0.0)
Pharmacists	0.1 (0.4)	0.0 (0.1)	0.0 (0.0)
Total WTE other staff	1.4 (1.0)	1.0 (0.0)	0.6 .
Number of different practitioners employed (including session staff)	6.2 (2.8)	6.9 (4.4)	6.2 (3.1)
Ratio of support workers to qualified staff*	0.6 (0.5)	1.1 (1.8)	0.7 (0.8)
Ratio of referrals to WTE staff (less admin)	81.8 (171.6)	66.8 (88.7)	113.7 (132.4)
Service characteristics			
Maximum duration of care (weeks)	18.7 (37.2)	15.2 (17.5)	38.2 (71.7)
Average duration of care (Weeks)	7.6 (10.5)	6.6 (4.7)	13.9 (25.4)
Referrals per year	978.0 (1487.0)	516.7 (522.3)	945.3 (905.8)
Frequency of operational team meetings*	4.1 (1.6)	4.9 (1.2)	3.6 (2.1)

*p<0.05

[1]Inpatient includes hospital inpatient, resource centre, and community hospital

[2]Outpatient includes hospital outpatient, community health service

6.5.6 Relationship between referrals and staffing

There was a moderate positive association between the size of the team (number of WTE qualified + support staff) and yearly referrals r_s=0.535, p<0.01 (fig 6-2, n=137).

Equally there was a moderate positive relationship between the ratio of support to qualified staff and the number of yearly referrals r_s=0.432, p<0.000 (Fig 6-3, n=171).

6.5.7 Relationship between the size and composition of the team and staffing

There was evidence of a moderate positive association between the size of the team (WTE qualified + support staff) and ratio of support workers to qualified staff r_s=0.370, p<0.000 (Fig 6-4, n=171).

There was also a significant positive relationship between the number of WTE support workers employed and the number of WTE qualified staff employed r_s =0.551, p<0.000 (Fig 6-5, n=171).

6.5.8 Relationship between size of population and staffing

There was little evidence of a relationship between the total number of staff (WTE qualified + support staff) and the size of the population r_s =-0.42, p=0.696 (n=87). However there was a weak negative associate between the ratio of support to qualified staff and the size of the population r_s =-0.201, p=0.038 (Fig 6-6, n=87).

Figure 6-2 Relationship between team size and referrals

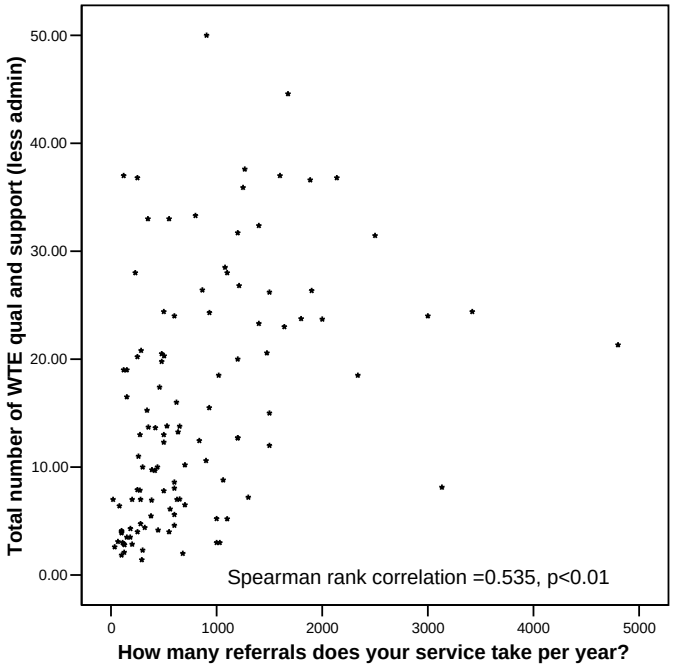


Figure 6-3 Relationship between support:qualified ratio and referrals

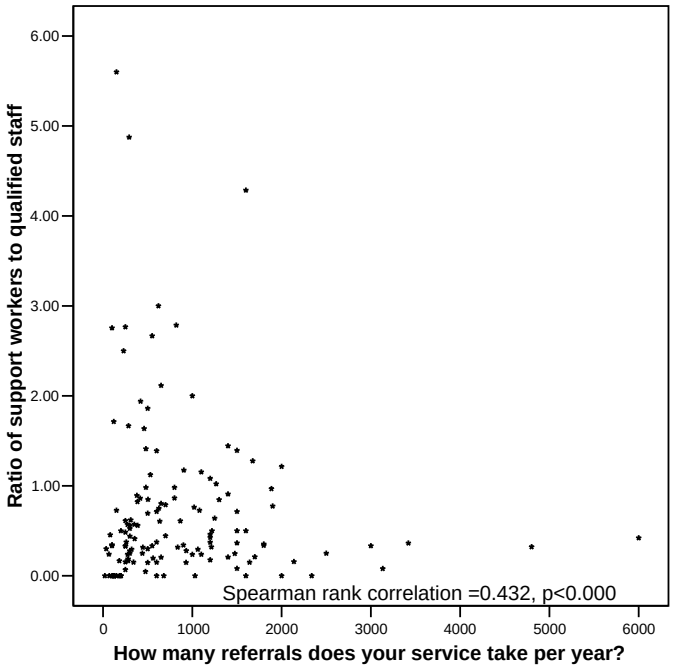


Figure 6-4 Relationship between size of team and support:professional ratio

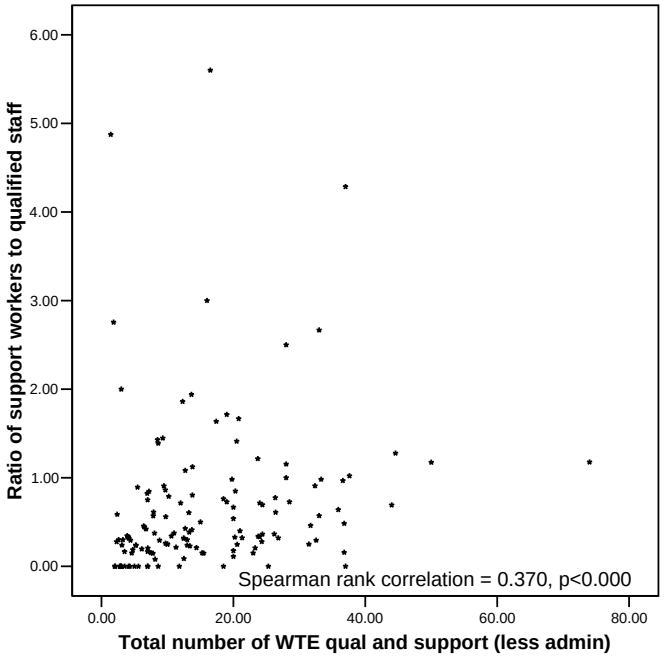


Figure 6-5 Relationship between numbers of support and qualified staff

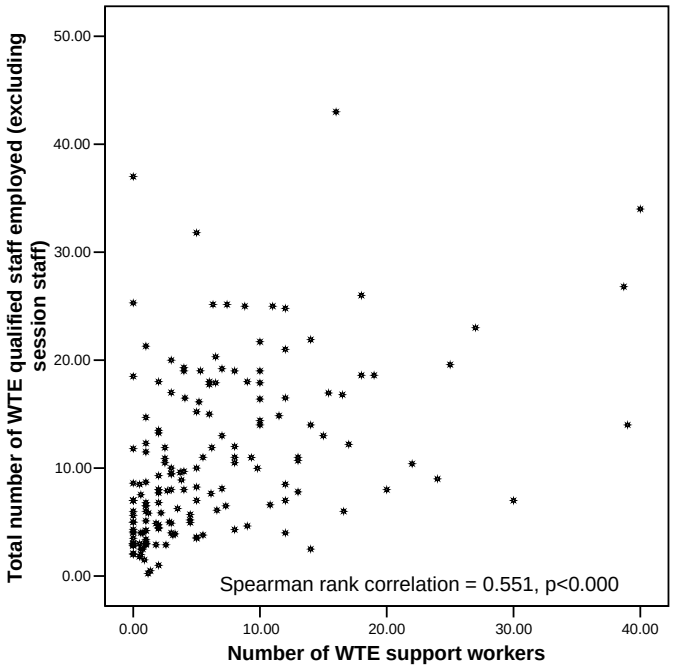
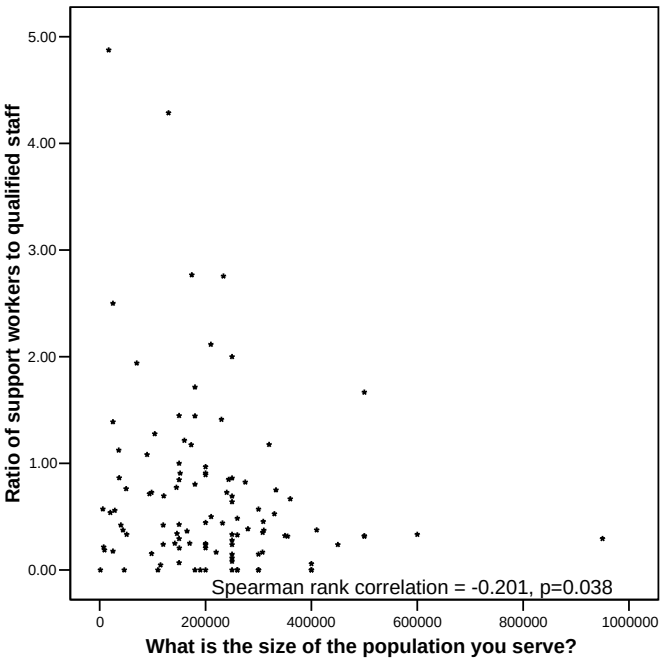


Figure 6-6 Relationship between support:qualified ratio and size of population



6.5.9 Cluster analysis

A cluster analysis was undertaken to determine whether there were any patterns emerging regarding staffing variations across different types of teams.

Six variables considered a priori to be important were included in the cluster analysis: number of referrals per year, duration of care, number of WTE qualified staff, number of WTE support staff, location of care and level of care provided. This produced two clusters as outlined in Table 6-7. Cluster 1 only delivered care at home to patients with medium level needs. Cluster 2 was more heterogeneous with respect to both location of care and level of care, providing care across the range of these two variables. In addition cluster 1 received more than twice as many referrals per year and had a shorter duration of care. In terms of staffing levels, the number of qualified staff was similar between the two clusters, but the number of support workers differed, which was higher in Cluster 1.

Table 6-7 Results of the cluster analysis

	Cluster 1 * (n=39)	Cluster 2* (n=37)
Number of referrals per year	905 (120 to 6000)	416 (66 to 2000)
Duration of care (weeks)	4 (0.7 to 14)	6 (0.9 to 96)
Number WTE qualified staff	9 (2.8 to 43)	10.5 (2.5 to 37)
Number WTE support workers	7 (0 to 39)	4.5 (0 to 22)
Location of care (%)		
at home	100	37.8
Outpatient	-	18.9
Inpatient	-	43.2
Level of care (%)		
Low	-	27
Medium	100	16.2
High	-	56.8

*median and range, unless otherwise stated

6.5.10 Support worker demographics

The mean age of support staff was 45.5 (SD 10.43, range 24 to 65) which when compared to qualified staff age (mean 42.2, SD 9.2), was marginally but significantly higher $p<0.05$. Support worker age did not however significantly differ across teams.

Similarly there was a small but significant difference between support workers and qualified staff for contracted work hours with support staff working slightly more hours than qualified staff (See table 6-8). There were no significant differences between the two groups of workers for length of time in their current job. As seen in table 6-9, however support worker length of time in their current job and hours of employment significantly differed between teams ($p < 0.001$).

Table 6-8 Support V professionally qualified staff: Age, length of service and hours of employment

	Support workers[$]		Professionally qualified	
	Mean (SD) n=82	Median (Range)	Mean (SD) n=210	Median (Range)
Age**	45.5 (10.43)	45 (24 to 65)	41.2 (9.2)	42.0 (20 to 64)
Length of time in job (yrs)	5.1 (6.3)	3 (<1 to 34)	3.7 (4)	1.5 (<1 to 15)
Hours of employment*	31.75 (6.9)	36 (12.5 to 37.5)	30.8 (8.2)	29.0 (10.75 to 37.5)

* p< 0.01
**p < 0.05
[$] includes unqualified social care workers

Table 6-9 Support worker[$] age, length of service and hours of employment across teams

		n	Age Mean (SD)	How many hours are you contracted to work each week in your current job? * Mean (SD)	How long have you worked in your current job (Years) * Mean (SD)
Team number	8	3	37.3 (11.0)	36.0 (0)	1.0 (0)
	20	3	57.7 (7.0)	22.7 (11.5)	26.0 (11.3)
	24	13	45.5 (10.1)	34.7 (4.9)	2.0 (3.2)
	31	2	42.5 (10.6)	37.5 (0)	1.0
	32	3	47.3 (4.9)	25.0 (1.0)	3.0 (2.6)
	33	2	49.0 (2.8)	30.0	7.5 (0.7)
	37	2	52.5 (17.7)	35.0 (0)	9.5 (12.0)
	47	2	54.5 (0.7)	37.5 (0)	2.5 (0.7)
	55	5	50.4 (11.7)	30.5 (7.4)	12.3 (9.9)
	56	4	49.8 (6.7)	29.8 (7.5)	4.7 (0.6)
	64	2	46.0 (9.9)	30.0 (8.5)	3.5 (0.7)
	79	1	48.0	27.0	1.0
	80	1	26.0	37.5	6.0
	97	1	24.0	37.5	1.0
	98	3	43.7 (0.6)	24.2 (5.2)	6.0 (5.2)
	103	2	27.5 (4.9)	18.8 (0.4)	0.5 (0.7)
	106	3	55.7 (0.6)	36.0 (0)	10.7 (6.4)
	112	1	37.0	12.5	.
	115	1	37.0	24.0	7.0
	120	1	57.0	30.0	6.0
	129	3	48.3 (16.9)	31.8 (3.5)	3.5 (4.4)
	134	1	36.0	16.0	1.0
	135	1	56.0	36.0	4.0
	137	1	32.0	24.0	.
	139	2	53.5 (13.4.)	32.5 (6.4)	8.0 (4.2)
	151	1	38.0	36.0	.
	156	3	42.7 (0.6)	36.5 (0.9)	6.0 (1.7)
	163	4	46.0 (10.4)	37.5 (0)	5.5 (9.0)
	165	7	40.6 (10.4)	34.3 (5.2)	2.1 (1.9)
	170	1	36.0	37.0	3.0
	252	1	42.0	35.0	13.0
	933	1	46.0	28.0	4.0

* significant difference between teams, $p < 0.001$

[$] includes unqualified social care workers

There were no statistically significant differences between support staff and professionally qualified staff in terms of the nature of their work undertaken (full or part time) or the ratio of male to female staff (Table 6-10). There were small but significant differences between teams for support worker type of work (Chi-squared = 46.098 on 30 d.f., p = 0.03) and gender (Chi-squared = 50.616 on 30 d.f., p = 0.015).

Table 6-10 Support worker V professionally qualified staff: nature of work and gender

	Support workers[$]		Professionally qualified	
	n	%	n	%
Nature of work*				
Full time	50	61.7	128	59.8
Part time	31	38.3	83	38.8
Other	0	0	3	1.4
Gender**				
Female	77	93.9	194	91.1
Male	5	6.1	19	8.9

[$] includes unqualified social care workers

*Chi-squared = 1.167 on 3 d.f., p = 0.761

** Chi-squared = 0.689 on 1 d.f., p = 0.407

6.6 Key points

The key findings from the cross sectional study are summarised in the following Table (6-12).

Table 6-11 Summary of findings from Cross Sectional Study

Outcome / Relationship		Factor	Association
Staff	Ratio of support to qualified staff	Yearly referrals	Moderate positive relationship
		Size of Population served	Weak negative relationship
		Size of team	Moderate positive relationship
	Number of support staff	Number of qualified staff	Moderate positive relationship
	Age	Professional V support staff	Support staff older than professionals ($p < 0.05$)
		Support staff between teams	No significant difference for support staff age between teams
	Length of time in job	Professional V support staff	No significant difference between professionals and support staff
		Support staff between teams	Significantly different between teams ($p<0.05$)
	Contracted hours	Professional V support staff	Support staff work greater hours than professionals ($p < 0.01$)
		Support staff between teams	Significantly different between teams ($p<0.05$)
	Gender	Professional V support staff	No relationship
		Support staff between teams	Small significant difference between teams (Chi-squared = 50.616 on 30 d.f., $p = 0.015$)
	Nature of work (part v full time)	Professional V support staff	No relationship
		Support staff between teams	Small significant difference between teams (Chi-squared = 46.098 on 30 d.f., $p = 0.03$)
Service	Setting of care (inpatient vs outpatient vs home)	Support workers	Greater numbers of support workers in home delivered care ($p<0.05$)

Outcome / Relationship	Factor	Association
Setting, level of care, number of professional & support staff, referrals per year		Cluster analysis indicated higher numbers of support workers are used in teams with higher yearly referrals, medium Levels of care and where input is delivered primarily in the client's home
Staffing demographics	WTE support workers	Total WTE across all teams n = 1046 80.1% teams employ at least 1 WTE support worker Mean number of WTE support staff 6.1 Mean ratio of qualified to support staff 1.4

7 Results & Analysis: Prospective study

7.1 Introduction

This section reports on the results of the prospective study component of the research, which involved the recruitment of twenty older peoples' community rehabilitation and intermediate care teams that collect detailed patient, staff and team information and outcomes data. This section also details the methods and analytical framework used. Study limitations are discussed in the discussion section (9).

7.2 Review of research questions

Data derived from this study were used to address the research questions below.

i) Is the utilisation of support workers in CRAICS related to any patient, team or organisational factors?

ii) To what extent do support workers contribute to the delivery of care?

- To determine the proportion of direct care delivered by support workers and qualified staff
- To explore how these proportions differs between teams
- To explore what team and patient factors may contribute to these differences

iii) To what extent does support worker utilisation and contribution to care impact on patient, staff and service outcomes?

- To explore the impact of support worker input on change in TOM, EQ5D, patient satisfaction
- To explore the impact of support workers on WDQ outcomes
- To explore the impact of support workers on Length of Stay (LOS)

7.3 Methods

Twenty five older people's services were invited to participate in a prospective study which included collection of staff, service and patient outcomes data.

The methods are presented under the following headings:

7.3.1 Identification and recruitment of participants

i) Community and Intermediate Care Teams

We aimed to recruit 20 older peoples' teams to participate in a prospective study which included patient outcomes data. No formal sample size calculation was determined, however based on the information provided in the cross sectional study it was believed that this would enable the recruitment of approximately 2000 patients.

There was no national database of the types of services we aimed to recruit for this study, and at the time of recruitment, primary care trusts in England were undergoing major changes, which were likely to impact on the structure, organisation and host of the types of teams we were attempting to recruit. Thus, we drew on several sources to recruit teams;

- The Community Therapists' Network (formerly the Community Rehabilitation Team Network), which represents community based rehabilitation teams from across the UK and had 173 members at the time of recruitment.
- A letter was sent to all PCT chief executives

- Local networks (eg the study team has access to intermediate care networks within London, Sutton and Merton and South Yorkshire)

All of the teams which were contacted as part of the cross-sectional study were also invited to participate in the prospective study. We endeavoured to ensure diversity of teams, in terms of ensuring they covered a range of different types of staff skill mix; team size; and host organisation (social services and health).

The aim was to recruit 20 services to participate in the prospective study, purposively sampled on the basis of diversity of skill mix of staff and team size. Actual response rate to the study is discussed in section 7.5.

ii) Patients

The team staff members were responsible for identifying and recruiting consecutive patients to this section of the study. At the first consultation with the patient, the team member responsible for their care provided the patient with an information sheet about the study and allowed the patient opportunities to ask any questions they had about the study. Staff then offered patients an 'opt out' option as decribed below (Ethical Considerations).

7.3.2 Eligibility criteria

Older peoples' community based rehabilitation or intermediate care services were eligible for inclusion if their primary client base is people over the age of 65 and where the clients receive a package of care which aims to make them more independent. Patients were considered eligible for inclusion in the prospective study if they were over the age of 65 and were a new referral to the service. These criteria often, but not always, reflected the eligibility criteria of many of the services recruited to the study (See Appendix 10).

Services were excluded from the prospective study if they did not primarily deliver care to older people. There were no specific patient exclusion critieria for this study. Although patients with advanced dementia or Alzheimer's disease were not always able to complete the survey components of the study, they were not excluded on this basis. The ability of the patient to complete these tools was at the discretion of the clinician administering the tools.

7.3.3 Participants

The study participants include all of the staff involved in delivering services with the selected teams, and a consecutively recruited cohort of patients who are admitted into the service over a three month recruitment period.

7.3.4 Data collection

The responding teams were followed prospectively so that all new consecutive referrals for a three-month period were followed until discharge, or for a maximum period of 3 months. This enabled us to examine the outcomes for older people in relation to a range of different staffing configurations.

Data were obtained for each team on workforce variables; the systems of service organisation and management; and the outcomes for staff, the service users and the service;

- Organisational context data were collected using the 'service proforma' described in the cross-sectional study above (see Appendix 5). This is completed by the team leader or a senior team member.
- Staff level data were collected from each staff member using the Workforce Dynamic Questionnaire (see Appendix 6).

For each patient recruited into the study, staff members completed a "Client / service user record pack" which captured

information about service use (type of contact provided to patient, frequency of contact, practitioner involved and length of time spent per contact) and change in patient health status (using the EQ-5D and TOMS) for the duration of the study (see Appendix 7).

A number of different tools and approaches were required to access these data, which are summarised in Tables 7-1 and 7-2. The next section reviews each of the outcome measures in detail.

Table 7-1 Contextual data

Data collection tools	Description
The Service Proforma	The Service Proforma was developed through a systematic literature review as part of the larger workforce study. It describes the 'inputs' that can have an impact on service delivery and outcomes, such as, setting of care, host organisation, and case mix of patients (Nancarrow et al., 2008b)
The Levels of Care	The Levels of Care tool is a matrix describing eight possible categories of patient need. It has been used in this study as one proxy for the severity of patient illness, and to help identify potential groups of patients based on their level of service requirement (Enderby and Stevenson, 2000).

Table 7-2 Outcome measures

	Outcome measures/ tools	Description
Service outcomes	Length of stay	Date of discharge minus date of admission
	Staff utilisation	Recorded in the patient record pack: every time a staff member had contact with the client they were asked to record the date, their discipline, their activity and the time spent with the client. From this information the following were calculated: -Proportion of time spent on administrative duties and direct care duties; -Proportion of contacts delivered by support / qualified staff; -Proportion of time spent with clients by support/qualified staff; -Time per contact;
Patient outcomes	The Therapy Outcome Measure (TOMS)	The TOMs scale is a therapist-rated rehabilitation outcome measure. It contains four dimensions: Impairment (degree of severity of disorder); Disability/Activity (degree of limitation); Social participation; and Wellbeing (effect on emotion/level of distress), with each dimension scored on an 11-point ordinal scale (0 to 5, including half-points). Lower scores indicate higher levels of impairment. Operational definitions of these ratings are given in (Chartered Institute of Personnel and Development, 2004).
	The EQ-5D	The EQ-5D, formerly know as the EuroQol, is a generic measure used primarily by economists to calculate quality adjusted life years (QALYs). It uses a single question to assess each of five health domains; mobility, self-care, usual activities, pain/discomfort and anxiety/depresssion. The EQ-5D has a complex scoring

		system, which ranges from 1 which indicates full health, through to -0.59 (Dolan 1997).
	Patient Satisfaction	The patient satisfaction instrument used for this study was developed and validated in the context of the National Evaluation of Intermediate Care (Wilson et al., 2006) (Appendix 8)
Staff outcomes	The Workforce Dynamics Questionnaire (satisfaction, intention to leave profession and employer)	The WDQ is a validated, 58 item, likert scale questionnaire, which is self-completed by staff members. It explores 11 domains: management; team working; training and skills development; access to support and equipment; autonomy; role perception; satisfaction, integration with team members; and role confidence. The WDQ also explores closeness of working and role overlap of the staff member to provide an 'interprofessional' score. It was developed and validated in the context of older people's services (Nancarrow et al., 2008a).

7.3.5 Outcome measurement

All staff involved in the administration of the outcome tools attended a half day training session which explained the purpose of the study, the methods of administering the outcome tools and ethical and recruitment considerations.

i) The Level of Care

Although included here, the levels of care is not an outcome measurement tool. As described below, it allows service providers to determine the most immediate level of care the patient requires. It therefore creates important contextual patient level information for services and researchers alike to examine patterns in patient needs.

The Eight Levels of Care are based on Enderby and Stevenson's Eight Levels of Care model (Enderby and Stevenson, 2000). Work was undertaken in 1999 in Sheffield by various intermediate care and rehabilitation stakeholders to identify gaps in the system and to identify points where intermediate care could be offered in a way more appropriate to a person's needs.

The group decided to consider people's needs and where they might best be met rather than adopting the more common approach of fitting people into services already provided.

Eight broad categories of care were defined in order to clarify the needs of people with disabling conditions. The levels of care range from Level 1 'client needs a prevention and maintenance programme' to Level 8 'client needs rehabilitation for complex profound disabling condition'.

The levels of care tool has been used in local evaluations of community rehabilitation and intermediate care and has been validated in these settings and within the broader study in which this thesis sits (Nancarrow et al., 2005a, Nancarrow et al., 2008d).

The matrix outlines eight programmes of care:

Level 0: Patient does not need any intervention

Level 1: Patient needs prevention / maintenance programme

Level 2: Patient needs convalescence

Level 3: Patient needs slow stream rehabilitation

Level 4: Patient needs regular rehabilitation programme

Level 5: Patient needs intensive rehabilitation

Level 6: Patient needs specific treatment for individual acute disabling condition

Level 7: Patient needs medical care and rehabilitation

Level 8: Patient needs rehabilitation for complex profound disabling condition

Selection of this data collection tool

The levels of care tool was chosen to collect data primarily to ascertain if there were any consistencies in how patient needs are met by different staffing and service models. For example an assumption may be that patients requiring level 8 care, rehabilitation for complex profound disabling condition, would be seen by more professionals than support staff and perhaps in a more acute setting, given the complexity of the condition. In addition the Levels of Care tool attempts to categorise patients by their level of rehabilitation, medical or social need rather than diagnostic category. This is important as many patients who are referred to intermediate care and community rehabilitation do not necessarily fall into one straight forward diagnostic category (Barton et al., 2005b, Godfrey et al., 2005, Young et al., 2005b).

Application of the Levels of Care

In this study the Level of Care tool was administered at the commencement and end of care to measure patient needs on admission and to monitor whether the patient's care needs had changed over time.

ii) The Therapy Outcome Measure (TOM)

The TOM was developed as a measure of outcome for therapists that would reflect the changes effected as a results of therapy intervention. At the time of development of the TOM, measuring outcome focussed on the results of standardised assessment, which measured levels of impairment or of achieving treatment

goals. However while two patients can achieve the same goal with therapy, they may have different outcomes. Enderby (Enderby et al., 1999) uses the example that treatment that focuses on teaching specific new vocabularly can improve communication skills in one person, it may reduce frustration and facilitate social interaction in another.

The World Health Organisation (WHO) classification of disease provided dimensions that equated to the areas targeted in treatment. The dimensions of impairment and disability/activity were focussed on clinical issues, while those of handicap/participation and the additional dimension of well-being were concerned more with the quality of life. The TOM was developed to reflect the WHO classification system.

The TOM considers the four specific concepts Impairment, Activity, Participation and Well-being:

Impairment	Is concerned with the integrity of body systems, and includes psychological and physiological structures and functioning. It reflects the degree of abnormality observed in terms of its variance from the norm for a human being.
Activity	Is concerned with the limitations on actions or functions for an individual, given his/her abilities/disabilities.
Participation	Is concerned with the disadvantage experienced by the individual, reflecting circumstances, social participation, interaction and autonomy.
Wellbeing	Is concerned with emotions, feelings, burden of upset, concern and anxiety and level of satisfaction with the condition.

Each of the four dimensions are rated on a six-point ordinal rating scale, with 0 representing the severe end of the scale and 5 representing normal for a human being given age, sex and culture (Table 7-3). The procedure for using the TOM requires the therapist to assess the individual referred for treatment using their usual assessment procedures, such as standardised tests, observation, report and consideration of medical and social history. The information collected leads the therapist to the appropriate dimension of the measure and to judge the appropriate rating to be assigned.

Table 7-3 Operational codes and descriptors for TOMs rating scale

Rating code	0.0 – 0.5	1.0 – 1.5	2.0 – 2.5	3.0 – 3.5	4.0 – 4.5	5
Description	Profound	Severe	Severe/ Moderate	Moderate	Mild	Norm

Reference: Enderby P, John A, Petherham B. (2006) Therapy outcome measures for rehabilitation professionals, Chichester, John Wiley and Sons Ltd

Validity and Reliability

The assessment of validity of the TOM has been made at both face and content levels. Face validity concerns whether the measure captures the qualities to be measured. Content validity concerns whether the domain of content is relevant to the measure. Acceptance of both face and content validity of the TOM was based on a review by an 'expert panel', comprising therapists working within particular specialisms covered by the measure. The TOM descriptors' scales were developed by therapists specialising in different client groups through use of the Delphi technique. The differing scales were then amalgamated to form an agreed on 'set'. These were then tested by therapists rating cases and assessing the competence of the descriptors and their ability to capture the key behaviours observed in a disorder on each dimension. Therapy teams then collected TOM data on more than 1000 cases over a 6 month period. The results of this data collection were used to assess the validity of the data produced by the TOM as an outcome indicator for different disorder groups (Enderby et al., 1999). The study found that the TOM was able to provide valid data on outcomes of therapy intervention that reflected change.

Three reliability trials were carried out during the development of the TOM. The largest of the trials recruited therapists from eleven different NHS services. In each service, the therapists were trained on the TOM in two 2 ½ hour sessions and asked to practise using the TOM on ten of their own patients. They were then given a reliability check which consisted of rating cases from case histories and viewing a video clip. The therapists obtained good to almost perfect reliability on the TOM dimensions (John et al., 2002).

Selection of this outcome measure

This tool was selected for use within this thesis and the broader study for several reasons. Community rehabilitation and intermediate care services are often complex. They manage a continuum of health conditions and social issues, operate at the interface of numerous agencies, settings and professional groups (Godfrey et al., 2005). They are also multidisciplinary. The TOM encapsulates these complexities. It not only measures social, health and psychological wellbeing it also allows different professionals to assess patients using the same measurement categories regardless of professional background.

As identified in the literature review, support workers may have a greater impact on patient wellbeing and participation than other types of practitioners and as such I felt it important to use an outcome measure that was able to detect change in this area. In addition support workers have also been shown to improve rehabilitation function in stroke (Parry et al., 1999b). I felt the TOM was appropriate to measure this domain of change as well.

Application of the TOM

In this study, the TOM was administered by therapists at the commencement of the episode of care, and again at discharge to look at patient change over time. Several teams chose to perform the TOM at their weekly case conferences or team meetings.

iii) The EuroQol (EQ-5D)

The EQ-5D is a generic, patient-reported, standardised instrument to measure health status or health-related quality of life.

The European Quality of Life instrument (EuroQol) was developed by researchers in five European countries to provide an instrument with a core set of generic health status items (The EuroQual Group, 1990). Existing instruments, including the

Nottingham Health Profile, Quality of Well-Being Scale, Rosser Index, and Sickness Impact Profile were reviewed to inform item content (The EuroQual Group, 1990).

Patient-reported health instruments elicit the patient's perspective across a range of health-related concerns, from symptoms and physical functioning to well-being and quality of life (Haywood et al., 2004, The EuroQual Group, 1990). There are two broad categories of patient-reported health instrument: generic and specific. Generic instruments, like the EQ-5D, are not age-, disease-, or treatment-specific and contain multiple concepts of health related quality of life.

There are two classes of generic instrument: health profiles and utility measures. The EQ-5D is an example of a utility measure. Utility measures of health related quality of life are preference values or weightings that patients attach to their overall health status. Although utility measures usually cover several domains relating to quality of life, the weighting generates a single index that relates quality of life to death (0) or perfect health (1) (Guyatt et al., 1993).

The "weight" of values between 0 and 1 is determined by a standardised descriptive system in the EQ-5D questionnaire, which categorise health states according to the following dimensions: anxiety/depression, mobility, pain/discomfort, self-care, and usual activities. Each domain has one item and a three-point categorical response scale (Box 7.1 depicts the mobility domain, full questionnaire can be viewed in Appendix 5). Weights based upon societal valuations of health states are used to calculate an index score of –0.59 to 1.00, where –0.59 is a state worse than death and 1.00 is maximum well-being (Haywood et al., 2004).

Box 7-1 Example EQ-5D question - mobility

"We are interested in how well you feel and how your health affects the way you carry out your daily activities. We would be grateful if you could answer these questions.

Place a tick in ***one box*** in each group below to indicate which statement best describes your own health state ***today***."

	Please tick one
Mobility	
I have no problems in walking about	☐
I have some problems in walking about	☐
I am confined to bed	☐

Reliability and Validity

Moderate reliability has been reported for older female respondents reporting no change in health over six months (Brazier et al., 1996). Internal reliability testing is not appropriate for the EuroQol (Haywood et al., 2004, Haywood et al., 2005). The point at which an individual with cognitive impairment is unable validly to report on their health is not known, with the majority of studies reviewed by Haywood et al (2004) excluding cognitively impaired respondents.

Haywood et al (2004) in their review of patient reported health instruments state that where a more succinct assessment of health related quality of life is required, particularly for patients in whom a substantive change in health is expected, the EuroQol EQ-5D is recommended; however, further evidence of its reliability and acceptability to respondents is required.

In terms of construct validity with other instruments, statistically significant correlations between the EuroQol and Barthel Index domains were found between the EQ-5D index for 'Mobility' and 'Self Care' items and Barthel Index 'Mobility', and the EQ-5D 'Self Care' item with Barthel Index item 'Dressing' (all p less than

0.05; correlation not reported) (Coast et al., 1998). The Barthel Index consists of 10 items that measure a person's daily functioning specifically the activities of daily living and mobility. The items include feeding, moving from wheelchair to bed and return, grooming, transferring to and from a toilet, bathing, walking on level surface, going up and down stairs, dressing, continence of bowels and bladder.

Also Haywood et al (2004) in their review of the EQ-5D included assessment of the tool's responsiveness. Responsiveness has been described as the ability of an instrument to measure clinically important change over time, when change is present (Fitzpatrick et al, 1998). Strong levels of responsiveness have been reported for patients in elective knee arthroplasty groups (compared with non-elective trauma patients) and also patients who underwent surgical repair of hip fractures. There was no difference in responsiveness however between patients attending a cardiac rehabilitation programme compared with those who did not attend the programme (Haywood et al., 2004).

Selection of this outcome measure

Due to the wide range of co-morbidity in the older population, health related quality of life instruments such as the generic EQ-5D that support the assessment of broader concepts of health status, provide an important source of comparative data across older population groups. The broad content of the EQ-5D enables the identification of co-morbid features that may not be captured by specific instruments.

In addition when selecting a self report instrument, the appropriateness of item content, population group and level of respondent and clinician/researcher burden in terms of time, cost, and feasibility of application should be considered. For the most extensively studied instruments, evidence suggests that completion difficulties increase with age, declining cognitive

ability, and deteriorating health status (Haywood et al., 2004, The EuroQual Group, 1990). Therefore the EQ-5D was chosen as it is one of the shortest instruments to administer.

Application of the EQ-5D

The clinician requested the patient complete the EQ-5D on admission to the service and then again at discharge. If patients were unable to complete the questions, the clinician administered the questionnaire. If patient were unable to answer the questions this was indicated on the form along with a brief explanation by the clinician.

iv) The Workforce Dynamics Questionnaire (WDQ)

The Workforce Dynamics Questionnaire (WDQ) is a questionnaire which is completed by staff to attempt to quantify the extent of worker flexibility within teams; identify the factors which positively and negatively effect worker flexibility; and determine the impact of worker flexibility on a range of staff outcomes.

The WDQ arose as a result of an exploration of the impact of workforce flexibility on older peoples' community rehabilitation and intermediate care services (Nancarrow, 2004a).

The subscales for the questionnaire were developed through a series of in-depth interviews with 26, multidisciplinary intermediate care staff, including nurses, therapists and support workers (Ritchie and Spencer, 1995, Ritchie, 1997, Nancarrow, 2007). The interviews asked specifically about the way that worker roles were changing, the factors that influenced their role changes, and the impact of those changes. All interviews were tape recorded and transcribed verbatim and analysed using Framework analysis.

The interview data were augmented through two substantial literature searches (Nancarrow et al., 2006, Nancarrow and Mountain, 2002a). The review showed that there were no validated questionnaires available to quantify, or measure the impact of workforce change on role boundaries. A number of tools measure components that are likely to be relevant to workforce change, such as professional autonomy and job satisfaction. However the domains necessary to test the concepts associated with role overlap and role flexibility were not clear.

As a result of the interviews and literature review, an initial list of 76 items was identified. Questions from published instruments were examined, and where relevant were rewritten or adapted to conform to the scaling requirements of this survey. As a result a

pilot of the instrument with 28 staff, ten items were removed from the questionnaire to reduce duplication and because some of these questions were seen as ambiguous (resulting in a total of 66 items). The wording of some of the remaining questions was altered, for instance in some cases, positive questions were rephrased negatively. The final eleven domains are detailed below in table 7-4.

The questionnaire was developed for self-completion by staff members and was formatted for automated computer entry, which was managed by the Centre for Research and Evaluation at Sheffield Hallam University.

Calculation of scores

Scores out of 100 were calculated for each subscale. Where one or more item of data were missing from any domain, we imputed the individual mean score for that domain, unless all data were missing, in which case the item was not calculated (Shrive et al., 2006). See Appendix 9 for the scoring algorthim.

Table 7-4 Domains of the Workforce Dynamics Questionnaire

	Domains (Cronbach α)	No of items	Description
1.	Overall satisfaction	1	Overall level of satisfaction with the job.
2.	Autonomy (0.807)	4	The extent to which a practitioner has control over his / her own work or that of others.
3.	Role perception (0.749)	9	The way a practitioner perceives his/her role is understood and valued by other people (practitioners and the public).
4.	Role flexibility (0.738)	6	The extent to which a practitioner perceives can alter his /her role to meet the needs of the team or service users.
5.	Integration with peers and colleagues(0.711)	3	The level of support available to the practitioner from a member of his / her own professional group.
6.	Team working (0.876)	10	The level of coherence and harmony within the team.
7.	Management structures and styles (0.900)	5	The overall extent of satisfaction with the management of the team.
8.	Access to technology and equipment (0.735)	4	Ability of the staff member to access necessary administrative support and equipment to do their job.
9.	Training and career progression opportunities (0.808)	8	Support for and satisfaction with the career development opportunities offered by the current post.
10.	Quality of care (0.768)	2	Staff perception of the quality of patient care provided by their team.
11.	Uncertainty (0.682)	4	Measures staff uncertainty about the future of their team and their role within the team.

Selection of this data collection tool

As explained above, there are no other validated questionnaires available to quantify, or measure the impact of workforce change on role boundaries. As this is a primary factor that influences staff within CRAICS it is important to measure it. In addition the questionnaire was developed in direct consultation with the staff who are the primary focus of this research and is therefore highly relevant. The WDQ was also chosen as it empirically measures staff outcomes and is validated to do so across teams, within teams and across different disciplinary groups. As such questions can be analysed such as do support workers have higher levels of autonomy in teams with a low qualified professional to support worker ratio. The empirical measurement of workforce dynamics also allows for comparison of team and discipline level WDQ results with other outcomes such as patient functional gain and length of stay. For example do teams with higher overall job satisfaction postiviely influence patient functional gain and/or reduce length of stay?

Application of the WDQ

The WDQ was completed once by each staff member for both the cross sectional and prospective studies. For the cross sectional study, the WDQ was completed by all members of staff who volunteered to complete the questionnaire as part of the service proforma. For the prospective study, the WDQ was administered once at the beginning of the evaluation. It was given to all staff who attended the training day and further copies of the WDQ were sent to staff who did not attend the training day. In the cross sectional study, due to resource limitations staff returned their WDQs as a group and therefore some confidentiality may have been compromised. This was resurrected in the prospective study where staff could return their individual WDQ in a separate envelope.

v) Patient satisfaction

The patient satisfaction instrument used for this study was developed and validated in the context of a large National Evaluation of Intermediate Care (Wilson et al., 2006, Barton et al., 2005b). The final validated questionnaire consists of eighteen questions scored on a 5 item Likert scale (strongly agree, agree, don't know, disagree, strongly disagree) with not applicable also available for selection. Principal component analysis identified six subscales including: general (overall satisfaction score); affective (how patients feel about care received); cognitive (satisfaction with the amount of information received); coordination after discharge; timing of discharge; and access to pain relief. Scores out of 100 are then calculated for each subscale.

Selection of this data collection tool

Patient satisfaction with care is always an important outcome to measure. As identified above, the patient satisfaction tool chosen is context specific and requests patient opinion on a range of areas specific to intermediate care such as access to pain relief and coordination of care after hospital discharge. It has also been shown to be reliable and valid to use with frail elderly people, who are the majority of those admitted to CRAICS (Wilson et al., 2006).

Application of the questionnaire

The patient satisfaction survey was given to each participating patient by a clinician at the end of their episode of care. The patient was instructed to complete the questionnaire and return it to the research team in a sealed addressed envelope. Each patient satisfaction survey was allocated the same number as the patient record pack which recorded their episode of care details. In this way patient level characteristics could be directly examined in association with satisfaction. Where patients were unable to independently complete the questionnaire, where possible a carer was asked to assist or it would be administered by a staff member. The questionnaire has also been shown to be

reliable and valid when self administered or administered by interview (Wilson et al., 2006).

Table 7-5 below summarises the scoring systems for each of the outcome measures detailed above.

Table 7-5 Summary of outcome measure scoring

		Range of scores	
Measure	**Sub-scales**	**Worst**	**Best**
$EQ\text{-}5D_{vas}$	n/a	0	100
$EQ\text{-}5D_{index}$	n/a	-0.594	1.000
TOM	Impairment	0	5
	Activity	0	5
	Participation	0	5
	Wellbeing	0	5
	Individual questions	0	5
Patient satisfaction questionnaire	Affective	0	100
	Cognitive	0	100
	Coordination of discharge	0	100
	Timing of discharge	0	100
	Pain	0	100
WDQ	Overall satisfaction	0	100

7.4 Analysis

Analysis strategies are described under each relevant heading of the results. Overall results such as patient and staff characteristics have been descriptively analysed.

An analysis strategy has been employed to evaluate the proportion of direct care support workers deliver and the team or patient factors that may be related to or predict variation in the care delivered by support workers. The analysis strategy from the broader study has also been included which evaluates the impact

of team, patient and staff level variables on patient, staff and service outcomes.

7.5 Results

Results are presented under the following headings:

7.5.1 Response rates and participating teams

Expressions of interest were received from 27 teams to participate in the prospective study and training and resources were delivered to all of these teams. However, not all of these teams actively undertook data collection. Table 7-6 summarises the teams whose data were included and excluded from each analysis (full details available in Appendix 10). Six teams were excluded from all analyses as the only data received were staff WDQ responses, and no team or patient information was available. One team had no service proforma data and was therefore excluded from analyses since there was no data available to investigate the relationship between team characteristics and outcomes. A total of 19 teams were therefore included in the full multivariate analyses which sought to capture the relationship between team characteristics, staff characteristics, patient satisfaction and patient outcomes.

The overall response rates were as follows;

- Service proforma data were received from 19 teams
- Patient record packs were received for 1880 patients from 20 teams
- Patient satisfaction questionnaires from 618 patients in 20 teams

- Workforce Dynamics Questionnaires from 340 staff in 25 teams (however only 298 responses from 19 teams were used in the multivariate analyses).

Table 7-6 Number of team responses

Team	Completed Service proforma?	No. of staff completing WDQ	No. of patients completing PRP	No. of patients completing pat. sat
A	Yes	43	313	127
B	Yes	23	85	19
C	Yes	8	18	6
D	No	10	53	30
E	Yes	10	69	33
F	Yes	9	52	17
G	Yes	15	173	62
H*	No	2	0	0
J	Yes	11	81	4
L	Yes	6	30	3
M	Yes	8	98	23
N	Yes	0	100	8
PA	Yes	5	21	9
PB	Yes	19	16	14
PC	No	0	0	0
Q	Yes	10	46	8
SA	Yes	18	73	29
SB	Yes	55	225	88
SD*	No	3	0	0
SF*	No	3	0	0
SG	Yes	19	82	38
T	Yes	7	56	21
TA	Yes	17	240	54
U	Yes	5	49	25
W*	No	6	0	0
X*	No	6	0	0
Z*	No	7	0	0
Total number included	**19**	**298**	**1880**	**618**

* not included in overall analyses.

7.5.2 The nature of the participating teams

The following section summarises the organisational, staffing and patient characteristics of the responding teams. The contextual data for each team was provided on the Service Proforma (Appendix 5) and is detailed in Appendix 10.

Organisational characteristics

The majority of the participating teams for whom records were provided (n=19) provide services in more than one location (76%), predominantly the client's own home (74%). Most teams are hosted by a single organisation, the majority by PCTs (78%), and they serve rural, urban and mixed populations. The mean population served is 210,114 (SD 214638, range 48000 – 390000). On average 630 referrals per year are accepted by teams (SD 555, range 166 to 2000). However most teams (n=16) reported they accept between 200 and 700 referrals with only 3 teams accepting 1600 or more.

Staffing characteristics

The mean number of WTE staff in participating teams was 32.07 (SD 18.01, range 3.5-51.1). There was a wide range of practitioners employed with the most common being support workers (95%), physiotherapists (90%), occupational therapists (90%), nurses (68%) and social workers (53%). The average proportion of support workers in the team (defined as number of support workers/support workers + qualified staff) was 41.1 (SD 14.9, range 0-82.4). Tables 7-7 and 7-8 summarise the staffing characteristics of the participating teams, complete staffing descriptions for all teams are available in Appendix 11.

Table 7-7 Summary of staffing characteristics

Number of staff in team	Mean (SD) Range	32.07 (18.01) 3.5 – 51.1
Number of WTE clinical staff in team	Mean (SD) Range	27.31 (15.6) 3.5-44.1
Number of WTE clinical support workers in team	Mean (SD) Range	11.08 (6.4) 0-18.6
Proportion of support workers in team	Mean (SD) Range	41.1 (14.9) 0-82.4
Total number of staff types in team	Mean (SD) Range	9 (3) Apr-13

Table 7-8 Staffing characteristics by team

Team	Total number of staff in team Mean	Number of clinical staff in team *(WTE) Mean	Number of clinical support workers in team (WTE) Mean	Proportion of support workers in team Mean	Total number of staff types in team
A	51.10	44.1	15.5	35.15	13
B	16.60	14.8	3.2	21.62	9
C	17.28	15.34	4	26.08	8
D	No data	No data	No data	No data	No data
E	8.73	7.23	2.94	40.66	8
F	24.90	12.5	10.8	82.40	11
G	43.00	40	21	52.50	9
J	3.50	3.5	0.5	14.29	4
L	11.00	9	0	0.00	4
M	8.70	7.2	3	41.67	6
N	28.28	22.28	12.28	55.12	9
PA	18.50	17.1	8	46.78	10
PB	33.71	32.71	11.57	35.37	5
Q	26.60	20.6	14.5	75.20	9
SA	27.22	24.34	5.82	23.91	8
SB	60.90	50.7	18.6	36.69	11
SG	26.12	21.84	6.63	30.36	11
T	24.00	19	11	60.00	9
TA	24.16	19.06	8.76	48.65	10
U	8.00	6	3	50.00	4

* qualified + support staff (not including administrative or management staff)

Based on the 340 responses to the WDQ, staff were predominantly female (84%); slightly more than half of the respondents (55%) reported that they work full time; the mean hours of employment per week was 31; and the mean duration of employment of staff in their current team was 4 years (Appendix 12). The proportion of responding senior staff (AfC bands 5-8) was 63% and non-qualified staff 30.5% (Table 7-9). There were no 'specialist' practitioners (AfC band 8A) within this cohort. The WDQ responses by team are included in Appendix 12.

The demographic characteristics of support workers did not differ significantly from the findings in the cross sectional study. Support workers were predominantly female (87%), slightly less than half of the support workers worked full time (42%), worked an average of 31 hours per week (SD 6.9, range 15-38) and had worked in their current position for an average of 4.8 years (SD 5.3, range 0.4 – 26). Table 7-10 outlines support worker characteristics by team.

Table 7-9 Agenda for change banding

AfC Band	n	%
'Unqualified staff'		
Band 2	20	6.6
Band 3	62	20.3
Band 4	11	3.6
'Senior staff'		
Band 5	39	12.8
Band 6	78	25.6
Band 7	57	18.7
Band 8	18	5.9
Student	4	1.3
Social services grading	16	5.2
Total	305	100.0
Missing	24	

Table 7-10 Support worker characteristics by team

		Age		Hours contracted to work per week		Time worked in current job: Years	
	n	Mean	SD	Mean	SD	Mean	SD
A	14	44.1	10.1	29.3	7.6	3.9	3.8
B	8	42.4	9.3	28.2	8.6	3.4	4.5
C	0	-	-	-	-	-	-
D	3	45.0	5.6	29.8	0.3	3.0	4.4
E	2	46.0	2.8	18.8	3.2	1.5	2.1
F	5	44.4	6.9	28.8	7.0	9.6	10.7
G	3	37.7	12.1	37.0	0.9	1.3	2.3
J	3	36.7	8.1	37.5	0.0	9.0	11.4
L	0	-	-	-	-	-	-
M	2	52.0	1.4	28.8	12.4	1.5	0.7
PA	2	37.5	2.1	30.0	10.6	4.5	2.1
PB	7	.	.	30.4	7.8	5.7	4.1
Q	2	56.0	2.8	33.0	4.2	4.0	1.4
SA	3	55.0	2.6	36.0	0.0	5.7	3.8
SB	12	42.3	8.4	33.0	6.4	3.5	2.9
SG	6	50.5	14.4	28.8	7.3	10.3	9.1
T	0	-	-	-	-	-	-
TA	4	49.0	7.1	30.2	3.9	6.0	1.6

Patient characteristics

Of the 1882 patients for whom we received patient record packs, 63% were female with an average age of 79.7 (Table 7-11).

The level of dependence of the patients at admission was measured by the EQ-5D, TOMs and levels of care need (Table 7-11, Appendix 13). Overall mean EQ-5D admission scores were low across the board, with the average EQ-5D admission score being 0.4 (SD 0.3, range -0.59 to 1). This cohort of patients rate their health as significantly worse than the average 80 year old in the UK population, whose EQ-5D score is around 0.7 (Kind et al., 1999). The mean TOMS admission scores (3.1 – 3.7, range 0-5 for all domains) demonstrate patients admitted to these services also have moderate levels of disability.

Dependency at admission, as measured by the EQ-5D and TOMs impairment scores show some differences between teams (Appendix 13). One way ANOVA demonstrated these differences as well as age were significant at the $p<0.000$ level.

Table 7-11 Summary of patient characteristics

N	1880
Mean age (SD)	79.7 (11.0)
Gender (% female)	1190 (66%)
EQ5D admission mean (SD)	0.4 (0.1)
TOMs impairment admission mean (SD)	3.1 (0.9)
TOMs activity admission mean (SD)	3.1 (1)
TOMs participation admission mean (SD)	3.2 (1.1)
TOMs well-being admission mean (SD)	3.7 (1)

7.5.3 Summary of outcomes

As demonstrated in table 7-12 almost one third of clients (30%) required a regular rehabilitation programme. The average length of stay was 32.9 days (range 0 to 274, SD 35.5) and patients on average received 14.3 contacts (SD 22.3). There were on average small but positive gains in TOMS scores for all domains. Mean change in EQ-5D score was also positive (0.18, range -0.77 to 1.18, SD 0.3). Changes in health status, length of stay and average number of contacts per patient also shows some differences between teams (Appendix 14).

Overall, patient satisfaction was high with a mean score of 80.1. However, 'timing of discharge' scored 54.8, indicating an overall lack of satisfaction with this item. Similarly scores for access to pain relief were also low scoring 69.5 (Patient satisfaction results in Appendix 15).

Table 7-12 Summary of patient outcomes

Outcome measure	Mean (SD)
EQ-5D change	0.18 (0.30)
TOM Impairment change	0.40 (0.82)
TOM Activity change	0.47 (0.84)
TOM Wellbeing change	0.39 (0.86)
TOM Participation change	0.27 (0.83)
Patient satisfaction	80.1 (9.7)
Modal level of care	4 - Regular rehabilitation programme (30%)

7.5.4 Contribution of support workers to the delivery of care

i) Proportion of direct care delivered by support workers

Analysis strategy

Of interest here was the proportion of direct care delivered by support staff (Su) and or Qualified staff (QS). This was analysed in three ways:

i) Proportion of patient contacts (C_Su) delivered by support workers
ii) Proportion of face to face patient time (T_Su) delivered by support workers
iii) Time/contact delivered by support workers as compared to qualified professionals

The *proportions* of time and contacts delivered by Su and QS therefore gives an indication of how the workload is balanced or divided between the two groups. This will enable me to examine whether or not support workers are indeed delivering greater proportions of care *relative to* qualified practitioners.

The time per contact on the other hand gives an indication as to how these two groups of practitioners spend their time with

patients. This will enable me to examine whether or not support workers are indeed spending on average more time with clients each time they are visited than a qualified practitioner.

The following times and contact details taken from the dataset used in this study will be used as examples to demonstrate how these three variables have been calculated.

Sample table of data

Patient ID	Total no **contacts**		Total face to face **time** per contact	
	Su	QS	Su	QS
1	0	3	0	243
2	13	7	673	610
3	40	24	1247	1244

i) Proportion of contact

For each patient (C_QS)/(C_QS+C_Su) was calculated and the average then reported. Using the above sample table of data and calculating the proportion of contact using this formula you would get:

First patient = 3/(3+0) = 1

Second patient= 7/(7+13) = 0.35

Third patient = 24/(24+40) = 0.38

Patient ID	Total no contacts		Proportion contact	
	Su	QS	Su	QS
1	0	3	0	1
2	13	7	0.65	0.35
3	40	24	0.62	0.38
Average			0.423	0.567

The average of 1, 0.35 and 0.38 is 0.567, and you'd say that a patient on average has 57% of their contacts delivered by qualified staff and 43% delivered by support staff.

ii) Proportion of time

For each patient (T_QS)/(T_QS+T_Su) was calculated and the average then reported. Using the above sample table of data and

calculating the proportion of time using this formula you would get:

First patient= 243/(243+0) = 1
Second patient= 610/(610+673) = 0.48
Third patient= 1244/(1244+1247) = 0.5

Patient ID	Total Face 2 Face time		Proportion time	
	Su	QS	Su	QS
1	0	243	0	1
2	673	610	0.52	0.48
3	1247	1244	0.50	0.50
Average	640	699	0.34	0.66

The average of 1, 0.48 and 0.5 is 0.66, and you'd say that a patient on average has 66% of their time delivered by / spent with qualified staff and 34% delivered by support staff.

iii) Time/contact

For each patient the total time delivered by a support worker (Ttot_Su) was divided by the total number of contacts delivered by support worker (Ctot_Su). This gave a mean time/contact for each patient. The overall mean time/contact for all patients for support workers was then calculated and reported. This was then repeated for qualified staff.

Using the above sample table of data and calculating the mean time per contact for a support worker using this formula you would get:

First patient mean time/contact SW = 0/0 = 0 mins per contact
Second patient mean time/contact = 673/13 = 51.77 mins per contact
Third patient mean time/contact = 1247/40 = 31.18 mins per contact
Mean time per contact delivered for all three patients by a support worker = (0+51.77+31.18)/3 = 41.475 mins per contact

Similarly for QS:
First patient meant time /contact = 243/3 = 81mins per contact
Second patient mean time/contact = 610/7 = 87.14 mins per contact
Third patient mean time/contact = 1244/24 = 51.83 mins per contact

Mean time per contact delivered for all three patients by qualified staff = (81+87.14+51.83)/3 = 73.323

Patient ID	Total Face 2 Face time		Total no contacts		Mean time/contact	
	SW	QS	SW	QS	SW	QS
1	0	243	0	3	0	81
2	673	610	13	7	51.77	87.14
3	1247	1244	40	24	31.18	51.83
Average	640	699	17.67	11.33	41.47	73.32

Interpreting these results
When interpreting the results of this analysis strategy it is important to keep in mind the difference between the *proportions* of care delivered and the *mean time/contact*.

That is, the proportions of care indicate how work is divided between the two groups – it is looking at how one group relates to the other. For this reason it is calculated as a percentage such that the amounts of time or contacts delivered by each practitioner can be considered relative to each other.

Time/contact on the other hand considers each group (separately of each other) and as such demonstrates how the two separate groups of practitioners differ in the average amount of time they spend with patients each visit. It is a measure of the relationship between time and contact for each practitioner. For this reason the mean time per contact is expressed in time units per contact. These results are mutually exclusive; they are not relative to each other.

Results

Across all teams, the proportion of contacts delivered by support workers was 31% and qualified staff 69%. Similarly, the proportion of time spent with support workers was 42% and qualified staff 57%. This indicates that qualified practitioners are overall delivering greater proportions of care relative to support worker contribution to care.

These proportions differed significantly between teams ($p<0.001$). Table 7-13 illustrates the difference in proportion of contacts and time delivered by qualified staff to support staff by team.

The mean time per contact for support workers was 57 mins compared to 77 mins for qualified staff. This indicates that on average support workers spend less time with a client per contact than a qualified practitioner. These results also differed significantly between teams ($p<0.001$).

Table 7-13 Proportion of face to face care delivered by support staff (by team)

Team	Time per contact support worker*		Proportion of time delivered by support worker*		Proportion of contacts delivered by support staff*		Proportion of support staff in team* As a % of all staff
	Mean	SD	Mean	SD	Mean	SD	
A	57.09	15.88	0.38	0.17	0.35	0.26	35.1
B	77.83	54.41	0.36	0.29	0.08	0.23	21.6
C	113.57	71.19	0.21	0.07	0.06	0.12	26.1
D	47.38	13.97	0.5	0.21	0.42	0.31	No data
E	51.5	21.91	0.47	0.21	0.38	0.3	40.7
F	35.57	19.05	0.6	0.28	0.56	0.35	82.4
G	55.17	12.75	0.31	0.15	0.23	0.22	52.5
J	48.07	22.65	0.46	0.16	0.26	0.29	14.3
L	4.14	0.2	0.06	0.03	0.25	0.46	0
M	44.71	20	0.4	0.26	0.26	0.29	41.7
N	47.38	14.93	0.52	0.29	0.47	0.39	41.7
PA	74.42	18.73	0.52	0.25	0.28	0.33	46.8
PB	88.05	12.16	0.41	0.03	0.41	0.05	35.4
Q	73.86	47.83	0.76	0.2	0.72	0.24	75.2
SA	66.89	14.74	0.3	0.17	0.27	0.23	23.9
SB	68.93	25.71	0.39	0.2	0.32	0.27	36.7
SG	35.37	13.17	0.22	0.13	0.22	0.15	30.4
T	97.62	117.83	0.63	0.23	0.32	0.35	60
TA	52.37	28.92	0.47	0.23	0.29	0.36	48.7
U	60.43	16.8	0.52	0.2	0.3	0.31	50

* one way ANOVA demonstrated significant differences between teams for these domains ($p < 0.001$)

ii) Factors associated with support worker contribution to care

Analysis strategy

Of interest here is the relationship between the proportion of direct care delivered by support staff and various team and patient level factors. I am also interested in the proportion of time qualified and support staff spent undertaking administrative duties and whether or not this differed between the two groups of practitioners.

The statistical analyses investigated the association between direct care delivered by support staff (dependent variable) and team and patient level characteristics (independent variables).

Dependent variables include:

- Proportion of time spent with support worker
- Proportion of direct care delivered by support worker
- Time spent per contact with support worker

Independent variables (predictors) include:

a) Team and service level (sourced from service proforma)

- Proportion of support staff in the team (calculated as support / qualified + support)

Correlation analysis will be carried out to determine the strength of the association (if any) between the proportion of support workers in a team and support worker care. Correlation measures the association between two variables. As there are only 19 items of data available at team level, it is not statistically feasible to carry out any further analysis of relationship (such as linear regression).

b) Patient level - admission health status (sourced from patient record data)

TOMS admission score Impairment

TOMS admission score Activity

TOMS admission score Participation

TOMS admission score Wellbeing

EQ-5D admission score

Level of care need on admission

- Covariates / confounding variables include:

  Age

  Gender

In the first instance Pearson's correlation coefficients will be calculated for each variable. Where a moderate association is found ($r > 0.3$) these variables will then used in step wise regression.

Regression analysis is used if it is thought one variable may be causing a response in the other. In this case I am interested in investigating whether or not the proportion of care delivered by support workers changes in response to patient health status.

Stepwise regression involves the step by step addition of variables to a predictive model. It is used to determine whether particular variables can be used to predict outcomes. Therefore of interest here is whether or not the admission health status of the patient has any relationship to or any predictive capacity on the proportion of care delivered by support workers.

Patient health status on admission, as expressed by EQ-5D, TOMS and Level of care, has been used as a predictor variable for several reasons. There is some evidence to show there may be an association between patient severity and the type of worker involved in care in acute hospital environments (Jenkins-Clarke and Carr-Hill, 2003). As identified in the literature review, there is an assumption that introducing support workers into the skill mix will enable more specialist/high level care to be undertaken by qualified practitioners. If this assumption is true, we should see that patients with more severe admission health status are seen

more predominantly by qualified staff and conversely that less disabled patients are seen more by support staff.

Age and gender have been used as covariate predictors as there is often an association between age, gender and health status. In addition age and gender may be confounding variables and thus need to be accounted for in the analysis.

The choice of predictor variables for step-wise regression should ideally be based on past research with good methodology and/or substantive theoretical importance (Field, 2005). The problem I have encountered is that there is no research looking at these relationships in this setting and therefore no previous models were available to base my chosen variables on. For this reason stepwise regression was chosen as the analytical model because it is useful for *exploratory* model building (Wright, 1997).

Stepwise regression involves adding the variable with the highest degree of explained variability (highest R-squared, lowest residual variability) first to the model. At each step, the variable that increases the amount of explained variability (R-Squared) the most is added (e.g. TOMS impairment or EQ-5D score). The process is stopped when none of the remaining variables significantly increase the amount of explained variability. The statistical software SPSS version 12 was used to undertake the stepwise analysis.

A two sided statistical significance level of 1% was used for all comparisons. No adjustments have been made for multiplicity. The results are expressed as coefficients (the degree of change in outcome per unit change in predictor variables) with their corresponding confidence intervals set at 95%.

v) Time spent on administrative and direct care

Of interest here is whether or not the proportion of time spent by qualified and support staff on administrative duties differs. These results will be analysed descriptively.

Results - Team level characteristics

i) Proportion of contacts

Table 7-13 (above) details the proportion of contacts delivered by support workers with the ratio of qualified staff in the team.

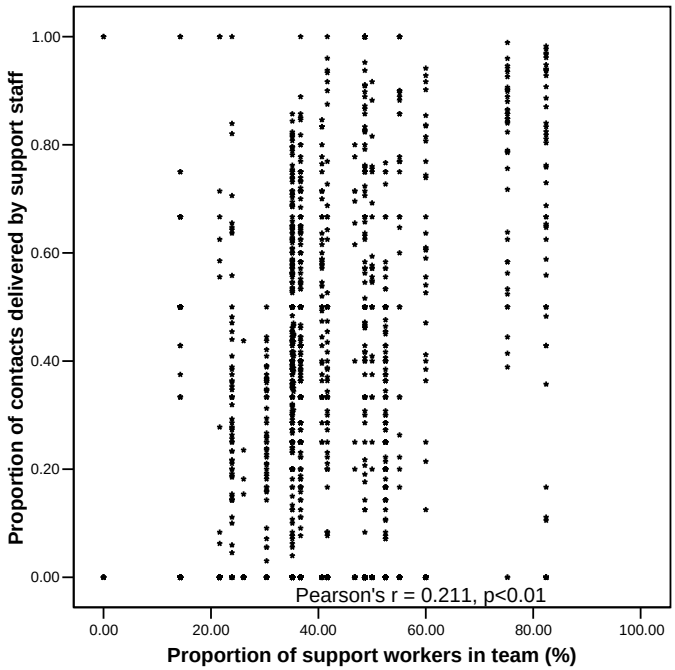
From the data it doesn't appear that there are any obvious associations between these two variables. For example team N consists of 42% support workers who are responsible for delivering 47% of face to face contacts. Team G consists of 52.2% support workers who are responsible for delivering only 23% of care which is almost half of what the support workers deliver in team N, even though they have a higher proportion of support staff in their team.

This is further demonstrated in figure 7-1 which shows the proportion of support staff in the team against contacts delivered by support staff. Correlation analysis showed a very weak but significant positive linear association between the proportion of support staff in the team and the proportion of contacts delivered by support staff $r_p = 0.211$, $p<0.01$ ($n=1631$). This suggests teams with greater proportions of support staff may have a greater proportion of their care delivered by support workers. The association however is very weak. The lack of strength in the association may be partially explained by the small amount of data available to determine the proportion of support staff at team level ($n=19$), or alternatively that there isn't a strong association between the two variables.

As this relationship is expressed as proportions, the reverse is also true for qualified staff. That is as the proportion of support

workers in a team increase, the proportion of total client contacts delivered by qualified staff decreases.

Figure 7-1 Proportion of support workers in the team and proportion of support worker contacts



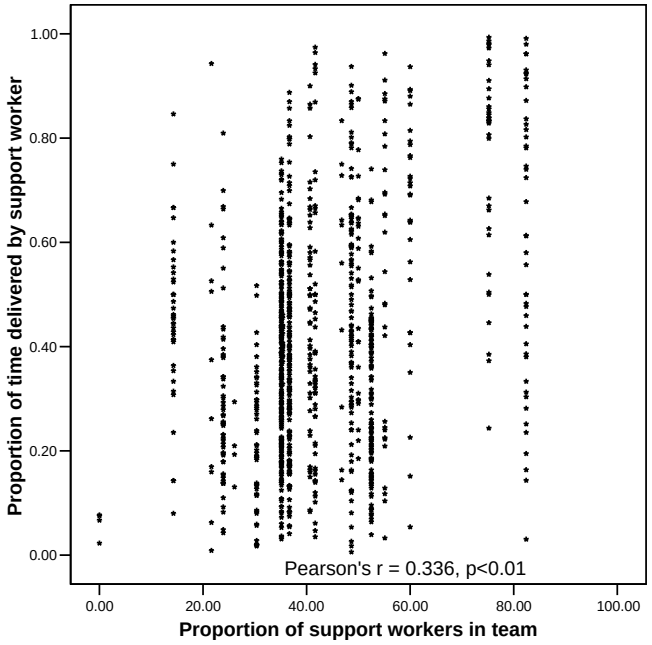
ii) Proportion of time

Table 7-13 (above) also details the proportion of time delivered by support workers with the ratio of qualified staff in the team. There are some differences between the proportion of time and proportion of contacts delivered across teams. For example support workers in team T spend around 60% of total face to face time with a patient yet carry out only 30% of contacts.

From the data it appears there is some consistency with the proportion of support workers in the team and the proportion of time spent with clients. For example the proportion of total time delivered by support workers seems to be higher in teams with greater than 40% proportion of support workers seem to have higher total time. This isn't consistent however. For example team N consists of 42% support workers who are responsible for delivering 52% of total face to face time with patients. Team G has a greater proportion of support workers in the team (52.2%) yet they are responsible for delivering only 30% of total time.

As figure 7-2 demonstrates, a weak but significant positive linear association was found between the proportion of support workers in the team and the proportion of total face to face time spent with clients r_p=0.336, p<0.01 (n=1046). This suggests that as the proportion of support workers in a team increase, the proportion of total client time delivered by support workers also increases. As this relationship is expressed as proportions, the reverse is also true for qualified staff. That is as the proportion of support workers in a team increase, the proportion of total client time delivered by qualified staff decreases.

Figure 7-2 Proportion of time and support workers in team



iii) Time/contact

Table 7-13 (above) details the mean time per contact for support workers by team. Again there are quite a number of differences between these figures and the proportion of contacts and time. The most obvious example is team C who had the second lowest proportion of time (21%) and contact (6%) delivered by support workers yet has the highest time per support worker contact. The same pattern applies for team B. These two teams also have a low proportion of support workers however as figure 7-3 demonstrates, there is no statistical association between the proportion of support workers in a team and the time/contact delivered by support workers (r_p=0.013, p=0.680, n=1019).

There was one outlying record, time per contact 600 mins, which was a correct record. When this particular record was removed from the data, no significant change to the correlation coefficient or p value was observed.

Interestingly, as seen in figure 7-4, there was a very weak negative association between time per contact for qualified staff and the proportion of support staff within the team (r_p= - 0.122, p<0.01, n=1595). Inferring qualified staff may spend less time per contact with patients when there are greater proportions of support staff in the team.

Figure 7-3 Time per contact and support workers in the team

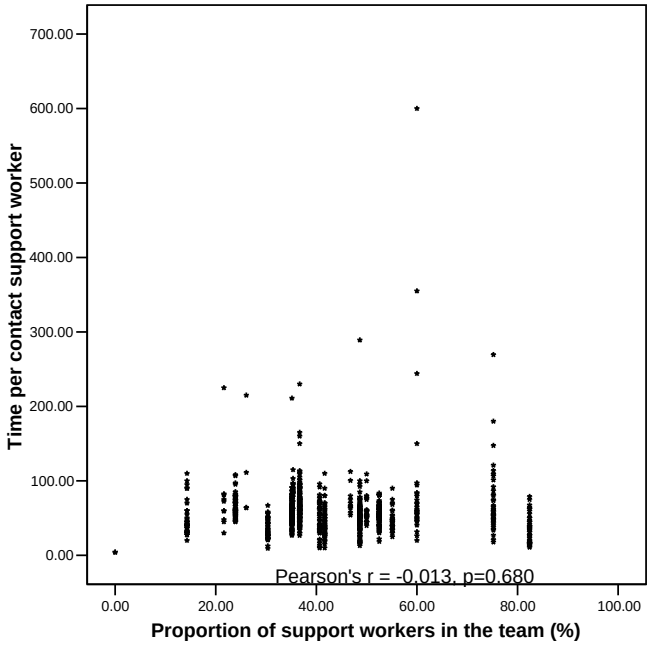
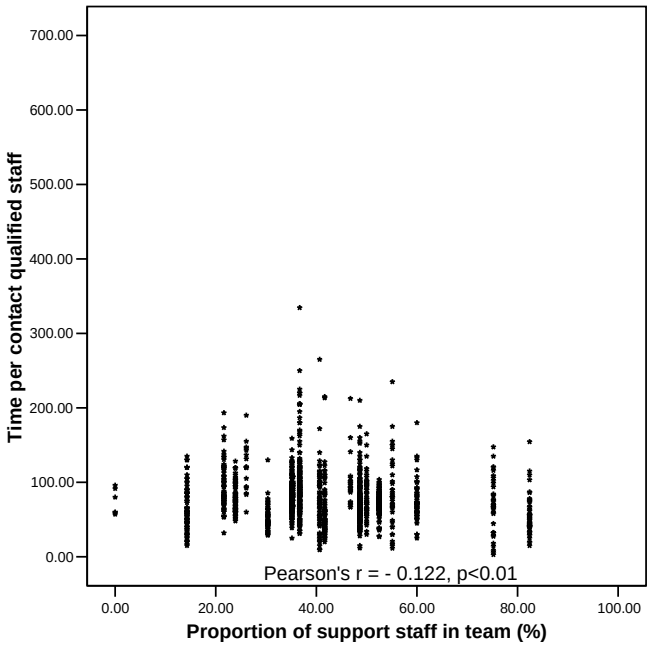


Figure 7-4 Time per contact and qualified staff in the team



Summary - team level characteristics

The proportion of time delivered by support workers had a weak to moderate association with the proportion of support workers in the team (r_p = 0.336, p<0.01). The association between support staff in the team and proportion of contacts delivered by support workers was slightly weaker (r_p = 0.211, p<0.01).

There was no association found between the proportion of support workers in the team and the time per contact delivered by support workers. However there was a very weak negative association between the proportion of support staff in the team and time per contact delivered by qualified staff (r_p= - 0.122, p<0.01).

Results - Patient level characteristics

Table 7-14 details the proportion of direct care delivered by support workers with the mean admission scores for EQ-5D and TOMS as well as corresponding modal level of care for each team.

From the data there are no clear relationships emerging between the proportion of direct care delivered by support staff and patient health status at team level. This is not surprising given one way ANOVA demonstrated significant differences between all teams for each of the admission variables p<0.001. For example Team Q have the highest proportion of support worker contacts but one of the higher mean EQ-5D admission scores in the cohort (0.56). Team E also have greater than average proportion of contacts delivered by support workers (38%) but have one of the lowest mean EQ-5D admission scores in the cohort (0.27). Similarly Team U has 31% of contacts delivered by support workers and has the lowest mean TOMS impairment and activity admission scores (2.51, 2.56). Team PA has almost identical proportion of contacts delivered by support workers (28%), yet has the highest mean TOMS scores for these domains (impairment 3.63, activity 3.88)

The following section looks at each of the health status measures individually against proportion of support worker contacts at patient level to explore these relationships in more detail.

Table 7-14 Proportion of direct care and patient characteristics

Team	Proportion of support worker contacts Mean (SD)	Proportion of support worker time Mean (SD)	Time/contact support workers (mins) Mean (SD)	EQ-5D (adm) Mean (SD)	TOMS impairment (adm) Mean (SD)	TOMS activity (adm) Mean (SD)	TOMS participation (adm) Mean (SD)	TOMS wellbeing (adm) Mean (SD)	Level of care (adm) Mode (%)
A	0.35 (0.26)	0.38 (0.17)	57.09 (15.88)	0.43 (0.31)	3.27 (0.92)	3.16 (0.97)	3.21 (1.02)	3.66 (1.02)	Regular rehabilitation programme (47%)
B	0.08 (0.23)	0.36 (0.29)	77.83 (54.41)	0.49 (0.29)	3.14 (0.84)	3.28 (0.93)	3.18 (0.90)	3.60 (1.12)	Slow stream rehabilitation (23%)
C	0.06 (0.12)	0.21 (0.07)	113.57 (71.19)	0.34 (0.27)	3.28 (0.75)	2.89 (1.02)	2.69 (0.97)	3.72 (1.02)	Intensive rehabilitation (28%)
D	0.42 (0.31)	0.5 (0.21)	47.38 (13.97)	0.39 (0.31)	2.81 (0.71)	2.95 (0.84)	3.29 (1.05)	3.74 (0.84)	Regular rehabilitation programme (51%)
E	0.38 (0.3)	0.47 (0.21)	51.5 (21.91)	0.27 (0.30)	3.10 (0.74)	2.98 (1.0)	3.39 (0.99)	3.78 (0.95)	Slow stream rehabilitation (35%)
F	0.56 (0.35)	0.6 (0.28)	35.57 (19.05)	0.40 (0.34)	3.19 (0.74)	3.26 (0.76)	3.69 (1.11)	3.89 (1.08)	Regular rehabilitation programme (65%)
G	0.23 (0.22)	0.31 (0.15)	55.17 (12.75)	0.35 (0.35)	3.26 (0.86)	3.17 (1.02)	3.27 (0.97)	3.91 (0.83)	Slow stream rehabilitation (33%)
J	0.26 (0.29)	0.46 (0.16)	48.07 (22.65)	0.48 (0.32)	3.23 (0.94)	3.21 (1.10)	3.50 (1.15)	4.11 (1.02)	Prevention/maintenance programme (33%)

L	0.25 (0.46)	0.06 (0.03)	4.14 (0.2)	0.46 (0.33)	2.50 (1.21)	3.33 (0.66)	3.19 (1.21)	3.59 (0.82)	Specific treatment for individual a (55%)
M	0.26 (0.29)	0.4 (0.26)	44.71 (20)	0.39 (0.35)	3.30 (0.99)	3.13 (1.11)	3.51 (1.24)	3.93 (1.08)	Regular rehabilitation programme (32%)
N	0.47 (0.39)	0.52 (0.29)	47.38 (14.93)	0.48 (0.30)	3.11 (1.14)	2.86 (1.32)	3.23 (1.21)	3.73 (1.13)	Prevention/maintenance programme (31%)
PA	0.28 (0.33)	0.52 (0.25)	74.42 (18.73)	0.44 (0.30)	3.63 (1.06)	3.88 (0.64)	3.81 (0.84)	4.25 (0.46)	Regular rehabilitation programme (64%)
PB	0.41 (0.05)	0.41 (0.03)	88.05 (12.16)	0.38 (0.28)	3.25 (0.89)	2.88 (0.87)	2.84 (0.72)	3.03 (0.83)	Regular rehabilitation programme (81%)
Q	0.72 (0.24)	0.76 (0.2)	73.86 (47.83)	0.56 (0.27)	2.91 (0.78)	2.95 (0.71)	2.65 (0.96)	3.47 (0.80)	Regular rehabilitation programme (38%)
SA	0.27 (0.23)	0.3 (0.17)	66.89 (14.74)	0.50 (0.35)	3.37 (1.04)	2.95 (1.12)	2.85 (0.98)	3.41 (0.99)	Regular rehabilitation programme (41%)
SB	0.32 (0.27)	0.39 (0.2)	68.93 (25.71)	0.34 (0.36)	3.13 (0.92)	3.16 (0.98)	2.82 (1.05)	3.62 (1.06)	Regular rehabilitation programme (25%)
SG	0.22 (0.15)	0.22 (0.13)	35.37 (13.17)	0.47 (0.29)	3.14 (0.79)	3.37 (0.95)	3.45 (1.22)	3.91 (0.94)	Prevention/maintenance programme / intensive rehabilitation (26%)
T	0.32 (0.35)	0.63 (0.23)	97.62 (117.83)	0.29 (0.35)	2.86 (0.96)	2.64 (1.11)	2.92 (1.17)	3.49 (1.14)	Regular rehabilitation programme/medical care & rehab (28%)
TA	0.29 (0.36)	0.47 (0.23)	52.37 (28.92)	0.38 (0.33)	3.09 (0.89)	3.13 (1.01)	3.18 (1.16)	3.61 (1.20)	Slow stream rehabilitation (27%)
U	0.3 (0.31)	0.52 (0.2)	60.43 (16.8)	0.25 (0.35)	2.51 (0.99)	2.56 (0.95)	2.72 (1.02)	3.32 (1.20)	Medical care and rehabilitation (36%)

* One way ANOVA demonstrated significant difference between teams for these measures $p<0.001$

i) Level of care

As Table 7-15 demonstrates, there are some vague patterns emerging between the level of care need and proportion of support worker contacts delivered.

The group 'client does not need any intervention' has the lowest proportion of support worker contacts. Given the short time these patients have in contact with the service, it indicates that the qualified staff (who are delivering on average 89% of contacts for this level of care need) are likely to be assessing, triaging and/or making referrals.

The proportion of support worker contact with the patient increases roughly linearly to level 4 need then decreases for level 6 need. Even though the proportion increases, it is still fairly low. I would have expected support workers to deliver a much greater proportion of contacts in these lower levels of care (1-4) as the level of care tool assumes these clients do not require 'expert' professional intervention as would be expected for clients in levels 6-8. This pattern does not hold true however for the proportion of total time delivered by support workers, although there does seem to be a linear increase in time/contact for support workers for levels 5 and above.

One unexpected trend however is the increase in proportion of time and contact delivered by support staff for level 7 care (Client needs medical care and rehabilitation). This may be partly explained by a dominance of data from one intermediate care team (U) whose clients were predominantly level 7.

Table 7-15 Proportion of contact deliverd by qualified and support staff by level of care

Level of care at admission	Proportion of support worker contact Mean (SD)	Proportion of support worker time (F2F) Mean (SD)	Time/ contact support worker Mean (SD)
0 Client does not need any intervention	0.21 (0.32)	0.51 (0.18)	56.30 (23.91)
1 Client needs prevention/maintenance programme	0.25 (0.30)	0.38 (0.22)	55.39 (18.41)
2 Client need convalescence/respite	0.24 (0.26)	0.38 (0.20)	67.36 (23.87)
3 Client needs slow stream rehabilitation	0.32 (0.31)	0.41 (0.23)	55.68 (22.75)
4 Client needs regular rehabilitation programme	0.38 (0.29)	0.43 (0.23)	55.42 (20.85)
5 Client needs intensive rehabilitation	0.35 (0.28)	0.39 (0.21)	60.18 (36.16)
6 Client needs specific treatment for individual acute disabling condition	0.25 (0.29)	0.36 (0.23)	67.15 (84.58)
7 Client needs medical care and rehabilitation	0.34 (0.33)	0.49 (0.25)	69.95 (53.39)
8 Client needs rehabilitation for complex disabling condition	0.26 (0.31)	0.48 (0.24)	73.54 (60.06)

The level of care has been treated as a continuous variable for the following correlation analyses, level 0 being the least amount of care required and level 8 being the most. As figures 7-5 to 7-7 demonstrate however, there were no statistical associations found (parametric or non parametric) between any of these variables and patient level of care need on admission.

Figure 7-5 Association between proportion of support worker contact and level of care (n=1046)

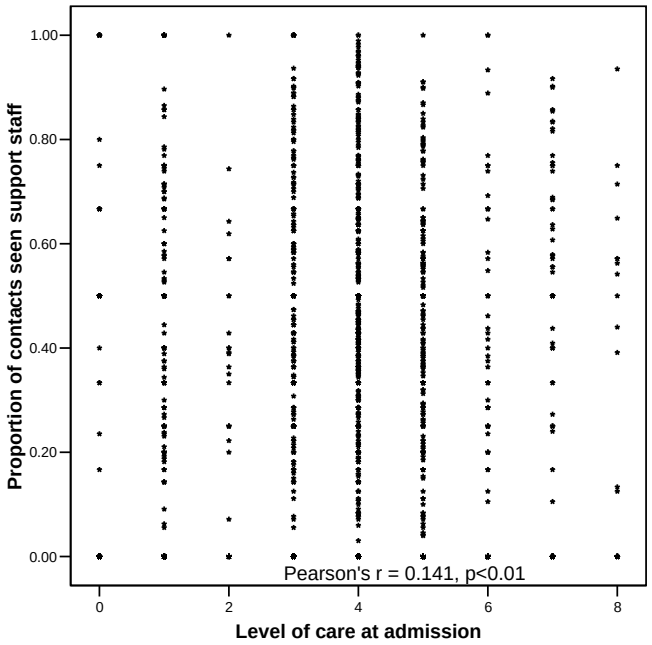


Figure 7-6 Association between proportion of time (support worker) and level of care (n=1043)

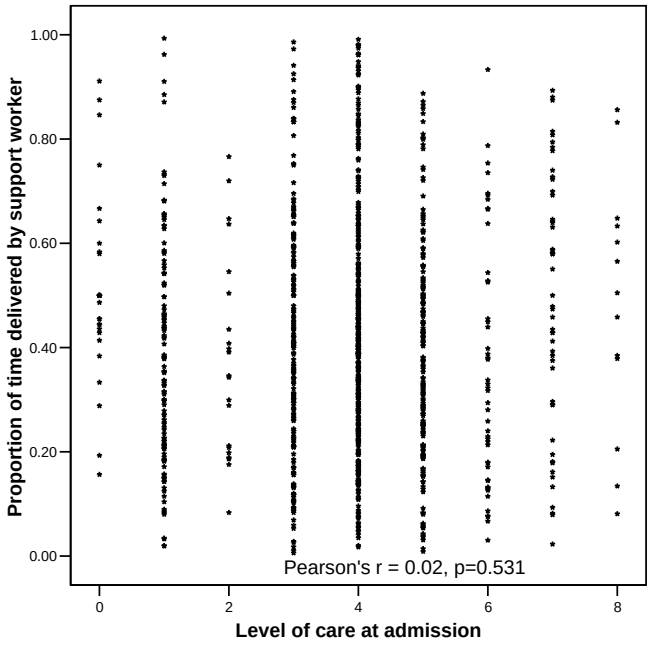
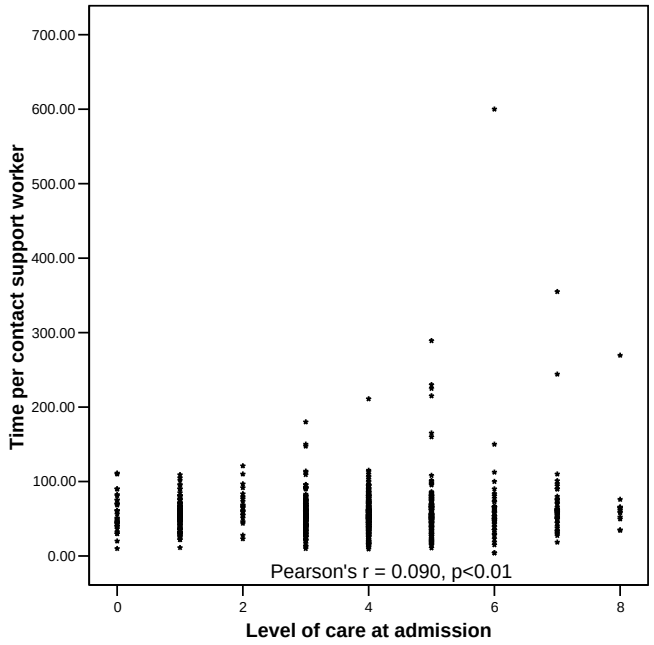


Figure 7-7 Association between support worker time per contact and level of care (N=1029)



Spearman's rank correlation =0.032, p=0.303

ii) TOMS

There are no clear trends that can be seen in the data (Table 7-14 above) exploring the relationship between mean admission TOM scores and the mean proportion of contact, proportion of time delivered by support staff or time/contact.

Impairment

As depicted in figures 7-8 to 7-10, no statistical association was found between any of the variables of interest and TOMs impairment score on admission.

Figure 7-8 Association between TOM impairment score on admission and proportion of support worker contacts (n=1505)

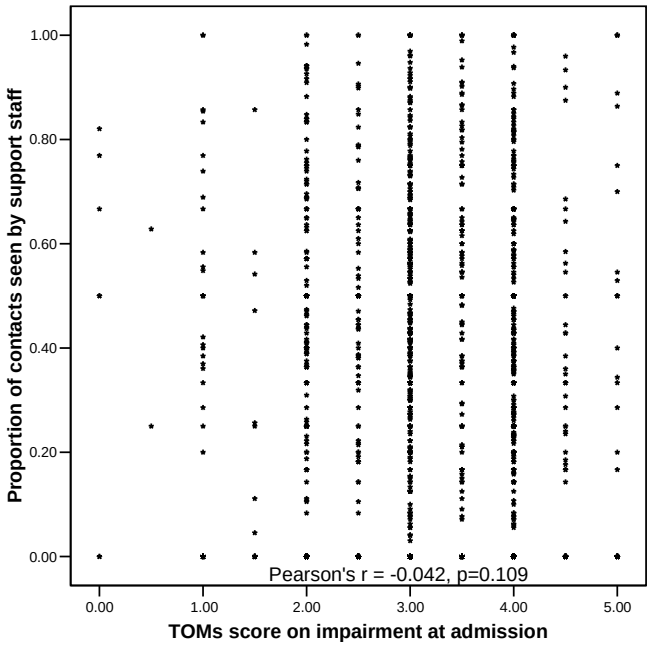


Figure 7-9 Association between TOM impairment score on admission and proportion of support worker time (n=997)

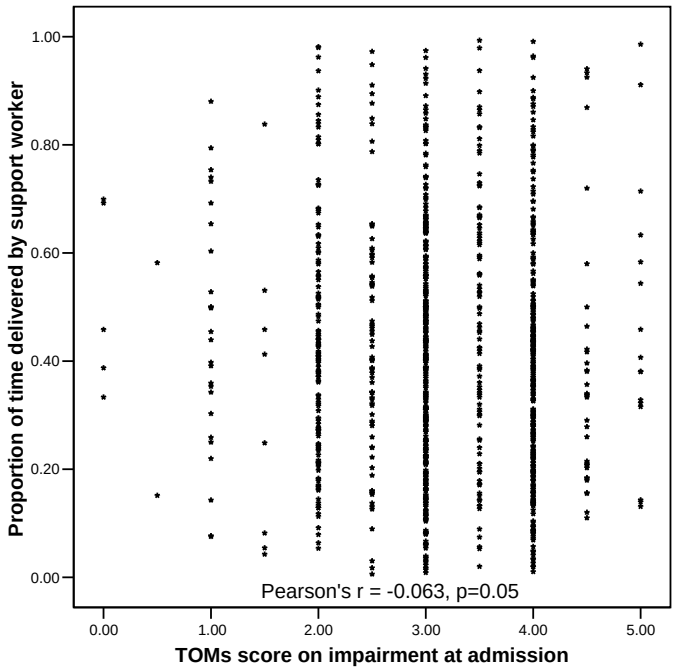
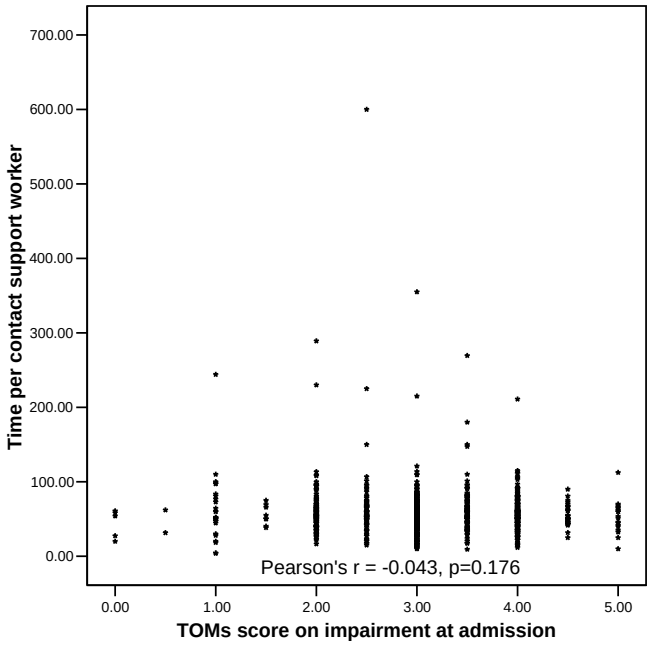


Figure 7-10 Association between TOM impairment score on admission and support worker time/contact (n=986)



Activity

As depicted in figures 7-11 to 7-13, once again no statistical associations were found between any of the variables and TOMs activity admission score.

Figure 7-11 Association between TOM activity score on admission and proportion of support worker contacts (n=1509)

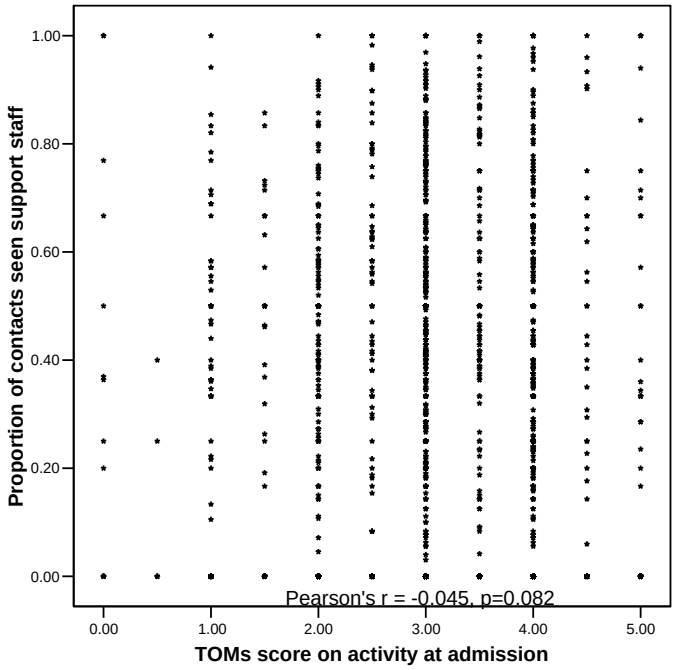


Figure 7-12 Association between TOM activity score on admission and proportion of time (support worker) (n=981)

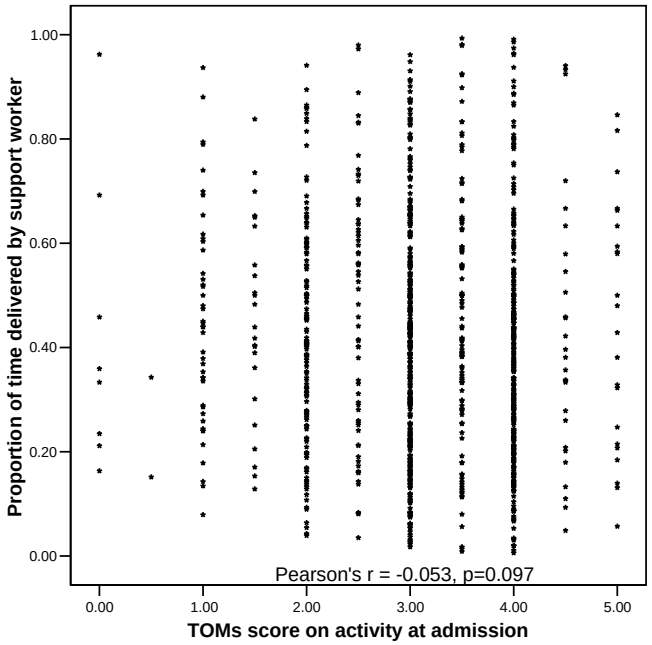
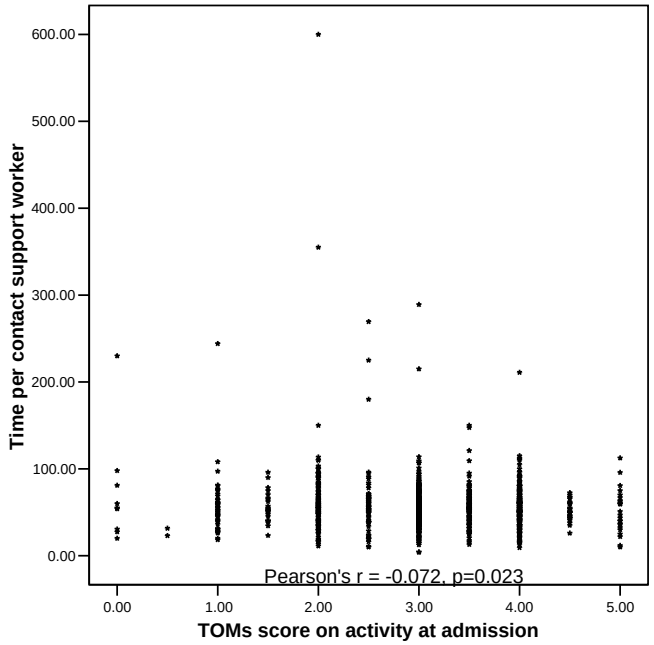


Figure 7-13 Association between TOM activity score on admission and support worker time per contact (n=990)



Participation

Again, as depicted in figures 7-13 to 7-15, no statistical associations were found between proportion of time or contact delivered by support workers and TOMs participation admission score. TOMS participation on admission however was found to have a very weak negative association with time/contact delivered by support workers $r_p = -0.127$, $p<0.01$. Indicating support workers deliver greater amounts of time per contact to patients with lower TOMS participation scores on admission.

Figure 7-14 Association between TOMS participation score on admission and proportion of support worker contacts (n=1509)

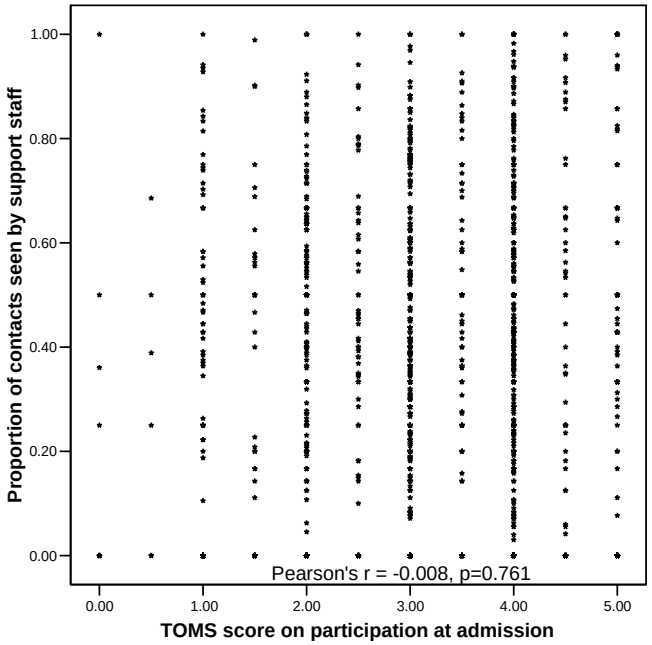


Figure 7-15 Association between TOMS participation score on admission and proportion of time (support workers) (n=981)

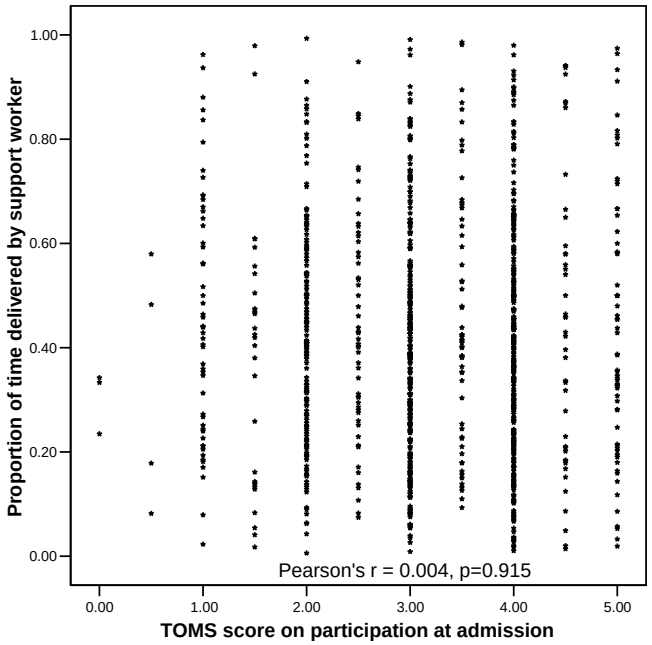
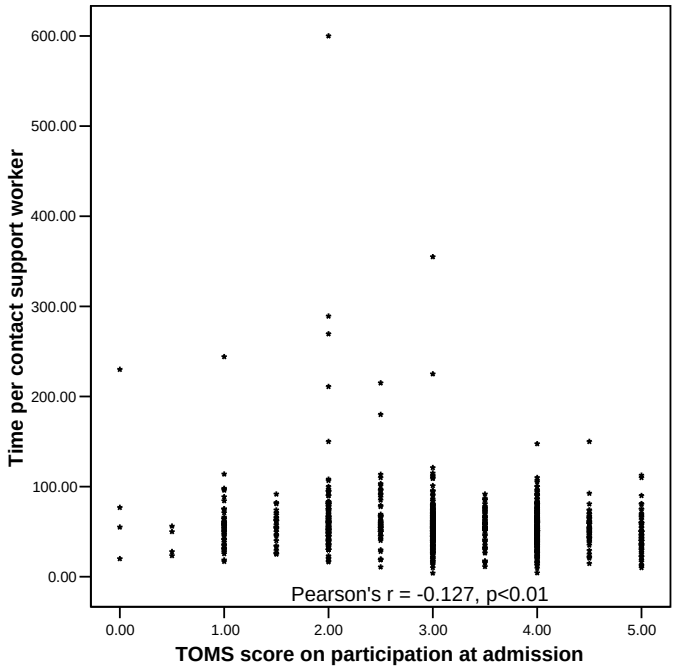


Figure 7-16 Association between TOMS participation score on admission and support worker time per contact (n=990)



Wellbeing

As depicted in figures 7-17 to 7-19, no statistical associations were found between any of the variables and TOMs wellbeing admission score.

Figure 7-17 Association between TOMS wellbeing admission score and proportion of support worker contact (n=1507)

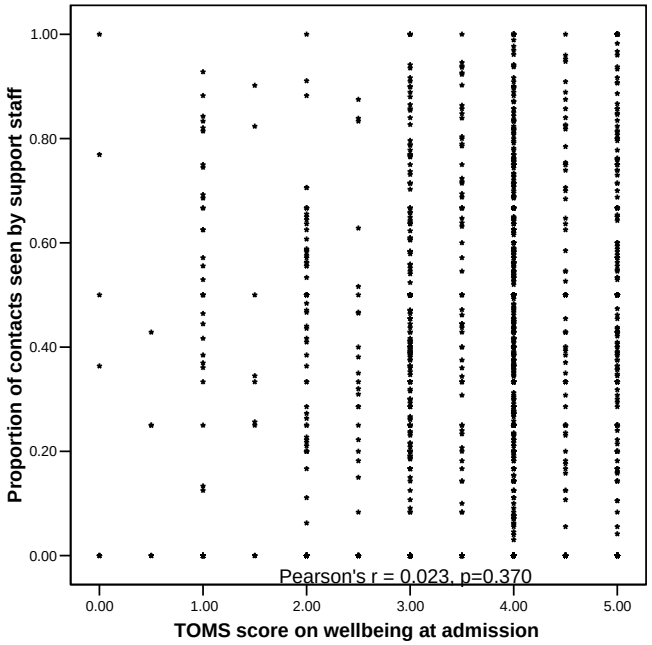


Figure 7-18 Association between TOMS wellbeing admission score and proportion of time (support worker) (n=981)

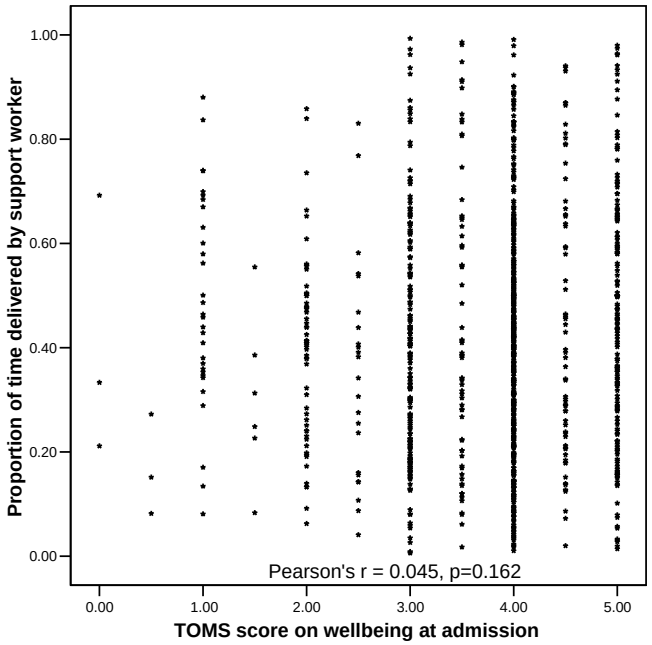
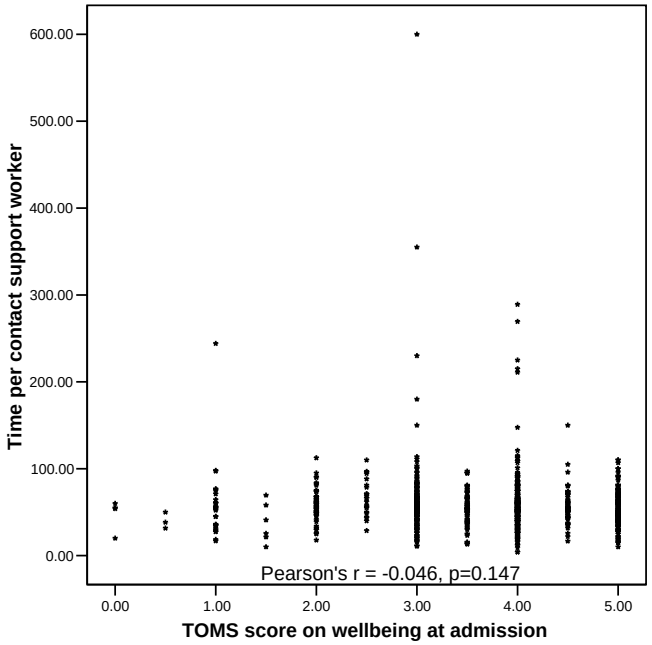


Figure 7-19 Association between TOMS wellbeing admission score and support worker time per contact (n=990)



iii) EQ-5D

As can be seen in Table 7-14 (above), there is no obvious associations between mean EQ-5D admission score and the proportion of contacts, time of time/contact delivered by support workers.

This is further demonstrated in figures 7-20 to 7-22, where no statistical associations were found between any of the variables and EQ-5D admission scores.

Figure 7-20 Association between EQ-5D admission score and proportion of support worker contacts (n=1349)

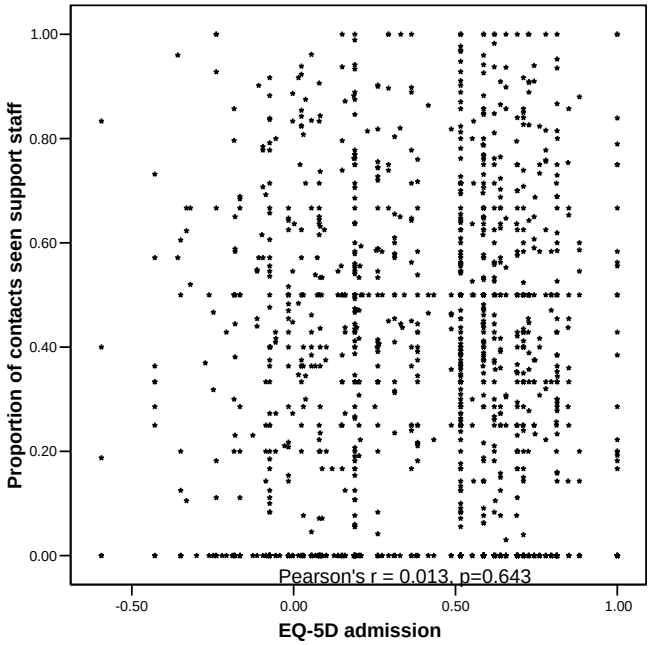


Figure 7-21 Association between EQ-5D admission score and proportion of time (support worker) (n=929)

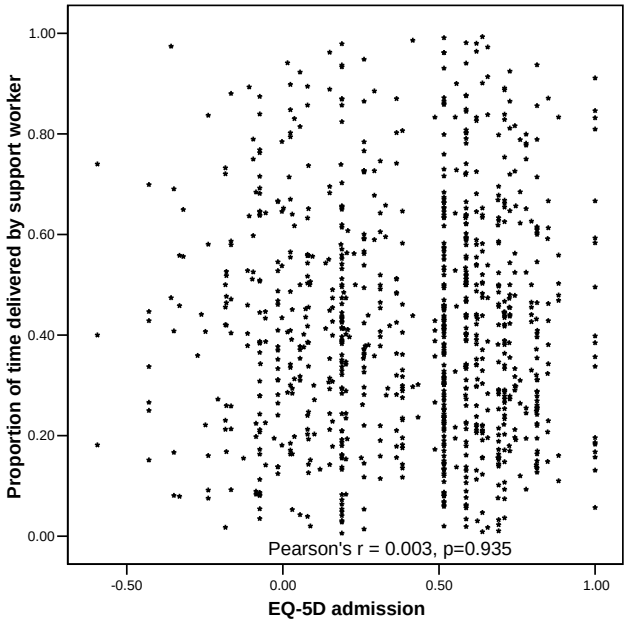
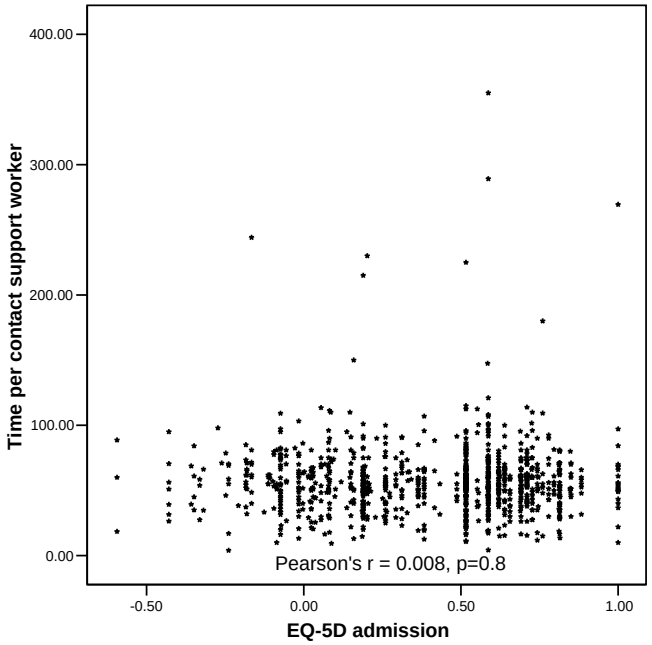


Figure 7-22 Association between EQ-5D admission score and support worker time/contact (n=934)



Summary - patient level characteristics

From these patient level results it would seem that patient health and/or wellbeing when admitted to care, as measured by level of care need, TOMS and EQ-5D, has no statistical association with the proportion of contact, time or time/contact delivered by support staff. Only TOMS wellbeing on admission had a very weak association (r_p = -0.127) with time per contact delivered by support staff and Level of care on admission with proportion of contacts delivered by support workers (r_p = 0.141).

As described earlier, because these correlations utilised the *proportion* of support worker time or contact, the association of qualified time or contact with patient level variables can also be inferred. In general these correlations demonstrate that the proportion of any worker (support or qualified) input to care has no statistical relationship with the level of patient severity on admission. Again as described above, TOMS wellbeing score on admission and Level of care may have some association on the amount of care delivered by qualified staff however these associations are weak and there is the possibility for type I error.

In addition, as with all correlation analysis, these results imply only association and not causation.

Even though no associations stronger than r_p= 0.3 have been demonstrated between patient level variables and the proportion of direct care delivered by support workers, to further investigate the potential predictive capacity that admission health status of patients has on support worker contribution to care, stepwise regression was carried out.

iii) Step wise regression

Of interest in this analysis is how well (if at all) the proportion of care delivered by support workers can be predicted by patient admission health scores (EQ-5D, level of care need and TOMS). The covariates included in the analysis were age and gender.

Age and gender were added to the model and remained in the model as additional independent variables (predictors) were added. As explained above, stepwise regression involves the step by step addition of variables to the model. The variable with the highest correlation coefficient r_p (and corresponding highest R-squared) is added first to the model. At each step, the candidate variable that increases r_p or R-Squared the most is added. The process is stopped when none of the remaining variables are significant.

The regression analysis was performed in SPSS version 12. The predicted variable or dependent variable (proportion of support worker contacts, time, time/contact) was entered along with the predictor variables or independent variables Gender, Age, admission EQ-5D, TOMS (activity, impairment, wellbeing, participation) and Level of care need.

i) Proportion of contact

Tables 7-16 to 7-18 detail the results from the stepwise regression for the dependent variable proportion of support worker contact.

Table 7-16 Stepwise regression - Pearson correlation (contact)

	Pearson Correlation	Significance	n
Proportion of contacts seen support staff	1.000		1215
Age	0.124	0.000	1215
Gender	0.097	0.000	1215
Level of care at admission	0.068	0.009	1215
TOMs score on impairment at admission	-0.069	0.008	1215
TOMs score on activity at admission	-0.062	0.015	1215
TOMS score on participation at admission	-0.020	0.246	1215
TOMS score on wellbeing at admission	0.019	0.257	1215
EQ-5D admission	0.027	0.174	1215

From these results, the variables added to the model included: age, gender and TOM score on impairment at admission. All other variables were excluded. As table 7-17 demonstrates, the correlation coefficient of the included predictor variables is very weak (r_p = 0.164) with 98% residual or unexplained variability (R-square) in the model. Interpreting these results, age and gender only account for 2.2% of the variation in the proportion of contacts delivered by support workers. However when the other predictors are included (TOMS impairment and activity), this value increases to 2.7%. Therefore if age and gender account for 2.2% of the variation in the proportion of contacts delivered by support workers, TOMS impairment and activity account for an additional 0.5%.

Table 7-17 Correlation coefficients of predictors (contact)

Model /Step	R	R Square	Adjusted R Square
1	.147(a)	.022	.020
2	.164(b)	.027	.025

a Predictors: (Constant), Age, Gender
b Predictors: (Constant), Age, Gender, TOMs score on impairment at admission

Table 7-18 Stepwise regression results (proportion of contact)

	Coefficient	**Lower 95% CI**	**Upper 95% CI**	**p-value**
Age	0.321	0.162	0.480	0.000
Gender	5.115	1.575	8.764	0.005
TOMS impairment (admission)	-2.552	-4.480	-0.624	0.010

It is not surprising then that the results of the stepwise regression (Table 7-18) demonstrate TOMS impairment score on admission (along with age and gender) has a very weak predictive effect on the proportion of support worker contact. That is an increase in TOMS score on impairment at admission (as patients become less impaired) is associated with a decrease in the proportion of total contacts delivered by support workers of 2.6%) (95% CI 0.6% to 4.5%).

ii) Proportion of Time

Tables 7-19 to 7-21 detail the results from the stepwise regression of the dependent variable proportion of time delivered by support workers.

Table 7-19 Stepwise regression - Pearson correlation (time)

	Pearson Correlation	Significance	n
Proportion of contacts seen support staff	1.000		843
Age	0.146	0.000	843
Gender	0.102	0.001	843
Level of care at admission	-0.006	0.435	843
TOMs score on impairment at admission	-0.059	0.043	843
TOMs score on activity at admission	-0.033	0.172	843
TOMS score on participation at admission	-0.006	0.434	843
TOMS score on wellbeing at admission	0.052	0.066	843
EQ-5D admission	0.020	0.277	843

From these results, the variables added to the model included: age, gender and TOM score on impairment and TOM score on wellbeing at admission. All other variables were excluded. As table 7-20 demonstrates, the (multiple) correlation coefficient of the included predictor variables is weak (r_p = 0.196) with 96% residual or unexplained variability (R-square).

Table 7-20 Correlation coefficients of predictors (time)

Model Summary

Model / step	R	R Square	Adjusted R Square
1	.168(a)	.028	.026
2	.183(b)	.033	.030
3	.196(c)	.038	.034

a Predictors: (Constant), Age, Gender

b Predictors: (Constant), Age, Gender, TOMs score on impairment at admission

c Predictors: (Constant), Age, Gender, TOMs score on impairment at admission, TOMS score on wellbeing at admission

Table 7-21 Stepwise regression results (proportion of time)

	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Age	0.311	0.156	0.466	0.000
Gender	4.518	1.188	7.848	0.008
TOMS impairment (admission)	-2.533	-4.429	-0.636	0.009
TOMS wellbeing (admission)	1.766	0.088	3.44	0.039

The results of the stepwise regression (Table 7-21) demonstrate TOMS impairment and TOMS wellbeing (along with age and gender) have a very weak predictive effect on the proportion of total time delivered by support workers. That is an increase in TOMs impairment score on admission (as patients become less impaired) is associated with a reduction in the proportion of total face to face time delivered by support workers by 2.5% (95% CI 0.6% to 4.4%). Conversely an increase in TOM wellbeing score on admission (as patients have improved wellbeing) is associated with an increase in the proportion of total face to face time delivered by support workers of 1.8% (95% CI 0.1% to 3.4%).

iii) Time/contact

Tables 7-22 to 7-24 detail the results from the stepwise regression of the dependent variable support worker time/contact.

Table 7-22 Stepwise regression - Pearson correlation (time/contact)

	Pearson Correlation	Significance	n
Proportion of contacts seen support staff	1.000		845
Age	-0.007	0.420	845
Gender	-0.036	0.149	845
Level of care at admission	0.044	0.102	845
TOMs score on impairment at admission	-0.043	0.105	845
TOMs score on activity at admission	-0.074	0.016	845
TOMS score on participation at admission	-0.134	0.000	845
TOMS score on wellbeing at admission	-0.055	0.056	845
EQ-5D admission	-0.014	0.345	845

From these results, the variables added to the model included: TOM score on participation at admission. All other variables were excluded. As table 6-35 demonstrates, the correlation coefficient of the included predictor variable is weak (r_p = 0.134) with 98% residual or unexplained variability (R-square).

Table 7-23 Correlation coefficients of predictors (time)

Model	R	R Square	Adjusted R Square
1	.036 (a)	.001	-.001
2	.139(b)	.018	.017

a Predictors: (Constant), Age, Gender
b Predictors: (Constant), Age, Gender, TOMS score on participation at admission

Table 7-24 Stepwise regression results (proportion of time)

	Coefficient	**Lower 95% CI**	**Upper 95% CI**	**p-value**
Age	-0.006	-0.195	0.169	0.892
Gender	-2.034	-6.003	1.936	0.315
TOMS participation (admission)	-3.572	-5.352	-1.788	<0.000

The results of the stepwise regression demonstrate TOMS participation has moderate predictive effect on the time/contact

delivered by support workers. That is an increase in admission TOMS participation score (better patient participation) is associated with a reduction in the time/contact delivered by support workers of 3.57 mins/contact (95% CI 1.79 to 5.35mins/contact).

Summary - stepwise regression results

TOMS impairment and activity scores on admission have been shown to be statistically very weak predictors of the proportion of care delivered by support workers. The results however contradict each other. Greater levels of support worker contact and time had a weak association with worse TOMS impairment scores on admission whereas greater levels of support worker time had a weak association with better TOMS activity scores.

Using this model, TOMS participation scores on admission on the other hand has been shown to be a moderate predictor of the proportion of support worker care delivered.

Caution must be applied however when interpreting these results. Although the statistics have shown a relationship between admission health status and support worker contribution to care, the association is extremely tenuous given the amount of unexplained variability in the model was between 96 and 98%. That is, on average 97% of the variation in the proportion of care delivered by support workers cannot be explained by patient TOMS scores on admission.

iv) Time spent on administration and direct care

Table 7-25 illustrates the breakdown of mean face to face versus administrative time for support workers and other practitioners. The results demonstrate that support workers spent the greatest proportion of their time on direct care (74%) compared to qualified clinical staff and social care practitioners who spent on average 60% on face to face care and 40% on administration.

Table 7-25 Proportion of practitioner time spent in face to face contact versus administration

Practitioner	Proportion of total time spent in face to face contact	Proportion of total time spent doing administration
Support Worker	0.74	0.26
Qualified professional (clinical)	0.6	0.4
Social care practitioners*	0.56	0.44
Administrative Personnel	0	1

* includes social workers and other social care practitioners such as community care officers

7.5.5 The impact of staffing models on outcomes

Analysis strategy

The variables investigated here were derived from the findings of the literature, as well as building on the findings from secondary analysis of intermediate care data which was included in the larger study (Nancarrow et al., 2008c). It must be noted that although I contributed to the analysis model, I did not carry out this analysis. The following section details the analysis strategy employed for the larger study which was carried out by Mr Mike Bradburn. I have included only the variables, analysis and results of interest to this thesis.

The statistical analyses investigated the association between the following outcomes (dependent variables) and characteristics (independent variables):

Dependent variables

Patient outcomes (Patient record data):

- Change from baseline in EQ-5D
- Change from baseline in TOMS (four domains: impairment, activity participation and wellbeing)
- Overall satisfaction with care

Service outcomes (Patient record data):

- Length of stay

Staff outcomes (WDQ):

- Overall job satisfaction
- Intention to leave current employer
- Intention to leave profession

Independent variables

Staff characteristics (sourced from WDQ):

- Seniority: senior staff (defined as band 5-8) or non-senior staff (bands 1-4, social services grade or student)
- Speciality (Nurse, Social worker/social care worker, Occupational therapist, Physiotherapist, Support worker, Other)

Team/organisational level variables (sourced from Proforma)

- Proportion of qualified staff (qual/qual+support)

Post baseline patient characteristics (sourced from Patient data)*

- Proportion of contact delivered by qualified staff or support staff

*As these are "on-treatment" measures, it was decided to model and interpret these separately.

Covariates

- Age
- Gender
- EQ-5D**
- TOMS**

**The EQ-5D at admission was used as a covariate in all analyses of change in EQ-5D, the TOMS impairment at admission was a

covariate in all analyses of change in TOMS-impairment, and so on.

It must be noted that where speciality has been examined, a comparison (and a coefficient) needs something to be compared against. So in specialty, nurse was chosen as the comparison reference partly because there were a large number of nurses within the WDQ data and also so the coefficients would all be fairly robust. The analysis can be conducted comparing variables to other specialties (it did not necessarily have to be a nurse) as the "global test p-value" would remain the same irrespective of the reference category.

Statistical methodology

Several patient, staff and team characteristics were investigated for their relationship to the above outcomes. It was also expected that there would be differences between teams in terms of many of the outcomes, and that this may lead to spurious associations between outcomes and the characteristics. To investigate the impact of team, the following approach was adopted:

- The association between team and each outcome was modelled with team being treated as a fixed effect in an analysis of covariance (ANCOVA) model.
- The association between the patient/team characteristics and each outcome was assessed by considering the team as a random effect in a generalised least squares (GLS) model.
- After selecting the most appropriate characteristics in the above analysis, the model was re-fitted with these characteristics and the team identifier all included as fixed effects.
- If the effect of team was still substantial, no overall model was fitted and instead we look within teams.
- If team was found to have minimal effect, the model stability was assessed removing data from each team in turn and then re-fitting the model. Firstly, data from team A was removed and the model re-fitted, followed by teams B, C

and so on. For each model, the results were compared back to the model derived on all teams, and any discrepancies investigated.

In assessing staff outcomes, associations were sought between the outcome and all team and characteristics. For patients and service outcomes, associations were sought between the outcome and all team, patient and staff characteristics. The latter was defined as the average score for each domain within the team.

Although ideally the model would look to include covariates irrespective of statistical significance, the number of team characteristics was limited to statistically significant terms since the number of teams with evaluable data were relatively low (n=19).

A two sided statistical significance level of 5% was used for all comparisons. No adjustments were made for multiplicity. The results are expressed as coefficients (the degree of change in outcome per unit change in predictor variables) with their corresponding confidence intervals. Analyses are performed at the level of the individual patient, staff members and services (according to the questions), and account for possible intra-class correlations associated with the cluster effect of the specific services (Donner and Klar, 2000). The analyses were carried out in the Stata statistical package (version 10).

Results: Patient outcomes

On univariate analyses, several characteristics were consistently found to associate with change in EQ-5D and TOMS. Results relevant to this thesis are summarised below (full results for all univariate and multivariate analyses of patient outcomes are in Appendix 16):

Team characteristics (from proforma): the proportion of qualified (qualified / qualified + support) staff in the team (larger improvements in teams with a smaller proportion of qualified workers/larger proportion of support workers)

Employee characteristics (from WDQ): the proportion of senior staff in the team (larger improvements with a lower proportion of qualified staff)

Patient characteristics at admission: level of care need at admission (not a straightforward relationship: on average, larger improvements were seen in patients around the centre of the 9-point scale), location where the patient receives care (non-home based)

Patient characteristics post-baseline: the percentage of face-to-face contacts that were with skilled or support staff

The following headings give results of the multivariate modelling given these univariate results. Again presented here are results relevant to this thesis. The multirvariate model included more variables than described below. The full results of the multivariate analyses for patient outcomes can be found in appendix 17.

i) Change from baseline in EQ-5D

When the multivariate model was fitted, several factors were found to be associated with EQ-5D. Teams with a lower proportion of qualified staff (higher proportion of support staff) had greater increases in EQ-5D scores. An increase in the proportion of support staff in the team by one unit (1%) is associated with a change in EQ-5D score of 0.002 points (95% CI 0.00 to 0.003).

Of the post-baseline covariates, the EQ-5D change was greater in patients who had seen a greater proportion of support staff. An increase in the proportion of contact delivered by support staff by one unit (1%) is associated with a change in EQ-5D scores of 0.064 (95% CI 0.007 to 0.121; p=0.026).

There remained substantial differences across the teams however even after the above factors had been fitted (overall test p=0.0004). Teams L, SA and U in particular had greater improvements in EQ-5D than the model was able to predict, whilst the improvements in teams C, PA, Q and SG were smaller than anticipated by the model.

ii) Change from baseline in TOMS impairment

The model fitted for change in EQ-5D was also fitted for each TOMS domain, with the only exception being TOMS domain at admission.

An increased change in TOMS impairment was associated with a worse TOMS impairment at admission coefficient -0.246 (95% CI -0.298 to -0.194, p<0.001) and a lower proportion of qualified staff (higher proportion of support staff) in each team coefficient -0.005 (95% CI -0.008 to -0.001, p=0.006). An increase in the proportion of support staff in the team by one unit (1%) is associated with a change in TOMS impairment score of 0.005.

The improvement in TOM impairment was also marginally statistically significantly associated with a lower proportion of senior staff in the team coefficient -0.282 (95% CI -0.601 to 0.036, p=0.083). An increase in the proportion of unqualified staff in the team by one unit (1%) is associated with a change in TOMS impairment score of 0.282.

With regards to the post-baseline covariates, the change in TOMS impairment was significantly associated with the patient seeing a greater proportion of support staff. An increase in the proportion of contact delivered by support staff by one unit (1%) is associated with a change in TOMS impairment of 0.164 (95% CI 0.001 to 0.330; p=0.052).

After having fitted this model, there were still significant differences between teams (p=0.019), with a particularly poor fit in teams C and PA, both of whom provided lower impairment change scores than the model is able to predict.

iii) Change from baseline in TOMS activity

An increased change in TOMS activity was associated with a worse TOMS activity at admission -0.198 (95% CI -0.248 to -0.149, p<0.001) and a greater proportion of support workers in each team -0.005 (95% CI -0.008 to -0.002, p=0.003), and a lower proportion of senior staff in the team coefficient -0.298 (96% CI -0.591 to -0.005). An increase in the proportion of support workers in the team and proportion unqualified staff in the team (as taken from the WDQ) by one unit (1%) is associated with a change in TOMS activity of 0.005 and 0.298 respectively.

With regards to the post-baseline covariates, change in TOMS activity was significantly associated with a greater proportion of contact delivered by support staff. An increase in the proportion of contact delivered by support staff is associated with a change in TOMS activity of 0.061 (-0.110 to 0.232; p=0.0483).

Again however, the residual difference between teams was substantial, with the model being unable to explain much of the between-team difference ($p<0.0001$). In particular, the change in TOMS activity was overestimated in teams Q and PA.

iv) Change from baseline in TOMS participation

An increased change in TOMS participation was associated with a worse TOMS participation at admission -0.204 (95% CI -0.250 to -0.159, $p<0.001$) and (less strongly) with a higher proportion of support staff in the team. An increase in the proportion of support staff in the team by one unit (1%) is associated with a change in TOMs participation of 0.003 (95% CI -0.001 to 0.006, $p=0.109$).

Of the post-baseline covariates, no significant association was found with the proportion of contact delivered by support workers.

The model was again unable to fit all teams ($p<0.0001$), with the change in TOMS participation in team F in particular being underestimated.

v) Change from baseline in TOMS wellbeing

An increased change in TOMS wellbeing was associated with a worse TOMS wellbeing at admission -0.250 (95% CI -0.294 to -0.207, $p<0.001$) but not with the proportion of support staff in the team 0.000 (95% CI -0.007 to 0.007, $p=0.991$).

Of the post-baseline covariates, no significant association was found with the proportion of contacts with support staff.

The model was again unable to fit all teams ($p<0.0001$), with the change in TOMS participation in teams F and G being the most underestimated and team PA being notably overestimated.

vi) Overall patient satisfaction

Few factors were found to be associated with overall satisfaction, including the team. When the multivariate model was fitted, only size of team appeared significantly associated with increased patient overall satisfaction (coefficient = 0.08, 95% CI 0.03 to 0.14;p=0.004). In clinical terms, an increase of 10 team staff was associated with an increase of 0.8% in average patient satisfaction.

Further modelling revealed no significant association between overall patient satisfaction and the proportion of qualified or support staff contact.

vii) Patient attributes associated with outcomes

Whilst not the focus of this study, it is important to consider the patient level factors found to be associated with outcomes. The following were found in the broader study:

- Female patients showed a greater improvement in TOMs impairment, participation and wellbeing scores than men.
- Patients who had higher dependency scores at admission (as measured by the EQ-5D and all TOMs domains) showed greater potential to improve across all domains.
- The patient 'level of care need' at admission was associated with the potential for improvement, with patients judged as needing levels of care need 2 - 5 showing the greatest improvements in outcomes overall.

Summary of results for patient outcomes

i) Proportion of support staff in the team

There are trends in the data to suggest the proportion of support workers in the team positively influences change in EQ-5D scores and TOMS scores (impairment, activity and participation). The changes seen in outcomes however were often quite small. Some would argue the change in outcome due to the predictor variable is therefore not clinically significant. In the context of CRAICS however quite often no change in outcome, indicating a patient has not declined in function, is a good outcome. Therefore in

interpreting these results it would seem that a greater proportion of support workers in the team can positively influence patient outcomes.

Furthermore, the strength of association between team level factors and patient outcomes (proportion of support workers in the team) is probably low because there were only 19 pieces of team level data to support the analysis.

This is partially addressed by the use of the WDQ data for which there was n=300 entries available to assess the association between the proportion of senior staff / unqualified staff in the team and patient outcomes. Where WDQ data were used a higher proportion of unqualified staff / lower proportion of senior staff saw a more clinically significant change in TOMs impairment (coefficient 0.282). This was also the case for TOMS activity (coefficient 0.298).

There were no associations found between change in TOM wellbeing or patient satisfaction and the proportion of support staff in the team.

ii) Proportion of care delivered by support workers
The results suggest that when the proportion of contacts delivered by support staff increases there are moderate improvements in EQ-5D score, TOMS impairment and TOMS activity scores. The change in EQ-5D and TOMS impairment associated with the proportion of contact delivered by support workers were larger than those changes seen with team level characteristics (proportion of support workers in the team). This is not surprising given the larger quantities of data available for the analysis (n~1800 patient records).

Again, as described above, in this context no change in outcome can be a good outcome. Therefore in interpreting these results it

would seem that a greater proportion of contact delivered by support workers has a positive influence on patient outcomes.

Results: Staff outcomes

The overall results of the Workforce Dynamics Questionnaire for staff from the twenty teams are presented in Table 7-26. Appendix 12a and 12b presents the WDQ results broken down by team and discipline levels.

i) Overall results

Training and career progression opportunities, uncertainty and overall satisfaction scored relatively low overall. There was substantial variation in scores between teams on some domains. Team satisfaction scores ranged from 53.9 (Team SB) to 77.8 (Team T). However, 'intention to leave employer' scores were even more divided, ranging from 62.2 (Team X) to 91.4 (Team D). Access to technology and equipment varied from poor (43.1: Team H) to excellent (90.7: Team W). Team working scores ranged from 57. 6 (Team PA) to 89.7 (Teams E & TA), whilst 'management structures and styles' varied from 44.3 (Team D) to 94.6 (Team Z). Overall, quality of care was rated highly across all teams, with all team scores above 70.

Table 7-26 Overall WDQ descriptive results all teams

WDQ domain	N	Min	Max	Mean (SD)
Access to technology and equipment	325	5.6	100	74.7 (20.8)
Autonomy	327	0.0	100	56.5 (26.1)
Integration with peers and colleagues	313	11.1	100	78.1 (22.7)
Management structures and styles	325	2.2	100	81.0 (21.9)
Quality of care	323	11.1	100	89.5 (12.7)
Role flexibility	318	9.3	100	78.9 (14.5)
Role perception	326	23.5	100	71.0 (14.3)
Team working	325	11.1	100	80.1 (14.9)
Training and career progression opportunities	324	8.3	100	56.3 (20.2)
Uncertainty	316	0.0	100	52.7 (20.3)
Overall satisfaction	319	0.0	100	66.4 (20.2)
Intention to leave (employer)	313	0.0	100	73.8 (32.8)
Intention to leave (profession)	308	0.0	100	83.0 (27.6)
Valid N	291			

Support worker WDQ scores were compared to professionally qualified staff scores using One Way ANOVA (Table 7-27). Results demonstrate support workers had significantly lower mean autonomy scores than their qualified peers but significantly higher mean scores for access to technology and equipment, integration with peers and colleagues, perceptions of quality of care and management structures and styles (Table 7-27). Support workers were significantly more likely to report an intention to leave the profession compared to qualified professionals.

Table 7-27 Qualified professional Vs support worker WDQ scores

WDQ Domain	Professional		Support worker	
	n (missing)	Mean (SD)	n (missing)	Mean (SD)
Access to technology and equipment**	206	70.1 (20.7)	93 (1)	83.4 (18.1)
Autonomy**	206	70.3 (15.8)	94	28.1 (19.6)
Integration with peers and colleagues*	201 (5)	76.0 (23.2)	88 (6)	83.8 (20.1)
Management structures and styles*	205 (1)	78.1 (22.3)	94	85.6 (21.2)
Quality of care**	204 (2)	87.2 (13.6)	93 (1)	94.4 (8.6)
Role flexibility	203 (3)	79.5 (12.9)	88 (6)	78.5 (15.3)
Role perception	205 (1)	71.1 (14.3)	94	70.4 (13.3)
Team working	205 (1)	79.7 (13.9)	94	81.2 (16.5)
Training and career progression opportunities	205 (1)	54.9 (20.6)	93 (1)	58.8 (19.1)
Uncertainty	202 (4)	52.5 (20.3)	89 (5)	54.1 (20.8)
Overall satisfaction	201 (5)	64.0 (20.8)	94	69.4 (18.9)
Intention to leave (employer)	198 (8)	75.7 (30.6)	90 (4)	70.5 (36.1)
Intention to leave (profession)**	197 (9)	88.0 (21.1)	86 (8)	72.6 (35.3)

* $p < 0.05$
** $p < 0.001$

ii) Staff satisfaction

On univariate analyses, several characteristics were consistently found to associate with change in staff WDQ satisfaction scores (full results for all univariate and multivariate analyses of staff outcomes see Appendices 18 and 19).

Higher staff satisfaction had a statistically significant association with the size of the team -0.207 (95% CI -0.348 to -0.066, p=0.004), speciality (see Table 7-28) and seniority of staff (less senior staff had higher satisfaction scores) -4.024 (95% CI -8.906 to 8.583, p=0.106) but not the proportion of support staff in the team -0.020 (95% CI -0.179 to 0.137, p=0.797).

Table 7-28 Speciality and staff satisfaction (univariate analysis)

	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Speciality:				0.0456*
Social worker/social care worker v nurse	-1.002	-11.284	9.279	0.848
Occupational therapist v nurse	-7.272	-15.125	0.580	0.070
Physiotherapist v nurse	-7.965	-15.352	-0.579	0.035
Support worker v nurse	-0.144	-6.946	6.665	0.967
Other v nurse	3.968	-5.480	13.417	0.410

*global test

The multivariate model found no association between overall staff satisfaction and seniority of staff -8.53 (95% CI 0.16 to -20.42, p=3.36) or speciality (Table 7-29).

No statistically significant differences were found among teams after the model was fitted (p=0.65) and was retained only as a random effect. No other team characteristic was found to be statistically significant when added to this model.

Table 7-29 Speciality and staff satisfaction (multivariate analysis)

	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Speciality: Social worker/social care worker v nurse	-5.34	-19.03	8.35	0.44
Speciality: Occupational therapist v nurse	-3.65	-18.15	10.84	0.62
Speciality: Physiotherapist v nurse	3.80	-21.62	29.22	0.77
Speciality: Support worker v nurse	-0.31	-28.17	27.55	0.98
Speciality: Other v nurse	3.82	-15.11	22.76	0.69
(Constant)	77.49	56.56	98.42	<0.001

iii) Intent to leave employer

Univariate analysis demonstrated low staff intention to leave employer had a statistically significant association with the total number of staff in the team -0.241 (95% CI -0.44 to -0.038, p=0.02) but not the proportion of qualified or support staff in the team -0.135 (95% CI -0.366 to 0.096, p=0.252), seniority 1.277 (95% CI -7.146 to 9.701, p=0.766) or speciality (Table 7-30).

Table 7-30 Speciality and intent to leave employer (univariate analysis)

	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Speciality:				*0.475
Social worker/social care worker v nurse	7.931	-8.624	24.488	0.348
Occupational therapist v nurse	1.060	-11.523	13.644	0.869
Physiotherapist v nurse	0.064	-11.911	12.040	0.922
Support worker v nurse	-3.924	-15.0332	7.184	0.489
Other v nurse	9.393	-5.413	24.201	0.214

On multivariate analysis team was not associated with intention to leave employer (p=0.83). Intention to leave the post was higher in larger teams -0.25 (95% CI -0.48 to -0.02, p=0.03), whilst a borderline statistically significant relationship was seen between intent to leave and speciality whereby intent to leave is highest in social workers/social care workers, support workers and other staff (global p-value=0.10, Table 7-31) and also seniority (senior staff hold higher intention to leave, coefficient -18.09, 95% CI -37.2 to 1.03, p=0.06).

The association between team and intent to leave did not appear unduly influenced when teams were removed.

Table 7-31 Speciality and intent to leave employer (multivariate analysis)

	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Speciality:				0.10*
Social worker/social care worker v nurse	-8.00	-30.93	14.93	
Occupational therapist v nurse	0.09	-13.57	13.75	
Physiotherapist v nurse	2.23	-10.73	15.18	
Support worker v nurse	-23.16	-45.02	-1.30	
Other v nurse	7.14	-9.99	24.27	
(Constant)	94.11	64.08	124.15	<0.001

*global test

iv) Intent to leave profession

Low staff intention to leave profession had a statistically significant association with seniority of staff (less senior staff had less intention to leave profession) coefficient 10.73 (95% CI 3.537 to 17.869, p=0.003) and speciality (support workers) (Table 7-32) on univariate analysis but not the proportion of support or qualified staff in the team coefficient 0.042 (95% CI -0.015 to 0.243, p=0.682).

Table 7-32 Speciality and intent to leave profession (univariate analysis)

	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Speciality:				*0.002
Social worker/social care worker v nurse	-6.670	-20.783	7.441	0.354
Occupational therapist v nurse	-0.823	-11.567	9.921	0.881
Physiotherapist v nurse	-4.882	-15.162	5.396	0.352
Support worker v nurse	-18.442	-28.024	-8.859	0.000
Other v nurse	-3.814	-16.443	8.814	0.554

*global test

On multivariate analysis, the only apparent relationship with intention to leave the profession was with speciality (Table 7-33), where social workers/social care workers and support workers had the highest inclination to do so. This was quite a strong relationship.

Table 7-33 Speciality and intent to leave profession (multivariate analysis)

	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Speciality:				0.03*
Social worker/social care worker v nurse	-14.22	-33.79	5.35	
Occupational therapist v nurse	-0.72	-12.52	11.09	
Physiotherapist v nurse	-2.36	-13.58	8.86	
Support worker v nurse	-30.32	-49.18	-11.47	
Other v nurse	-3.23	-17.91	11.46	
(Constant)	102.91	78.74	127.08	<0.001

*global test

Summary of staff outcomes

The proportion of support workers within the team was not found to impact on overall staff satisfaction scores or staff intention to leave the profession or employer. Equally support workers were no more or less satisfied in their role than qualified professionals. Support workers as a group however were more likely to report an intention to leave the profession than qualified staff. This may have some relationship to autonomy. Results from the broader study indicated that a higher intention to leave the profession was significantly associated with lower levels of autonomy. This research has demonstrated that support workers as a group scored significantly lower on autonomy than qualified staff ($p<0.001$).

Results from the broader study also demonstrate that improved staff satisfaction as measured by WDQ is significantly associated with the following factors (Nancarrow et al., 2008d):

- A perception that the team delivers high quality care
- High levels of integration with peers and colleagues
- Better team working and management scores
- Having a specific line manager, rather than a split style of management
- Meetings held at least weekly (as opposed to staff in teams where meetings are held less frequently)
- A smaller overall team size

Results: Service outcomes

The overall length of stay was defined as the number of days spent under care between admission and discharge, or more precisely as (discharge date – admission date + 1). Where the admission date was not recorded it was estimated from the first patient contact data records or the date on which baseline EQ-5D was completed, whichever was earlier. Likewise, where date of discharge was missing it was imputed from the last patient contact, the date of EQ-5D completion at study end, or the date of death. The duration of stay was analysed on the log scale.

On univariate analysis (Appendix 20), no relationships were found between the proportion of qualified staff in the team, coefficient 0.003 (95% CI -0.022 to 0.028, p=0.815), or seniority of staff, coefficient -0.143 (95% CI -2.189 to 1.900, p=0.891), and length of stay. Furthermore as length of stay is, by definition, linked closely to many of the post-baseline measures (such as proportion of care delivered by qualified staff) no formal modelling was done to investigate this.

7.6 Key points

- Overall support workers are involved in approximately 31% of all face to face contacts with patients and are responsible for delivering 42% of the total face to face time to patients

- On average support workers spend 57 minutes per contact with a patient and qualified professionals 77 minutes.

- Support staff, as compared to all other qualified staff, spend the greatest proportion of their time delivering direct care

- The proportion of contacts, time and time/contact delivered by support staff significantly differed between teams

- The proportion of contact delivered by support workers is very weakly associated with the admission level of care need of the patient – as level of care increases, so does the proportion of support worker contact

- There was weak evidence to suggest that there is an association between the proportion of care support workers deliver and the proportion support workers within a team

- There was weak evidence to suggest a lower TOMS impairment score on admission is associated with greater levels of support worker input

- There was weak evidence to suggest a higher TOMS wellbeing score on admission is associated with a greater level of support worker input

- There was weak evidence to suggest a lower TOMS participation score on admission is associated with greater time per contact with support workers

- A greater proportion of care delivered by support staff has a positive influence on patient outcomes as measured by the EQ-5D and TOMS impairment, activity and participation scores (but not TOMS wellbeing or patient satisfaction)

- A higher proportion of support staff within the team has a positive influence on patient outcomes as measured by the EQ-5D, TOMS impairment, activity and participation (but not TOMS wellbeing or patient satisfaction)

- The proportion of support staff within the team did not impact on overall staff satisfaction or intent to leave

- Support workers reported significantly lower autonomy scores (WDQ) than qualified professionals and staff with higher autonomy scores (WDQ) were less likely to report an intention to leave their profession

- Support workers (social workers and social care workers) were more likely to report an intention to leave their employer and their profession in the next 12 months

- The proportion of support staff within the team and the proportion of care delivered by support staff did not impact on length of stay of clients

8 Results & Analysis: Qualitative study

8.1 Introduction

This chapter presents the qualitative data arising from focus group interviews with staff members from the teams participating in the prospective study. Focus group interviews were held with staff from 11 of the participating teams to examine the roles of support workers and impact of different workforce models that utilize support workers from the staff perspective.

8.2 Review of research questions

The principle aim of the qualitative study was to capture the views of support workers themselves and health and social care professionals working with support workers within older peoples' intermediate care and community rehabilitation services in England. The following questions were posed:

i) How do support workers fit within CRAICS? What does the support workforce look like?
ii) What are support worker roles in this setting and how do they differ to professionally qualified roles?
iii) Is the utilisation of support workers in CRAICS related to any patient, team or workforce factors?
iv) How does the contribution of support workers to the delivery of care impact on staff, patient and team outcomes?

8.3 Methods

A focus group interview was held with staff from 11 of the 20 teams who participated in the prospective study to examine the impact of different workforce models from the staff perspective.

Focus groups were undertaken at the same time as the team received training in the use of the data collection tools. For some teams, more than one focus group was undertaken to ensure all of the team members were able to participate. As part of the

broader study, separate face to face and telephone interviews were conducted with a selection of staff and their managers from four teams who held 'novel' or extended/specialist roles. These separate interviews were conducted to ascertain staff and management views on these roles. As part of this process, three generic health and social care support workers from two different teams and one assistant practitioner were interviewed as were their corresponding managers. The data from these interviews have been included in this analysis.

Focus group and individual interview schedules were constructed by AM and SN and informed by results from a recent review into the impact of intermediate care on patient and staff outcomes; themes and results from previous interviews with staff in intermediate care(Nancarrow, 2004c, Nancarrow and Mountain, 2002b, Nancarrow et al., 2005b); and a review of workforce literature (Nancarrow et al., 2006). The interview schedules can be found in Appendix 21.

The focus groups covered the following topics:

- The aims and objectives of the service
- The way the team is organised
- Roles and responsibilities of different staff members
- Benefits and difficulties of the current staffing models
- Challenges to delivering the service
- Working relationships between different types of staff members
- Management processes (frequency of team meetings, service location, information systems and transfer)
- Workforce priorities

The individual interviews covered the following topics:

- The role of the staff member
- Training levels and requirements
- Interdisciplinary / interprofessional role relationships
- Staff members' perception of their role
- How the role is perceived by others
- Impact of the extended role on the team
- Job satisfaction
- Reward and recognition for the role

It was originally intended to undertake focus groups with all of the participating teams, however early saturation of the data were achieved as decided by the research team for the larger project, rendering the collection of additional data redundant.

Focus groups were digitally-recorded and transcribed verbatim and analysed using the Ritchie and Spencer (Ritchie and Spencer, 1995) Framework approach using the qualitative data analysis NVivo Package (Version 7) as an administrative tool.

8.4 Analysis

A coding framework was established based on *a priori* issues which formed the basis of the research questions and interview schedule. An initial coding template was developed using the *in vivo* terms used by interviewees, as well as the codes developed by the research team (AM, AMc & SN).

I then organised the resulting coding framework hierarchically under the dominant themes identified from the interview data. These headings were used as 'tree nodes' within NVivo and form the organising structure for the presentation of the results. In addition, interview transcripts from teams with similar staffing structures were grouped together and then compared against

each other to explore if there were any issues related to particular staffing structures.

Focus group interviews were used because they stimulate discussion and enable the researcher and participants to gain insights and generate and shape ideas (Hollis, Openshaw & Goble, 2002). It was the purpose of this evaluation to capture breadth of perception and experiences, rather than consensus, eliminating the possibility of consensus techniques (Roberts-Davis & Read, 2001). Focus groups are a data collection technique that capitalise on group interactions to elicit qualitative, experiential information (Robson, 2002). Debate encourages consideration of personal views within the social context to which participants belong.

8.5 Results

A total of 16 focus groups were undertaken. The teams that participated in the focus group interviews are summarised in Table 8-1. Team level information, found in Table 8-2 and Appendix 10 was used to group teams into those with low, medium and high ratios qualified professional staff to support staff in order to explore the impact these staffing models had on staff outcomes.

Table 8-1 Teams that participated in the focus groups

Team	Number of focus groups	Total number of staff involved (support staff)	Geographic region (England)
A	4*	40 (15)	South West
B	2*	20 (5)	South
C	1	10 (0)	South
D	1	15 (2)	South East
E	1	15 (2)	South East
F	1*	15 (8)	North East
G	3**	15 (5)	North East
J	1	3 (0)	North East
L	1	5 (0)	North East
M	1	7 (1)	North East
N	1	8 (4)	North East
TOTAL	16	158 (44)	

*Support workers and managers separately interviewed;

**Manager only interviewed

Table 8-2 Team level information

Team ID	Host organisation	Diff type staff#	Support workers** (WTE)	Qualified staff# (WTE)	Ratio of qualified to support staff
L	PCT	1	8	0	none
F	Social Services	5	9.8	3.2	0.35 (low)
G	PCT	3	21	17	0.81 (low)
N	PCT	4	12.28	10.0	0.81 (low)
A	PCT	9	15.5	27.2	1.75 (mid)
E	PCT	6	2.94	4.29	1.46 (mid)
D	No information: similar to team E				
M	Acute Trust		3.5	8.2	2.35 (mid/high)
J	PCT	2	0.5	2	4.00 (high)
B	Social Services	7	3.2	11.0	3.44 (high)
C	PCT	5	2.0	11.34	5.67 (high)

**Support workers = rehabilitation assistants, health care assistants, support workers, therapy instructors, enhanced carers, nursing support workers, OT technicians, care staff, home help enablers, physiotherapy assistant, assistant practitioner
excluding management, domestic staff and admin; including support workers

The data are presented below. The first section presents results of aggregated themes for support workers across all teams and

includes an overview of how support workers function within teams, support worker roles, factors that shape and influence these roles, success and hindrance factors when utilising support workers and support worker satisfaction. The second section explores differences in themes between teams with low, medium and high levels of qualified staff to support worker ratios, as defined above in Table 8-2.

Results are presented under the following headings:

8.5.1 Function of support workers in IC teams

The inclusion of support workers in the staffing mix, in particular those who were skilled across several professions, was positively viewed by both managers and professionals as a way to increase the team's capacity and the intensity of therapy delivered to clients as this therapist sums up:
'We need bodies to go and do'

Indeed the overarching theme from all interviews was that support staff are primarily responsible for coordinating the delivery of several different therapies, following the patient's progress against a care plan and feeding back to the team. As such they act as the focal point of care within a multidisciplinary team. One manager summarises here why this support worker function is so valuable:
'…we are not just looking at the need for qualified staff for seeing the people, the patients, because it is not the assessment that makes them better, it is the rehabilitation process and that, in our

case is done by the rehab assistants… They are the ones that are actually doing the work aren't they' [Manager, Team G]

As this therapist here describes, the extension of their service out of hours is enabled by support staff:
'It is from 8.30 till basically 5.30 service, with an evening option within it and weekends, then I think on the whole we can provide because the support workers will do extra visits if somebody has got particular needs.' [Therapist, Team A]

This was a consistent theme throughout the interviews. When professionals were asked to identify workforce needs, additional support workers were most frequently cited as a staffing priority.
I So what would your wish list be?

F Mine would be not necessarily more therapy staff but more rehab assistants. [Team M]

In addition, as acknowledged by this therapist, support workers enable qualified practitioners to undertake the essential parts of their role:
'I think what the strength is …they kind of enable us to take the lead for the client….' [Team A]

This is reiterated again by this therapist -
'*in a sense we are assessing and setting goals and a therapist's time we haven't enough, so the care assistants, the therapy assistants, they are the vital part … they are a vital part.'*
*[*Therapist – focus group team F]

Support worker input was also perceived as beneficial to patients in that therapy could be delivered in the absence of qualified therapy staff. This was particularly true for teams with lower ratios of support workers to qualified staff:

F I think the principle of the rehab assistant being a generic worker is a good principle in the sense that they are providing the nursing care that's needed but they're very much a therapy and enabling role which I think for a rehab unit –
F Is a good thing.
F Because it means that when the therapists aren't there they're still getting therapy overview, they're still getting –
F It's an ongoing 24-hour thing rather than just when therapists are there, even though they can't do specific things at specific times, or the times that there aren't therapists there they can continue with that rehabilitation. [Team M]

Crucially, several teams also identified that support workers are fundamental to enabling the service to achieve its goals:
'I worked last Saturday and we had a rapid response and we got our services in, we had health care support workers going in to support a lady, who quite probably could have been admitted to hospital were it not for that.' [Team G]

8.5.2 Roles

i) Qualified staff roles

In order to analyse the roles of support workers, it is important to understand what qualified staff perceived as their roles and remit. The sharing of information across professional groups and to an extent sharing professional roles was commonplace amongst qualified professionals, as this occupational therapist acknowledged:
'I think as well, since joining [the team], the main thing for me is I have become more and more specialised at being more and more general.' [Team N]

A social worker also commented:
'…I do find that when I go out and do a visit, if I have to do in on my own that I am thinking with an OT hat on and a physio hat on as well.' [Team F]

Although there was variation in how different roles of IC staff were described, it was clear that professionally qualified IC staff were responsible for screening and assessing clients and organising care. One staff member expressed;
'our assessment skills are extremely good because they have to be - we have to sort out people that we can assist and rehabilitate' [Team A].

ii) Support worker roles

Another key role in CRAICS is the implementation of rehabilitation programmes. This is where the boundary between professional and support roles came into play. The professional role was generally described in terms of triage, assessment and the establishment of rehabilitation programmes while the support staff role was to carry out rehabilitation programmes and report back to professionals about client change and progress. The following exchange between the interviewer and professionally qualified staff members is an example of this theme:

I So what things do you think your sort of keeping hold of at the moment that are very important to keep within your professional envelope?

F I think probably initial assessments and our specialist assessments that we need and the ones, it becomes more basic, then we can hand it down to the technical instructors [support staff] to continue with. Which we do.

F Yes, the goal setting, and we will do, and then they can then just follow the..

F ...the rehab programmes yeah. [Theapist, Team G]

As demonstrated in the above quote, there seemed to be no confusion between qualified and support staff over this distinction between roles. Furthermore, support workers from all interviews commonly expressed their role as that of delivering therapy to clients as part of a care plan devised by a professionally qualified staff member.

'*I'm also one of the support workers with the team, basically the role is following the plans that are set by the professionals…*'
[Team A]

However it would seem that the role is not as simple as just delivering care plans. Support workers typically utilise a mix of skills to enhance patient function. These skills include delivering therapy exercise programmes or other professional programmes like speech and language therapy, practising skills in the community such as mobility, shopping and banking and also helping to enable patients to perform day to day activities more independently such as food preparation and social confidence building -
'if they come out of hospital with, for example, a hip replacement or something and we go in and our role is to get them to be independent, so we go in and we may do some exercises with them, just make sure they can make a meal safely, sometimes we do shower practise with them, basically to get them independent again, some need their confidence building up..'
[Enablement assistant interview, Team F]

Day to day informal assessment of the client's progress -
'…*but also as we learn a lot more on our daily basis to move the patients forward towards their goals'* [Team B]

Listening to and motivating the client -
'I'm one of the support workers… and we just basically talk to them as well and make sure that they're all right and if they want to talk we're there to talk with them' [Focus group, Team F]

Developing a relationship with the client –
'You're in their trust aren't you, you make friends with them really, over your visits and also you know when to not, when to step back and just let them go.' [Focus group, Team F]

Identifying change, risks and or any problems that have arisen with the client -

'When you hold a conversation with somebody you can pick up on the fact that sometimes their conversation doesn't make sense and you just think, the old warning bells ring and it's, like, are they just sometimes wandering off the point or do they have a UTI or is it dementia or something else, you've not necessarily got to decide these things but you come and feed it back.'

[Enablement Assistant, Team F]

Identifying when goals are met and when patients are ready for discharge or follow up from a professional -

'They [professionals] don't really oversee, they set the goals and then they'll alter the goals if we feedback to them that that might be required. That's it really, we sort of decide when those goals are met, don't we?' [Enablement assistant interview, Team F]

And communicating all of this information back to different professional disciplines within the team -

Well normally therapists will write the care plan and we adhere to the care plan but we can actually report, you know, increase or reduce services as people's ability improves but we do feed back. Normally verbally because we don't do like case meetings and things like that. Usually Monday morning we'll go through what patients we've got and if we think they need a review or anything.

[Generic health and social care worker interview, Team B]

There were occasions however where support workers felt it appropriate to directly contact other professionals outside the team as demonstrated in this exchange:

'F No, we've gone to clients and we've phoned GPs, yes, if we've thought, if I've gone in and I can see a difference or they're not well or, yes, I phoned the doctors.

I For a house call?

F *Yes, yes.*

F *Chemists we deal with quite a lot, it's often nothing to do with their goals but, when you're going and you're dealing with somebody about something else, often Enablers or, they'll come home from hospital and their medication will just be chaos in some way or they really can't understand it, so sometimes you ring a chemist to try and get –*

F *To set a dosette box up and stuff, you know.*

F *Try and get it, because if they're not managing their medication then you can't tell whether their failure to do something is due to that or not, so you've got to deal with that in order to try and achieve their, help them achieve their goal.'* [Enablement Assistant interview, Team F]

Not all teams however encouraged this level of autonomy and flexibility:
'…we are there to promote independence and get them motivated more than - it is dressing skills, breakfast skills, a list of instructions, yes just following instructions really.' [Focus group, Team B]

Finally, the therapists themselves admitted that they rely heavily on support workers to influence their care plans as expressed here:
F *And we do rely on the support workers for the information of what's going on with the patient.*
F *Because all of them are very experienced, so we respect what they tell us and if they think that somebody needs to see a professional, we will get to see them.* [Team D]

8.5.3 Factors that influence support worker roles

Although the above roles were common across all interviewed, the exact role of a support worker was never stagnant. It relied greatly on the demands of the service, external services being available, the setting of care provision, the skills and expertise of professional staff within the team, whether or not particular staff / skills were fully utilized and the types of clients referred to the team.

This support worker for example describes how her role changed when moving from residential care setting into people's homes: *'The responsibility [has changed] because you're, when you're in the resource centre at least you've someone on hand if something goes wrong or if something collapses where if you go and see someone alone in their own home then you're making decisions there by yourself what should I do.'* [Team M]

This variation in role however did not always attract positive comments. Support workers from one team, for example, complained about learning skills through dedicated training only to be denied the opportunity for these to be used when more suitably qualified staff were available.

F 'Well I take blood, the support workers are a very mixed group, we all have our areas, but I very rarely get to do it and they will put nurses in the same day as I go in to take a blood, it's quite.. and we've all got skills that perhaps we could use a little bit more.
I So you've been trained to take bloods but you don't take bloods?
F Well I do when I initiate going in to do it myself, but if I didn't make the move forward.... all the support workers have got skills in different areas that perhaps aren't used as much as they could be'.[Team A]

In another team, the type of clientele coming through the service had changed due to service restructuring which has seen support workers taking on more medically ill, frail elderly patients rendering some of their rehabilitation skills redundant.
'I think they're more medical now, definitely, I don't think we get so much fall prevention or socialising, we used to go out on the bus with people and get them back out into the community and I don't think we have that any more because medically they're more unstable and I think that we're, it's basically making them better at home and then we discharge'. [Support worker, Team G]

Or again here another support worker comments on how this change in role has impacted on job satisfaction:
F we used to have nice pure rehab –

[laughter]

F You could see progression, you achieved something, obviously the patients as well, it was brilliant and that happens now as a treat rather as the norm [Team A].

A problem across many of the teams was that of service blockages, mostly with social services. Support workers found their role become one of providing personal care in the absence of a home care package. As one professional acknowledges here, this not only has implications for support worker morale, but also service capacity in that vital resources are being used inappropriately:
'The poor support workers end up filling in for home care and it drives them mad and then they are being – they are used up – our valuable support worker resource is used up covering for home care instead of doing rehab.' [Team G]

And yet as this qualified professional points out, it is exactly this role – the provision of social or personal care that can prevent someone from going into hospital:
'When we go into patients who we perhaps feel need some urgent care – there is rapid response through social services but there isn't that much of it and it's always full, so quite often it's a social need that prevents patients going into hospital and that's part of our role, obviously, to prevent hospital admission, but we can't put any social care in… So quite often it's not the fact that we can't put in the equipment, the physio, the OT, it's the fact that there's nobody there to wash them and get them up in the morning.' [Team D]

It seems that this can happen regardless of host organization or whether or not health and social services are working jointly as demonstrated by the support workers in this team who were directly employed by social services yet were frequently required to deliver home care instead of enablement due to home care staff shortages.
'It was bad around Christmas because home care, they had quite serious staffing levels but, Enablement was never set up to be a staff pool for home care, it's never going to go completely away'
(Senior Enabler)

This change in role was, as expected, not taken lightly:
'…my job title is Enablement and I didn't sign up to go to home care, you know, I've never done home care in my life'
(Enablement Assistant)

It must be noted however that qualified practitioner roles also varied according to different demands and were almost as elastic as support worker roles.

8.5.4 Utilising support workers - what works

i) Multidisciplinary teams

The multidisciplinary skills available within a team was seen as important to the breadth of support worker roles and confidence in a range of therapies as expressed by this support worker - *'And also working with different professions … we just learn to feed off each other and it's much better for the client again'* [Support worker, Team B]

This in turn can enhance the capacity of a team to see clients and enable support workers to identify a greater range of patient needs as one manager commented on in this exchange with the interviewer:

I Do you think that having quite a broad skill mix across your team has impacted on the skills of, say the rehab assistants?

F Yes. I think the rehab assistants, they're key to the way the service works but they are very skilled and generalist workers, they have, they're very capable of undertaking physio, OT or nursing type duties and then a couple of them have expressed particular interest in specialist areas so we've got a couple of them who have had some additional training in speech and language communication issues and so are like assistants to the speech and language therapists, so they are, having the broad range of professional input has actually enabled them to develop further skills which means that we're able to rely on them to undertake quite a significant amount of work with individual services. [Manager, Team A]

ii) Staff relationships, Teamwork and communication

The success of multidisciplinary working was perceived by all staff to be reliant on good staff relationships, clear communication channels and good teamwork. This was particularly the case where resources and time were stretched:

'But the important thing is good communication, so that we are making the most of the resources we have got really.' [Team F]

It was abundantly clear that the success of the support worker role from both a qualified and support worker perspective, depended largely on the ability of support workers to access qualified professionals easily and for clear communication channels to be open to them to voice any concerns or feedback information about a particular client's progress.
'And also there's the, you know, for the support workers they know that there's always somebody at the end of the line for them and whoever it is within the team, they may not actually be working with some particular client but they will support where they can and I think that's enormously important.' [Team A]

The importance of good communication channels is reinforced when a support worker feels uncertain or out of their depth with a client:
'*If I felt as if I was out of my depth then I would ask somebody, you know, I would always ask about whatever I was worried about.'* [Generic support worker interview, Team B]

iii) Co-location
Good communication in the form of daily 'informal' client feedback and discussion was enhanced when the team worked from the same office. Indeed the shared office as a hub of activity attracted many positive comments when help or advice was needed and it was to be found within the same building or office space. This was identified as a key 'success' factor to facilitating good team working and communication processes, the benefits of which cascaded to patient level.

'I'm based in the office here, all Enablers come in and out of this office at the beginning and end of the shift, the social workers and CCO (Community Care Officer) are based in that same office, so there's a lot of informal feedback goes on every day, so we all have our own picture, really, of all the clients and all the service'
[Enablement assistant, Team F]

iv) Generic working

The majority of teams perceived role sharing as a positive experience that is essential to delivering services and as one professional expressed 'getting the job done';

'… there is no defensiveness or possessiveness about roles because there is more than enough work to go round…' [Team C]

It was also clear that the generic support worker role not only encapsulates the positive aspects of generic working as expressed here -

'I think one of the most positive aspects of the service since it began has been the flexibility of the staff to change and to try all new ways of working. If it hadn't have been for that we wouldn't be doing what we are doing now.' [Team M]

But also thrives in an environment where there is little protectiveness over professional roles, enabling them to enhance the delivery of services because they can cover a wide range of disciplines.

'Yes, I think if you give the support workers training in all the different roles, that helps with the therapists are able to do assessments on a weekly basis rather than to go in and do it daily.' [Team D]

v) Training, education and supervision

Although several support workers and qualified practitioners expressed better access to formal training would be beneficial to the success of the support worker role, it was clear that the most valued avenues for skill and knowledge acquisition were through working relationships with qualified practitioners.

I What training have you had for this role?

F We have actually gone out with the speech and language therapist, he was overseeing us and we were actually doing some of the lessons and things and also we worked with him so he knows about the progress of the clients. As I say the

physios and things as well, we go out with them on the initial visit so that we know exactly what we're asked to do.

I OK, so it's mostly you've learnt about all the different therapies by working with the other therapists.

F Yes. [Team B]

Working closely with qualified practitioners through joint visits, delivering care plans made by qualified staff and just being part of a multidisciplinary team were perceived to directly enhance support worker skills and knowledge. Indeed the importance of good communication and information sharing for skill and knowledge acquisition is reinforced by this support worker:

'…but I am learning very quickly and I've got a lot of people around me that know a lot more than me, but they [professionals] do share all their information and it's really a brilliant team.' [Team N]

Furthermore 'in house' training, structured supervision and support or 'mentoring' by qualified practitioners was also seen as crucial to the success of the role.

vi) Assessment by qualified practitioners

Although not mentioned by all teams, the importance of timely and thorough assessment by qualified practitioners prior to support worker input was perceived as vital to enabling support workers to deliver safe and risk-free interventions to clients. An enablement assistant has just been asked if she ever felt out of her depth:

F I haven't felt that, what happens is the occupational therapist goes in first anyway and assesses them, you know, having a dry run in the shower, so really when we go, they shouldn't be any problems.

I So you always feel safe performing your therapy role –

F Yes, because you know somebody's already been, one of the occupational therapists has been..' [Enablement assistant, team F]

vii) Type of input

It was acknowledged also that the mixture of social interaction, personal care, therapy intervention and general enablement philosophy of care that support workers undertook were all important factors within the role that directly benefited patients.

'Still the support workers going in because that's really what in reality helps get people home, the therapy helps as well, but if you didn't have that you wouldn't be able to, you need them both together basically, one won't function without the other.' [Team G]

viii) Time

And finally, support workers also mentioned the importance of having time to give to clients. Time allowed a relationship to develop between the support worker and client which in turn was perceived to positively enhance a patient's rehabilitation process.

F …so you're sitting having a cup of coffee with them … and you'll listen to them and you get some conversation with them and it's having those times that you can spare that time that I think really works well with the relationship building

I And do you think that it's, that it's a balance of what you deliver as, say, a therapist or an enabler and also the friendship component that helps them get to their final goal?

F Definitely, definitely, yes. [Generic support worker interview, Team B]

8.5.5 Utilising support workers - what doesn't work

i) Staff shortages

The pressure of staff shortages aroused feelings of frustration across many of the teams. This was particularly the case where support workers were used for work outside the team and were therefore not available to assist therapists. One therapist describes this problem:

'We are at times top heavy and like you say, people are doing things that don't need their skill level to do. But because the rehab assistants haven't got time, even if you put more rehab assistants in, I think the ward will soak them up. Or, because they're employed by the acute hospital trust, if there were staffing shortages in the acute hospital they just come down and take them so some days we might be staffed quite well on the ward and have asked them to do a certain amount of tasks with patients but because the acute ward on the main hospital site has got a shortfall, they will come and take our rehab assistant that should have been doing rehab tasks. So then they just don't get done.'[Team M]

As described here from a support worker perspective, a lack of support staff also means clients are missing out on valuable therapy time:

I Do you think any priorities or wishes for the next 12 months, things you would like to see develop or anything?

F More staff.

I That would make a difference to your role?

F Yes, because on the unit we are a member of staff down, so if you are a member of staff down, not every shift, but a few - probably 3 - 4 days of the week, you are a member of staff down, so then you are like prioritising yourself to which client needs the more time, which isn't fair to that client. [Support worker, Focus group, Team F]

Indeed the same group of support workers identified that not having enough therapist presence on the residential unit meant that there was no backup to reinforce therapy programmes. The support workers conceded that they didn't feel they had the authority to make patients carry out their exercise programmes and this may be addressed by having a greater presence of therapists on the unit.

F My wish list would be a permanent Physio and OT, even if it is only part-time, maybe mornings or afternoons.

F But something everyday would be ideal wouldn't it?

F Yes.

I Because then, is that because the patients are changing and you want the input?

F No, it is more - when we go round, if the Physio is there they actually do their exercises and they do them really well, but the following day when we go, 'oh no, I can't do them today' and obviously we can't force them. So sometimes the work that [the therapist] has put in is a waste of time because they won't do it for us.

ii) Lack of time for training and supervision of support staff

Several teams expressed concern over the need to find time to train, supervise and manage support staff and the implications of not having access to time to comprehensively undertake these activities.

'...so suddenly we went from just doing the therapy care to managing the health care support workers, managing their one to one supervision, managing their off duty and being responsible for their shift allocation and everything like that, which is an enormous – I think it was a real strain at first because I certainly didn't come into the job expecting to be doing that'. (Team G)

As one team member summarises below, the employment of support workers to increase service capacity has to be balanced by additional support for qualified staff to deliver training:
'It is the old problem where you have to hit the ground running, so you employ people into the posts but they might have the basic level – you need a comprehensive programme of training to get them to the point where they are appropriate to do the job. It takes a lot of time, it doesn't happen over night …' [Team M]

iii) Lack of access to formal training

Following on and perhaps compounded by these concerns, many support workers felt access to formal training was lacking or where the courses were available, assessors were not. Many support workers understood that because of budget and service capacity constraints, achieving an NVQ would have to be in their own time. These issues are summed up in this exchange:

F And the possibility of doing the NVQ3 as well, which I don't think is available through funds is it at the moment?

F They are going to reinstate it.

F Are they? Right.

F I think the problem then is more lack of assessors who can take you on.

F It's all time isn't it? Not many of us work full time, we're all sort of part time aren't we and different hours, different days.

F No, the NVQ, you have to do that in your own time.

F Oh do you?

F Yes.

F *So how can you do that when you work?*

F *In the evenings.* [Team D]

Or as one support worker simply acknowledged:
'I did my NVQ3, more or less off my own back'

In the case of the Assistant Practitioner, it was found that the course was a necessity to attain her new status but was not overly useful to her practise.
Well, I think the way that the Assistant Practitioner [course] run originally was that it was very much based towards nursing, so that Assistant Practitioners could, in theory, swap places with each other. So somebody working say in a Walk In Centre, could work as a District Nurse across the district. But it hasn't worked like that for me.

And as pointed out by this support worker, this lack of access to formal training can impinge on career progression opportunities:
'On a Physio tech side point of view, we've been offered NVQ, but there's nobody to do it, so we can't progress to get an NVQ because there's nobody around to give us the training and the qualification, so we're stuck because we can't get the NVQ through no fault of our own, we can't move on to apply for other jobs which say we must have an NVQ. So we're being held back because the training isn't there for us.' [Team B]

There were also issues among the qualified staff that training wasn't available to equip support staff with particular competencies to perform certain tasks, such as prescribing equipment or using electrotherapy equipment. If support workers could perform these tasks it was perceived it would 'free up' professional time. Budget constraints were often cited as a reason for the lack of such formal training. The practise in one team however, as described below, was based on gauging the level of competency of the support worker to carry out the task. A more

streamlined and formal system of gauging competency was considered more appropriate:

'Well for example there is a course that rehab support workers do which are that they become trusted prescribers so that they could go out and prescribe basic equipment, which is really a common sense type of stuff and at the moment they can't do that but that costs something like 250 pounds to do. Well there isn't the money but it would be great if we could send after a year or two, everybody to that and then we could say it's simple and so they would know well enough to go out and know what they don't know so that they can come back and say 'no, actually it needs an OT to go out there because I've done all the basics but there are gaps'. But you need to know something to know what you don't know!' [Team E]

The importance of formal training for support workers is highlighted by the qualified professionals in that it gives them a degree of certainty and confidence that the support worker is sufficiently qualified to undertake particular tasks and as demonstrated in this team, undertake a greater level of autonomy:

'…they [support workers] have all been trained and they can actually working at NVQ level 3 and actually augment the care plans that are in there, just with the minimal reference back to us.' [Team N]

8.5.6 Factors influencing support worker satisfaction

i) Varied caseload

Many support workers expressed that their varied case load gave them a great deal of satisfaction -

'*…it's quite nice, as you say, because we do a little bit of everything.'* [Generic support worker interview, Team B]

ii) Enablement

Furthermore, the ability to follow and 'enable' a client from the beginning to the end of their care was seen as the biggest contributor to support staff satisfaction. One support worker expresses the reality and reward of her job here -
'…sometimes it can be incredibly boring if somebody wants to take three quarters hour to make a cup of tea but that's our job, you know what I mean, and it's so satisfying at the end of it to see them making themselves a cup of tea that, you know, might only take them ten minutes in the end.' [Enablers Team F]

iii) Deskilling

On the flip side however when the support worker role became that of providing personal care to make up for a lack of home care, morale was affected:
'I think from a staff happiness point of view as well is that our support workers tend to want to focus on rehabilitation. They don't want to focus on personal care and having to pass that on. They want to feel that they're actually enabling somebody to become independent.' [Therapist, Team A]

iv) Teamwork

There a strong feeling from all interview data that staff valued teamwork and the camaraderie that came with it, a sentiment that staff were working for the common good against the odds.
'Even though we have just whinged for about half an hour, we are all incredibly high, we were thinking about this the other day, that the core competency of our team is the sort of cohesiveness and morale and there isn't - even though we are all different grades, there is no competitiveness.' [Team C]

iv) Remuneration and recognition

There was a perception that wages did not reflect the level of responsibility required of the role.
'I think they should have a look at our wages [laughing] because it is not very good for the responsibility that we have and

everything else. I think that should be looked at but other than that [I'm satisfied], yeah.' [Team B]

This however did not seem to alter with greater levels of training as expressed by the assistant practitioner –
'Well everybody would like more money. I think that our course is very academic, very academic, for the amount of money that I will be earning, it is not going to be that much more than a rehab support worker's money and I think if people really looked at the last 2 years and the amount of academic work that we have to do, to quite a high standard, I think we should be paid a bit more, but I accepted it at the beginning, so I have to accept it at the end.'

On the other hand, it was very clear to support workers that their role was highly valued within the team and with clients. This support worker has just been asked if she feels valued:
'Within the team I think so because at the end of the day I think that they do value you.' [Generic support worker interview, Team B]

v) Uncertainty

As with most staff interviewed, uncertainty impacted on job satisfaction. Although only in two teams, on both occasions restructuring of the service meant support staff, not qualified, had to reapply for their positions and were consequently uncertain as to whether they would still have a position at the end of the restructuring.
'I'm just hoping to keep my job, really! We don't really know what's happening, so, in case we're restructured they'd need half the carers they've got and we'd just go in a pool and would have to re-apply for our jobs, so, we're have to wait and see. So, there's nothing else, really, I'd just like to keep my job and carrying on working for the Community Rehab Team, because I really enjoy it.' [Team B]

This is reinforced by a consistent theme across all staff in all interviewed teams:
'I think if would could just start to settle down a little bit, it would be nice. Have a clear direction, yes, a bit of stability for a while would be good.'

8.5.7 The influence of staffing characteristics

Transcripts from teams with low, medium and high ratios of qualified professional to support staff were compared for any consistent themes among each group. In addition, other characteristics such as general team organisation were analysed to see if any themes emerged.

The clearest difference between these groups of teams was that teams with a high ratio of qualified professionals to support workers (Teams C, B, J) did not report any problems with finding time to supervise and train support staff. Conversely most of the teams with low-mid qualified to support worker ratios (Teams M, E, F, G) expressed training of support workers as a burden on their time. This was exacerbated in those teams that also reported problems with competing priorities such as staff shortages and or problems with social services (M,G).

A further difference was that support workers belonging to teams with a low ratio of qualified staff to support staff (F, G) felt it was sometimes difficult to access therapists for support or training:
'I think I personally feel that I've come into this role now and people expect me to know what I'm supposed to be doing and I don't. So I think they sort of just let me get on with it' [Team G]

Some support workers from teams with a low ratio of qualified staff to support workers (F) demonstrated they had more autonomy than those in teams with high qualified staff to support ratios (B, A). For example in team F, the team with the lowest levels of support staff often telephoned GPs, organised patient medications and were responsible for deciding when a client was

ready for discharge. This is compared to team A (medium levels of qualified to support staff) whose support workers were trained to take blood, for example, but were rarely able to do so because nurses within the team had reclaimed the role.

In addition, teams with very high levels of qualified to support staff (C, J) described themselves as more specialist services than others – one being an assessment and triage service in A&E and the other a neurological service. This may account for the difference in numbers of support workers utilised in these teams. Interestingly the team with no support workers at all (L) was the most specialised of all services included in the qualitative analysis.

8.6 Key points

- IC is characterised by multidisciplinary team working and sharing of professional roles.

- Qualified practitioner roles include undertaking assessment of needs and forming care plans or interventions.

- Delivery of care is generally the remit of health and social care support workers.

- Training, supervision and ongoing professional education of staff are largely 'in-house' and with respect to support workers, provided by qualified staff.

- There was a perception that joint and multidisciplinary working facilitated skill and knowledge acquisition.

- Generic working and sharing of professional skills within a multidisciplinary team was perceived to positively influence team cohesiveness, responsiveness to patient needs and morale.

- Good communication, team working and co-location were in turn identified as key components to successful generic working and utilisation of support staff.

- Support workers were viewed positively as a means to deliver a greater intensity of rehabilitative care to clients and assist the team to provide continuity of care.

- Support staff roles included day to day 'informal' assessment of patient function, liaison with health professionals, instruction in correct rehabilitative techniques for activities of daily living, delivery of a myriad of therapy programmes and motivating and listening to clients.

- Generic health and social care support staff were considered the vital team – patient link

- The roles of support workers varied according to the skill mix of the team, the clientele and demands of the service.

- There was a perceived absence of or lack of access to formal training opportunities. Either there is no funding, no NVQ assessors, no time, not enough staff, or the training is not appropriate.

- The lack of formal training opportunities raised problems where support workers wished to further their career and where qualified professionals required support staff to carry out particular tasks with a certain level of competency.

- Qualified professionals expressed concern about the lack of time available for them to conduct training and supervision of support staff, being that such training and supervision is the largest contributor to support worker skill and knowledge particularly in the absence of more formal training programmes.

- There was a general feeling that the level of pay did not reflect the level of responsibility required of most support worker roles.

- Qualified staff working in teams with a high ratio of qualified staff to support staff did not feel the pressures of training and supporting support staff as much as those in low or medium ratio teams.

- There was also some evidence to imply teams with low or medium ratio qualified:support staff had less access to therapists and also on some occasions higher levels of responsibility and autonomy to those with high ratios.

9 Discussion

9.1 Introduction

Workforce research is complex. The complexity extends to the workforce context, methods chosen, outcomes measured and the outcome of the research itself. This piece of research is no exception. I have attempted to evaluate a group of workers who are renowned for their diversity in role and function in a setting that is equally as varied. As such, this piece of workforce research has been complex to evaluate and interpret. It has by no means addressed all possible factors that can impact on support worker contribution to the delivery and outcomes of care however I would argue it has challenged some of the underlying assumptions about utilising support workers.

Policy messages and expectations around workforce and skill mix in health and social care I believe have over simplified the complexity of workforce evaluation and do not realistically account for the myriad variables that can impact on workforce effectiveness. In particular where support workers have been cited as a potential 'solution' to workforce constraints (Department of Health, 1999, Department of Health, 2000a, Select Committee on Health, 1999). This discussion therefore attempts to unravel some of the complexities faced by health and social care teams in the community who utilise support workers; to describe how these complexities impact on how and to what extent support workers are utilised; and to challenge some of the common assumptions about the utilisation and impact support workers make to the delivery and outcomes of care.

This final section of the thesis therefore brings together all the information from the separate studies and the literature review and discusses the findings with respect to the overall research objective and the individual research questions.

Research challenges and limitations are discussed as well as implications for policy and practise and further research questions that have arisen as a result of this research.

9.2 Overview of the research

This research aimed to identify the factors that may enhance patient, staff and service outcomes when support workers are utilised in the delivery of rehabilitative care to older people in the community.

In order to realise this objective, I have reviewed the evidence base and established research questions which were primarily concerned with addressing the lack of research around patient, staff and service outcomes when support workers deliver care in Community Rehabilitation and Intermediate Care Services (CRAICS). I have also attempted to provide some evidence to support or refute common assumptions around the function and contribution of support workers to workforce efficiency and overall patient care in CRAICS.

The five research questions were:

1. Is the utilisation of support workers and proportion of care delivered by support workers in CRAICS related to any patient, team or organisational factors?

2. How and to what extent do support workers contribute to the delivery of care?

3. To what extent does support worker utilisation and contribution to care impact on patient, staff and service outcomes?

4. How do support workers fit within current CRAICS workforce and service models? What does the current CRAICS support workforce look like?

5. What is the support worker role within CRAICS and how does this role differ from that of professionally qualified staff?

Three separate studies were employed to answer these questions along with a comprehensive review of the literature. The cross sectional study of 185 teams across the UK examined how support workers are employed in CRAICS, whether there were any patterns in the services that employ support workers and support worker demographics such as length of time in post and pay banding (Section 6).

The prospective study involving 20 CRAICS across England generated information from 1890 patient episodes of care,300 staff questionnaires and 19 detailed service descriptions. This information was then used to identify how and to what extent support workers were involved in delivering care and whether or not there were any patient or team level factors which could predict the proportion of care support workers delivered. The data were also used to examine how the proportion of care delivered by support workers impacted on patient, staff and service outcomes (Section 7).

Data generated from the qualitative study, which involved 16 focus group interviews with over 150 staff from 10 different teams, was then used to explain some of the patterns emerging in the empirical data, to examine the nature of the support worker role and to highlight and explore any particular factors that could not be empirically captured that may facilitate effective utilisation of support workers in CRAICS (Section 8).

Finally the literature review also examined in depth the roles support workers undertake in CRAICS and how the support worker role differs from the qualified practitioner role. This separate piece of work has been used to provide a context for the results from the qualitative study so that analysis of and conclusions drawn from the empirical data, which has primarily

compared practitioner titles, is appropriately interpreted (Section 3).

9.3 Research findings

9.3.1 How do support workers fit within current CRAICS workforce and service models?

i) Support worker numbers and demographics

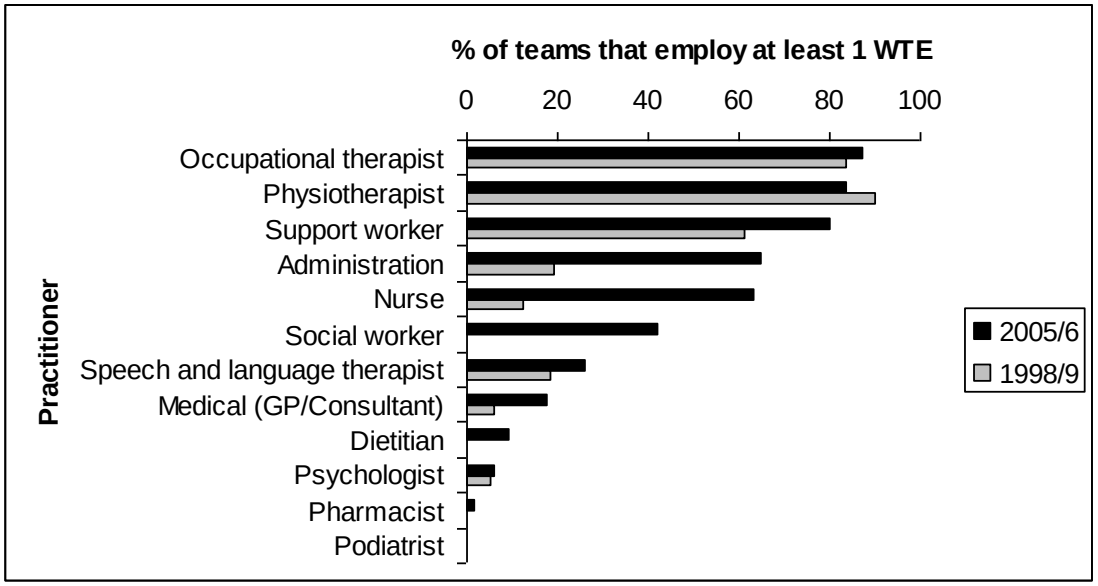
The vast majority of Community Rehabilitation and Intermediate Care teams that participated in the research utilised support workers within their teams. Within the cross sectional cohort, over 80% of teams utilised at least 1 Whole Time Equivalent (WTE) support worker. The average number of support workers per team was 6.1 and the mean ratio of professional to support staff was 1.4.

These figures are similar to those found in a 2003 survey of support workers in intermediate care teams (Nancarrow et al., 2005b), however the ratio of professional to support staff in this current study is slightly lower indicating there may have been some growth in support worker numbers compared to qualified professional numbers in the last few years.

When compared to Enderby and Wade's study of community rehabilitation services in 1998/9 there has almost certainly been growth in the last ten years in the number of teams that utilise support workers. Their study demonstrated 60% of teams employed support workers. Figure 9-1 compares the staffing profile of the services in 1998/99 with the findings from the cross sectional study. In addition the data from the cross sectional Workforce Dynamics Questionnaire indicated that support workers were marginally but significantly older than qualified staff and work on average slightly greater hours per week than qualified staff.

From this information, it seems likely that the growth in support worker numbers compared to qualified practitioners and the demographic profile of CRAICS staff reflects the workforce predictions outlined in government recommendations. That is, there are fewer qualified practitioners entering the workforce and that the workforce is ageing. The growth in support worker numbers also reflects the government's specific workforce agenda. Whether or not this growth can be directly attributable to policy is debateable. There is an equal chance that the changes to the way CRAICS are organised and commissioned along side imposed budget constraints can account for growth in support worker numbers. Growth in the actual number of CRAICS over the last decade may also have contributed to this observed growth in support worker numbers.

Figure 9-1 Comparison of staffing 1998/9 (Enderby and Wade 2001) and 2005/6



ii) Variety of practitioners

The cross sectional and qualitative data demonstrated that support workers work alongside a range of professionals, most commonly physiotherapists, occupational therapists, nurses and administrators. The presence of other disciplines within these teams such as speech and language therapists and podiatrists is

more varied and sporadic. The cross sectional study found that on average, most services employ between 6 and 7 different types of staff, however this varies according to the setting of care provision. The prospective study results were similar.

Enderby and Wade (2001) who undertook a survey of the Community Rehabilitation Team Network in 1998/99 raised concern about the lack of variety of staff employed by these teams, and the impact that this may have on the ability of these teams to deliver an 'holistic' approach to care in community rehabilitation. I would further argue that the variety of practitioners seen across teams in the cross sectional and prospective studies raises concerns for the 'mix' of skills and knowledge available to team members, in particular support staff.

As illustrated in this research it is this mix of skills and knowledge from qualified practitioners within teams, over and above formal training, that accounts for a great deal of learning and skill acquisition for support workers. Furthermore the lack of access to formal training opportunities for support workers makes this informal learning process even more important. The need for breadth of experience and learning from a range of professionals is particularly true for generic support workers who require a wider breadth of knowledge around particular professional roles than unidiciplinary support workers as they deliver a range of different therapies. This is reinforced by other studies which have raised concern that support workers who take on generic roles may not have the sufficient breadth of knowledge and experience to be a 'jack of all trades' (Hek et al., 2004, Rolfe et al., 1999).

In addition there is some evidence to suggest that when practitioners with specialist roles are involved in providing formal education sessions to staff, improvements in patient outcomes can be enhanced (Krichbaum et al., 2005). The findings from this research however indicate there are very few specialist practitioners within CRAICS.

The importance of a 'good balance' of professional skills in these teams is also of great value to the service older people receive. For instance, a study of 494 older people who had presented to a hospital with falls, incontinence, confusion and / or poor mobility found that 67% (n=331) of older people had utilised podiatry services within the preceding 12 month period, yet only 5% had utilised rehabilitation services such as domiciliary OT, PT or day hospital rehabilitation (Young et al., 2005a). This study however found that 92% of teams do not employ any podiatrists in their team and only 12% of teams provide any podiatry input on a casual or session basis. The lack of particular staff groups within a multidisciplinary setting has implications for patient care in that potentially without particular expertise in a team, how are particular problems identified? Indeed how do staff, in particular support workers, learn or acquire particular skills when specific professional skills are missing from the team? Alternatively there may be conflicting perceptions within older peoples' services regarding who should manage chronic, ongoing care needs such as podiatry. Such services may not be viewed as the type of care that is required to help patients through a transitional phase of recovery, which is generally the CRAICS remit.

Further research needs to be undertaken to investigate the impact of the number and variety of different types of service providers on patient outcomes in rehabilitation and indeed the skills and knowledge of staff.

9.3.2 Is the utilisation of support workers related to any service level or organisation factors?

There were some patterns that emerged regarding the utilisation of support workers and service characteristics. There is a cluster of services that are characterised by a skill mix of around 7 support workers and 9 qualified staff, a throughput of around 900 referrals per year which are home based and serve clients with 'medium' levels of care.

As far as I am aware, this is the first time such information has been captured and analysed for this setting. Farndon & Nancarrow (2004) was the only other source of evidence I found which looked at the relationship between service organisation and support worker utilisation. Their results were slightly different to these, reporting services that employed foot care assistants tended to employ large numbers of podiatrists and the podiatrists were more likely to have senior roles.

There are also significantly more support workers employed in services that deliver care in the home than outpatient or inpatient services. A Canadian study of occupational therapy assistants found similar results (Loomis et al., 1997).

A moderate association between the ratio of support workers to qualified staff and the number of yearly referrals accepted by teams was also found however there was no evidence of a relationship between the size of the population and the number of qualified or support staff. Equally there was evidence to suggest that as the total number of staff in a team increases so too does the ratio of support to qualified staff. Not surprisingly there was also evidence that as the number of qualified staff in the team increases so too do the number of support staff. These results would indicate that growth in team size may be more attributable to growth in numbers of support staff than qualified staff.

These results demonstrate that there is a general pattern to the characteristics of services that utilise support workers in CRAICS. However it is difficult to say why these patterns have emerged. The qualitative and prospective data from the broader study suggest there is more of a historical component to staffing configuration than a considered matching of skill and staff numbers to patient need or population demographics. Regardless of reason, the results indicate services on average add *both* support and qualified practitioners to their skill mix as service

demands increase, that potentially support workers are added in greater numbers than qualified staff and that these increases are related to the throughput of the service.

There may be some influence from national policy directives that have encouraged the use of support workers to aid service expansion. However I feel these trends in support worker utilisation are possibly more attributable to increasing financial pressures. Although not measured in this study there is a likelihood that policy directives, instructing greater local accountability for expenditure (Department of Health, 2001d, Department of Health, 2002d, Department of Health, 2002c), have led to financial restrictions for CRAICS with one effect being cost cutting on staff expenditure. Where services need to expand it is potentially cheaper to add support workers to the skill mix than qualified staff. More detailed research needs to be carried out to confirm this hypothesis.

The importance of such information was highlighted in a government consultation document (Department of Health, 2000d) which demonstrated a distinct lack of knowledge regarding the numbers of nursing, allied health professionals and support staff required for the delivery of health care in the longer term. These results go some way to provide service managers, policy makers and commissioners a picture of the current organisation and utilisation of support staff in CRAICS in order to inform future workforce development and expansion.

9.3.3 How do support workers contribute to care?

The evidence indicated support worker roles involve a mixture of direct care interventions such as rehabilitation, personal care, medical/nursing support, equipment provision/supervision and therapeutic interventions; emotional support, friendship and advocacy; and indirect care such as providing feedback to professionals and general administrative duties. There has also been some good qualitative evidence that suggests that although

support workers are perceived to be the main providers of direct care it is the emotional support provided to patients that comprises the majority of their role (Stevenson, 2000).

Support staff in this study reported that they undertook day to day 'informal' assessment of patient function, liaison with health professionals, instruction in correct rehabilitative techniques for activities of daily living, delivery of myriad therapy programmes and motivating and listening to clients.

Support roles in this setting and others have been shown to be influenced by many factors. These include setting, whereby more complex roles and skills in community settings compared with acute care settings; length of care, that is the greater the length of care the more diversity there is in roles; joint visits between support workers and qualified professionals; and the complexity of tasks undertaken.

Adding to these factors, the roles of support workers in the prospective study were found to vary according to the skill mix of the team, where the presence of some groups of qualified staff reduced the remit of support staff; the clientele, whereby less rehabilitative roles when clients are more acutely unwell; the demands of the service, where greater service demand reduced time for emotional support; and poor support service availability, where support workers were used as a stop gap for staff shortages in social services and/or acute hospital ward staff. Indeed the reverse was also true for qualified professionals who perceived they undertook more direct care in the absence or shortage of support staff and more administrative or indirect care due to poor links with social services and general NHS bureaucracy.

Therefore, although the analysis of the literature has indicated particular areas that divide the roles of the two groups of

workers, we cannot underestimate the influence of these contextual factors in influencing roles of both.

9.3.4 Is the proportion of care delivered by support workers related to any patient, team or organisational factors?

It is quite possible that such variations in support worker roles impact on workforce efficiency as demonstrated in the Jenkins-Clarke and Carr-Hill study which found that there was little difference in the types of tasks undertaken by any level/type of staff in acute hospitals in the UK (Jenkins-Clarke and Carr-Hill, 2003). Equally Knight et al (2004) found similar levels of variation in activity among generic support workers, with some spending nearly a fifth of their time on administrative duties while others spent 95% of their time on therapeutic interventions.

Indeed the results of this study indicate that this poor differentiation of workload is potentially also true for CRAICS. Although weak associations were found between the proportion of support workers in the team and the proportion of care delivered by support staff, the relationship was tenuous and conclusions cannot realistically be drawn from the association. What I had expected to see, and certainly what is implied in policy and the evidence base, was a fairly clear linear relationship between the proportion of support workers in a team and the proportion of care they delivered. That is, as support worker numbers in the team grow as a proportion of all staff members, so should the amount of work they carry out.

Equally, and again reinforced by policy and some of the evidence base, I had expected to see more of a relationship between the level of patient impairment and the proportion of care delivered by support staff. For example if qualified professionals were using their expertise and time for patients with severe or complex conditions, then we should have seen support workers spending a greater proportion of their time with less impaired clients. Again this was not the case. In fact, although far from statistically

conclusive, a trend in the opposite direction was found with the correlation analyses demonstrating a non-statistically significant relationship between more severe health admission scores and greater proportions of support worker input.

As these analyses were conducted using proportions, the results can also be extrapolated to the involvement in care by qualified staff. There was a very weak statistical relationship between the proportion of support staff in the team and the proportion of care carried out by qualified staff. That is as the proportion of support workers in the team increased, the proportion of care delivered by qualified staff decreased. I would have expected to see a stronger association. Equally there were no statistical relationships demonstrated between the severity of patient health and proportion of care delivered by qualified staff.

Furthermore results showed that patient severity on admission did not have a statistical association with the time spent per patient contact for support or qualified staff. Again I would have assumed from the policy and evidence base, and indeed common sense, that clients with less severe health or social care needs would require and therefore receive less time per contact than patients with more severe health or social care needs. This however was not the case and is perhaps a reflection of the myriad external pressures that were identified in the qualitative study that impact on the organisation of and type of care delivered by these teams.

Therefore when these results are combined with both policy expectations and perceived assumptions about support worker contribution to care in CRAICS, there are discrepancies. Policy and indeed many qualitative papers from the literature review assume the introduction of support workers will ‘free-up’ qualified professional time to perform a more expert role and to treat more complex clients and/or to carry out a greater proportion of more complex care (Department of Health, 2000a, Department of

Health, 2002a, Mackey, 2004, Reid, 2004, Russell and Kanny, 1998, Stanmore et al., 2005a, Stanmore and Waterman, 2007, Steele and Wright, 2001, Taylor and Birch, 2004, Thornley, 2003). It would seem from the results however that delineating the types of activity carried out by particular workers according to patient severity does not happen in practise. Furthermore, adding more support workers to the skill mix in CRAICS as a proportion of all staff does not seem to significantly or consistently increase or decrease the amount of time support staff or qualified practitioners spent on client care.

9.3.5 To what extent do support workers contribute to care?

The qualitative data demonstrated that staff from all teams perceived there to be a clear division of labour between qualified and support workers whereby support workers carry out the majority of care provision and qualified practitioners assess, triage and oversee patient care. For example there was an overall acceptance by all staff that the role of professionals had progressed to that of providing overarching expertise and care planning and therefore provision of direct care was no longer effective use of their time.

Contrary to this finding, the prospective data demonstrated that on average it is the qualified professionals that undertake the majority of care provision regardless of patient severity or proportion of support workers in the team. This inconsistency in the data also implies there is further inconsistency in what staff *perceive* they do and what they *actually* do.

I must acknowledge that this discrepancy in results may also be due to incomplete or inaccurate activity data that was collected. Although data monitoring was employed for inconsistencies in staffing and patient data, I have no direct measure for levels of the accuracy of data collected. There is therefore a chance that some teams may not have consistently recorded their activity

levels or particular staff may have consistently been left out of the data collection. Equally these results reflect the average over all teams. There were some teams that did actually have greater levels of support worker input however for these teams there was still no statistical relationship found between greater support worker input and team or patient level factors.

It must also be noted that both the literature review and qualitative study demonstrated quite clearly that there are a great number of factors at team and organisational level that can impact on the way work is distributed between qualified and support staff. In light of this, the lack of relationship found between patient and team level factors and support worker utilisation in the prospective study is not overly surprising.

For example professionals and support workers alike can have a great deal of competition for their time. This in turn has a knock on effect on both support worker and qualified practitioner roles. A common example cited was poor organisation of social services leading to support workers undertaking a more personal care role and qualified staff greater administrative roles.

Implications of these findings

Needless to say the implications of these findings remain the same: that is there is potential for both groups of workers to be used more systematically and effectively. For example there is potential for support workers to be deployed more systematically in patient care, possibly according to patient severity, and for qualified staff to focus more on their 'expert' role. These suggestions are not new within workforce research. Sibbald for example has recently suggested efficiency gains are possible if general practitioners discontinue the services that practise nurses provide and focus on the tasks only doctors can perform (Sibbald, 2008).

However as mentioned at the beginning of the discussion, workforce research is not straight forward. The variables described that can influence workforce activity must be accounted for. In an ideal world it would be possible to control for all external and internal variables and therefore have a preferential skill mix with staff working optimally. These teams however do not operate in a vacuum. There are many external and internal variables such as poor supporting services or staffing shortages that influence their workforce efficiency. Indeed many of these teams are already so pushed to their limits trying to provide a service and meet demand, there is no remaining time or staff resources to focus attention on 'fixing' these issues.

9.3.6 How does the support worker role differ to the qualified professional role?

The findings from this research indicate that there are three main differences between the role of the qualified professional and the support worker. These include assessment, provision of care and patient advocacy.

i) Assessment

It was evident from this study that the most definitive line that can be drawn between support and qualified professional staff is that of assessment. Although support workers are responsible for day to day assessment of patient progress and evaluating change against care plans, it is the qualified professional remit to assess the initial needs of the client and establish their care plan.

The qualitative data certainly indicated that this divide was an established part of working in CRAICS as clearly described by one team leader ' *because it is not the assessment that makes them [patients] better, it is the rehabilitation process and that, in our case is done by the rehab assistants'*. Indeed qualified practitioners perceived their role moved further away from direct care as support workers were introduced into the skill mix. This has also been found in other studies (Daykin and Clarke, 2000,

McCartney et al., 2005, Saunders, 1998, Spilsbury and Meyer, 2005).

The prospective findings partially reinforce these qualitative findings. Clients admitted to services with level 0 needs (client does not need any intervention) were seen on average 80% of the time by qualified professionals reflecting their role in triaging, assessment and referral. Indeed this may also explain why qualified professionals spent a greater proportion of total time with clients than support staff and why their time per contact with a patient was on average 20 minutes longer than support workers. However qualified professionals also spent a greater proportion of contacts jointly with support staff which suggests they are not only spending more time with clients, they are seeing them more often than support staff.

The only exception to this divide is the role of the Assistant Practitioner[4]. The literature review and qualitative data from this study indicate that there is a role for these new practitioners in assessing clients and indeed providing expert advice to other professional team members. However both sources of data indicate that the role is influenced by factors such as professionally qualified staff attitudes and is therefore subject to the same degree of variability as many other support roles.

ii) Provision of care

The division of role around assessment leads to the second most definitive division in roles, the provision of direct care. The data from this study indicates staff perceive the support worker role to be dominated by the undertaking of direct care. Direct care involved delivering rehabilitation programmes, motivating clients, instructing in activities of daily living, 'enabling' clients to perform their personal care, forming friendships and offering support.

[4] Assistant Practitioner is a support worker whose remit involves delivering clinical care that had previously been in the remit of registered professionals, under the direction and supervision of a state registered practitioner (Skills for Health)

Qualified staff indicated their time was taken up dealing with administrative processes, with support staff 'picking up' the remaining direct care. The prospective data showed support staff spend on average 74% of their time on direct care and 26% on administrative duties as compared to qualified staff who spend an average of 60-64% of their time undertaking direct care and 25-30% on administrative duties.

iii) Patient advocacy

A further role of support staff which was clear from the qualitative data but could not be empirically measured in the prospective study was the understanding that support workers are a key facilitator of the patient-qualified professional relationship. Support workers, being responsible for delivering interventions prescribed by multiple disciplines, assessing patient reactions to care, noting progress against their care plans and feeding back to a multidisciplinary forum, have effectively become the vital link between patient and professional. In many ways, this demonstrates that support workers may be the cornerstone of interdisciplinarity and play an essential role in the coordination and implementation of multidisciplinary care. Other research in this setting has cited this promotion of interdisciplinary cooperation between professionals as a reason for utilising generic support workers in the team (Rolfe et al., 1999, Stevenson, 2000).

Staff perceived open and accessible communication channels were the vital elements that successfully enabled this division of labour as was co-location of the team.

With these differences of role in mind the following section discusses the impact support workers have on patient, staff and service outcomes.

9.3.7 To what extent does support worker utilisation and contribution to care impact on patient, staff and service outcomes?

i) Patient outcomes: Health and social function

The most important finding from the outcomes analysis is the evidence that teams with a higher proportion of support workers have better patient outcomes across the EQ-5D and all TOMs domains (except wellbeing). This was also the case for patients who received a greater proportion of their care from support staff.

Potential reasons for these results: Support worker role

The reasons why a greater proportion of care delivered by support workers, and not qualified professionals, was found to have a positive impact on patient outcomes may stem from the differences in role. This is reinforced by the prospective study findings that support workers do not necessarily carry out greater proportions of care and thus greater *amounts* of input cannot necessarily be attributed to better outcomes. Furthermore the proportions of time spent with clients was greater for qualified professionals than support staff which rules out the possibility suggested in some literature that support staff have greater amounts of time to spend with clients thus accounting for differences in outcomes.

I propose therefore that it must be *what* the support workers deliver rather than *how much* care is delivered or the title of the practitioner delivering the care that has led to these improved patient outcomes. As summarised above support workers primarily deliver rehabilitative care, instruction in carrying out activities of daily living, motivation, encouragement and at times friendship. Several studies have demonstrated support workers may also provide superior levels of emotional support, counselling and companionship to qualified practitioners (Brandon and Morris, 2002, Keeney et al., 2005b, Meek, 1998). Although causation has not been statistically proven in this study, I would argue that it is these qualities and the *type* of care delivered by support workers

that accounts for a large part of the demonstrated improvement in patient outcomes.

This link was demonstrated a RCT and observational study by Lincoln and colleagues (Lincoln et al., 1999, Parry et al., 1999a, Parry et al., 1999b). Patients who had their therapy delivered by a physiotherapy assistant had greater improvements in function than those who had their therapy delivered by a qualified physiotherapist. The authors demonstrated in their observational study that the physiotherapy assistant treatment was significantly different to the physiotherapist: the assistant concentrated on repetition of exercises whereas the physiotherapist focussed on education and empowering the patient to take control of their own rehabilitation.

It is worth noting that a sub-analysis of their results demonstrated the greater improvements seen for assistants only occurred in patients who had *mild* stroke symptoms and that there were no differences seen for all other stroke patients when treating practitioner was compared.

Potential reasons for these results: Patient severity

This level of analysis has not been conducted in my research however the broader study demonstrated that patients with a poorer health admission score (EQ-5D or TOMS) were more likely to improve than patients with better health admission scores. The analysis of activity data suggested that there was also a trend for support workers to see more impaired clients, although it was not statistically significant. Indeed the mean proportion of support worker input was greatest for patients who ranked 4 or 5 on the level of care need (client needs a regular or intensive rehabilitation programme). Patients judged as having levels of care need 2 - 5 showed the greatest improvements in outcomes overall. Therefore the improvement in outcomes may be attributable not only to the type of care delivered by support workers but also to the severity of health needs of the client. That

is more impaired clients (or clients more in need of intensive rehabilitation) may benefit from a greater proportion of the *type* of care delivered by support workers than less impaired clients.

Alternatively these findings could also indicate that more severely impaired clients simply have greater room for improvement, regardless of the type of input delivered, and that the outcome measures used have a ceiling effect. The Birmingham and Leicester National Evaluation of Intermediate Care found for example that more impaired patients were more likely to improve (Barton et al., 2005a).

Implications of these findings

Combining these interpretations with the staff activity data that suggests there is no relationship between the level of severity of patient health and the proportion of care delivered by support staff, there may be potential for greater efficiency and improvement in outcomes if greater proportions of support worker care are focussed on more impaired clients.

However this in itself causes dilemmas. Support workers are proposed as a way to enable qualified practitioners to see more impaired or needy clients yet focussing support worker time on more impaired clients would counteract this purpose. This combined with the qualitative findings which suggest there is a fine balance between staff satisfaction and the opportunity to utilise skill and knowledge also causes conflict. Were support staff to undertake greater proportions of care for more impaired clients, they may be more fulfilled but qualified practitioners would not. This may potentially lead to greater levels of qualified staff turnover and/or lower staff satisfaction.

These two points tie into the fact that the training needs of support workers were found to be wanting. There would be a greater need to ensure support workers are competent in delivering care to more impaired clients and that qualified

practitioners are confident in delegating these roles. Finally there have been no studies to date assessing the impact of utilising support workers in CRAICS on levels of adverse patient events. Increasing the support worker role to concentrate on more impaired patients may inadvertently increase the risk of greater levels of adverse patient events.

Countering these arguments however is the fact that the prospective study has demonstrated that support workers are already delivering a great deal of care to patients with very poor health. The qualitative data and literature review suggest that good teamwork, open communication channels, joint qualified-support working and being located in the same office/building facilitate an environment where support workers are trusted and are rarely 'out of their depth' when providing care to clients. Therefore in a good team environment with adequate training there should be no reason why support workers could not carry out greater proportions of care with more impaired clients.

Inconsistency in the results

Although I have argued that there is a relationship between the type of care delivered by support workers and improvement in patient outcomes, there is one inconsistency in the results. I chose the TOM as an outcome measure as it measures both physical and social impact. As described earlier, there is evidence to suggest support workers may be particularly good at improving social aspects of care due to their insight into how social interaction and addressing social issues can may counteract the social isolation that older people often feel (Brown et al., 2003).

Given this information, I would have expected TOMS wellbeing as well as participation to have shown greater levels of improvement with greater levels of support worker input. However this may be due to the nature of the clients admitted to the services. There seemed to be bias towards more physically impaired clients in the studied services. Thus clients admitted to the prospective study

services, by nature of their admission status, had greater opportunity to improve health and physical impairment measures (TOM impairment and activity) than social measures (TOM participation and wellbeing). In addition the prospective study predominantly sampled services hosted by PCTs with only two services being hosted by social services. The prospective study therefore may have inadvertently sampled services with a more health focus.

Summary of these findings

To summarise, I feel it is particularly important to note that although there may be a component of what support workers offer that is 'unique' to their practise, as suggested by Mackey and Nancarrow (2004) and also Meek (1998), it may very well be that the shift in role of qualified professionals to that of assessment, triage and care planning has opened the way for other workers to carry out tasks previously carried out by qualified professionals. That is, it is not so much the label of the worker who carries out the work but the work itself. Therefore these findings may actually indicate that greater proportions of the *type of care* delivered such as repetitive rehabilitation, friendship, emotional support, motivation etc lead to improved outcomes rather than the type of worker who delivers them.

Moreover I feel it is necessary to acknowledge that there is obviously a relationship between the balance of support and qualified staff input and the positive outcomes reported. The results have demonstrated that a greater *proportion* of support worker input leads to greater improvements in patient outcomes. This does not imply that 100 per cent input from support workers will have the same impact. Rather, a greater proportion of support worker input also means that there is a proportion of qualified staff input and it is potentially the *mix* of roles carried out by the two groups of workers that leads to improved

outcomes. The qualitative study reinforces that there is an important role for both practitioners and it is finding the most appropriate balance of the two roles that is important to patient outcomes.

ii) Patient outcomes: Satisfaction

Although there is some evidence in the literature to suggest that support workers may have a greater impact on patient satisfaction than qualified practitioners, due to their close involvement in patient care, this was not demonstrated in CRAICS (Brown et al., 2003, Keeney et al., 2005b).

Brown and colleagues (2003) for instance suggest that greater time and contact with support workers is the most valued aspect of care by older people. Given we did not find support workers necessarily spend greater proportions of time with patients, the lack of association with patient satisfaction in this study is not surprising.

Reasons for this finding

The importance of measuring the correct variables that may impact on patient satisfaction however should not be overlooked. Bostrom et al (1994) for example in their study examining the relationship of nursing care continuity and patient satisfaction found that overall patient satisfaction was not related to continuity of nursing care. Rather it was the specific aspects of nursing care such as courtesy, compassion, promptness, and giving of instructions that related to patient satisfaction.

The satisfaction tool used in this study, although sensitive to patients specifically treated in CRAICS, was not directly measuring satisfaction with particular types of workers nor particular types of care. Therefore a direct link between the type of care support workers carry out and patient satisfaction would not be demonstrable from this particular survey.

Further, Aberg et al (2005) suggest older people value particular aspects of rehabilitation such as gaining personal care skills which is generally the remit of support workers. The provision of emotional and practical support, advocacy and companionship have also been demonstrated as valued aspects of care (Brandon and Morris, 2002). There may well be a link to increased patient satisfaction as rehabilitation goals are attained or emotional support given but it is too great a leap to demonstrate that these relationships are directly related to greater care delivered by support workers.

In addition the study captured patient satisfaction data for only one third of patients who participated in the prospective study. Some teams collected more patient satisfaction data than others. These factors may also account for the lack effect demonstrated.

A further consideration as highlighted by Hall and Dorman (1988) is that elderly people are often reluctant to criticise the care they have received. The high levels of patient satisfaction demonstrated in this study may well reinforce this notion. This effect was also noted by Wilson et al (2006) in the validation study of their intermediate care survey. Therefore the lack of relationship between support worker input and patient satisfaction may well be because there was not enough variation in patient satisfaction results to elicit an effect.

iii) Service outcomes

Although support workers have been found to have a positive influence on patient outcomes, this was not the case for service outcomes. Policy and the evidence base cite that adding support workers to the skill mix can increase service efficiency, expand services and increase service capacity. In this study I have looked at the relationship the proportion of support workers in a team has on length of stay of clients as well as the proportion of care delivered by support staff.

Given the majority of teams who participated in the study were time limited, that is they were restricted to deliver their services for up to 6-12 weeks, length of stay of clients is potentially an important measure of efficiency and service capacity. However neither the proportion of support workers in the team nor proportion of care delivered by support workers was associated with length of stay.

Again I must reinforce that although these findings challenge common assumptions about the use of support workers, given the qualitative findings, I am not surprised. There were a number of significant external variables that had the potential to impact on patient length of stay which included how long it took for a package of home care to be arranged or particular equipment to be ordered. In addition, shortages of particular types of staff such as occupational therapists often caused a backlog of patients waiting for a particular assessment which in turn had an impact on length of stay. It is important therefore to acknowledge the influence such variables can have on length of stay, over and above skill mix.

iv) Staff outcomes: satisfaction

Having greater or lesser proportions of support staff in the team did not impact on overall staff satisfaction or intention to leave. I must add here that a specific analysis of the impact of varying proportions of support staff in the team on qualified staff (alone) was not conducted. I cannot therefore conclusively rule out the possibility that having greater or lesser proportions of support workers in the team impacts on qualified staff outcomes.

The qualitative analysis for example demonstrated a trend for greater levels of concern and stress for qualified practitioners in teams with greater proportions of support workers to provide greater levels of support worker supervision and training in the absence of more qualified staff. Equally support workers in teams

with lower proportions of qualified staff felt they had less access to joint working with qualified practitioners and training.

v) Staff outcomes: Intention to leave

Although support workers did not have significantly lower satisfaction scores than qualified staff, they were significantly more likely to report an intention to leave their profession and their employer in the next twelve months than any of the other qualified professional groups (apart from social workers). This may be linked to levels of autonomy. Support staff reported significantly lower mean scores for autonomy than their professionally qualified colleagues. The broader study demonstrated that less autonomous staff were significantly more likely to report an intention to leave their profession than more autonomous staff.

Reasons for these findings: lack of career progression

The qualitative study highlighted several areas that may explain why support workers had higher intentions to leave their profession than their qualified colleagues. There was a common understanding that further qualification in the form of NVQ or even the tertiary level foundation degree required for Assistant Practitioner status did not necessarily translate into higher levels of remuneration or greater career progression opportunities.

Whereas qualified practitioners had the opportunity, through their professional title and qualification, to advance their career and remuneration prospects by specialising or moving into a different setting, support workers did not. Although the government has established a new pay and career structure and training strategies to encourage more seamless movement 'through the ranks' for all levels of staff, this was simply not the case in CRAICS. This lack of ability and ease to progress clinically or to be rewarded for further training may well be a large factor in explaining intention to leave.

Reasons for these findings: Poor access to training

The broader study demonstrated that providing better training and development opportunities for staff increased overall staff satisfaction, and reduced the intention to leave employer and/or profession. Although there were no significant differences between qualified and support staff scores for training (as measured by the WDQ) one could argue that the self confidence and acquisition of knowledge gained from training may well benefit support workers more.

Qualified practitioners have the capacity to move to a different area of practise or expertise through the freedom granted from professional qualification. They therefore have the opportunity to pursue further education and training in specialist areas if dissatisfied by the opportunities afforded in CRAICS. This is reinforced by the finding that more senior staff were more likely to report an intention to leave their *employer* but not their *profession*. Support workers on the other hand are specifically trained to work in the setting they are employed in and therefore any acquisition of skill or knowledge must be provided within that setting. The lack of opportunity to further knowledge and skill through formal or informal training may therefore be a further reason for higher reported intentions to leave among support workers.

As demonstrated by Hancock (2005), skills and knowledge gained from formal training and education may not necessarily translate into practise due to other variables such as workforce shortages, but has been shown to have an important bearing on support worker feelings of competence, confidence and initiative. A lack of training and therefore feelings of incompetence may in turn impact on satisfaction and intention to leave.

Reasons for these findings: deskilling

The qualitative data also suggested that staff feel they are at times subjected to 'deskilling' as the nature of the work and

clientele they serve does not always promote full use of the skills and knowledge they possess. Deskilling was also linked to overall satisfaction in the job and intention to leave. This has also been found by Eriksen (2006)

Although qualified staff were subject to deskilling, I would argue that support staff are potentially more exposed to deskilling as their role is so much more variable and dependent on qualified staff numbers, roles and attitudes. There was one example where support workers were trained to take blood however the introduction of more qualified nurses made this role redundant.

More commonly, where home care packages were delayed, support staff were expected to undertake the personal care role while the qualified professionals took over the support worker rehabilitation role. Indeed the myriad of factors that can impact on whether or not a task is delegated to a support worker by a qualified staff member, as identified in the literature review, reinforces the notion that qualified practitioners generally have the ability to determine support worker roles. Such high levels of role variation or indeed role ambiguity may also influence intention to leave. There is some research for example that suggests high levels of role ambiguity is a precursor to burnout in support workers (Blumenthal et al., 1998).

Furthermore as one author argues, and which is also reinforced in the qualitative study findings, qualified practitioners tend to control the type and content of training delivered to support workers (Baldwin et al., 2003). This then directly impacts on the extent of skills and knowledge a support worker can attain.

Reasons for these findings: Low pay, stress and responsibility

All these factors combined with significantly lower pay (the average pay band for support workers was level 3 which equates to £12500-15,500pa) (NHS Staff Council, 2007) will have a

bearing on intention to remain a support worker. High levels of stress and responsibility among support workers has been reported elsewhere as reasons for low satisfaction, burnout and intention to leave (Blumenthal et al., 1998) as well as poor relationships with qualified peers (Si et al., 2006).

Policy implications: retention of support workers

Finally, as mentioned in the literature review and implied in policy, there is an assumption support workers are a more stable group of employees, possibly because they are local to the area and do not hold tertiary qualifications that may afford more diverse employment opportunities. In CRAICS however this does not seem to be the case. Indeed the policy directives outlined in the NHS plan (2000e) and other government documents (Department of Health, 2000b, Department of Health, 2000a, Department of Health, 2003b, Department of Health, 2004c) proposed that the combination of pay reform, greater flexibility of roles, additional training and development of new roles would encourage greater recruitment and retention of staff. This research however did not find evidence to demonstrate these changes had occurred significantly enough to have an impact on retention of support and qualified staff.

Implications of poor access to training

A further staff outcome which I feel needs to be highlighted is the qualitative finding that revealed an overall lack of access to and availability of formal training for support workers. This raises concern around support worker competency in particular areas. Although not directly measured in this study there is potentially a link between lack of training and adverse patient outcomes. As detailed in one study there is a link between lack of training of home care assistants and an alarming lack of knowledge around medication administration, indications for certain drugs, adverse effects and symptoms (Axelsson and Elmstahl, 2002, Axelsson and Elmstahl, 2004).

I feel this is a very real issue in CRAICS given the prospective study data which demonstrated the average patient who passes through CRAICS is quite unwell (mean admission EQ-5D being 0.4). Other studies of intermediate care have also identified that patients within these services are extremely vulnerable and often suffer from multiple acute and chronic medical conditions (Barton et al., 2005b, Godfrey et al., 2005). Furthermore there has also been some research to suggest that there is a link between competency of support workers in delivering rehabilitation and improved patient functional gains (Nelson et al., 2007). Given a greater proportion of care delivered by support workers was found to enhance patient outcomes in this study, there may be room for even greater gains with appropriate training.

9.4 Research challenges and limitations

The rapidly changing policy landscape means that the context in which older peoples' community and intermediate care services are provided is also shifting. Significant policy implementation that coincided with this research included the introduction of Agenda for Change pay scales for staff; the shift to primary care based commissioning; and the reorganisation of primary care trusts. Each of these policies has had an influence on the structures of care provision and organisation which meant that several of the teams engaged in the study were undergoing some form of change during the process of the research. Additionally, the reorganisation of primary care organisations meant that the key personnel used to access intermediate care teams, such as PCT chief executives or older peoples' leads, were often no longer in post, or had a new remit, increasing the challenge of accessing teams.

In addition to the changes occasioned by the rapidly changing policy and practise landscape referred to above, there are some specific challenges in developing meaningful comparative analyses between older peoples' community and intermediate care services as follows.

Despite the terminology used in government documents and guidance, it is difficult to clearly categorise any intermediate care or community rehabilitation service according to a particular function, setting or purpose. Equally, the diversity in these services prevents the development of a robust evidence base of outcomes (Barton et al., 2005a). A lack of clear service taxonomy also makes it difficult to transfer findings between settings. It was therefore considered important for this research to develop a way to capture the depth of variation in service configuration that is community rehabilitation and intermediate care within a reproducible framework that enables comparison.

This was undertaken as part of the broader study and utilised as part of this thesis.

The objectives of care can vary widely within and between services, ranging from active rehabilitation to social care, resulting in a broad case mix. As a result, diagnostic criteria were not seen as being a valuable indicator of the type and level of care need. Instead, a battery of other, more rehabilitation specific approaches, have been adopted for this study.

An important component of this study was the capture of detailed data about the input of different types of staff to patient care. Because many of the patients were based in their own home, and staff may work for different agencies, it was difficult to ensure complete and accurate capture of the staffing information.

Furthermore, as discussed in section 9.3.5, there were no independent observational measures employed to check the levels of the accuracy of staffing data collected. There is therefore a chance that some teams may not have consistently recorded their activity levels or particular staff may have periodically been left out of the data collection. This however was addressed by periodic phone calls or visits made to teams to check their progress with data recording. In addition, as I was responsible for inputting large amounts of staffing data, I would regularly monitor the data for anomalies, unusual or inconsistently entered information and then contact teams for clarification. Discrepancies or anomalies in the data were also flagged by the broader study's statistician and the one other team member responsible for entering staffing data. Again, where inconsistencies were found, I would be informed and would contact the team for clarification.

In addition teams were given detailed reports of their results from the study. As such they have had the opportunity, and have been encouraged to identify any obvious discrepancies in the information provided. At the time of publication of this thesis,

which was 3 months after dissemination of the team reports, no teams had contacted myself or the research team regarding inaccurate reporting of their staffing data.

Nevertheless although these measures were employed, it is important to acknowledge and highlight that the potential for inaccuracies in the staffing data may directly impact on the strength of the conclusions drawn from this study.

This research has drawn from four sources of data: a literature and policy review, a cross sectional study, a prospective study and a qualitative study. Whilst conclusions have been drawn from each of these studies, there are inherent difficulties in merging the findings due to the diverse nature of the information collected and the sources of the data itself. For example it is difficult to translate the findings of the cross sectional study to patient level as the sources of the data are different. Equally, although teams who participated in the qualitative study were originally sourced from the cross sectional cohort, the findings from both cannot be conclusively linked.

The research limitations for each study are discussed below. I feel it is particularly important to highlight that whilst I, and the team from the broader study, have been systematic in our attempts to identify the most appropriate and meaningful variables to best represent the relationships between different approaches to staffing and outcomes, it is possible that there are other, unexplored variables which may explain some of the relationships seen in this study.

The other significant limitation is that which is inherent within an observational study, namely, that the various relationships do not imply causality, and nor do they suggest the direction of any causality. So, whilst plausible explanations are possible that match up with theory, rationales for policy and/or intuition with each of the identified relationships, these are best tested in a

controlled evaluation. Also, whilst I have identified possible relationships, I have not fully identified all possible mechanisms for these relationships.

9.4.1 Literature review study limitations

The literature was sought from several different settings and sources. Although such breadth of research allows a general picture to be created, there is a risk that the findings and conclusions drawn from the broader literature may be less relevant and useful to the research setting.

The nature of workforce literature itself is varied and evaluates the effects of various different workforce dimensions (skill mix, team working, worker substitution etc.) on various outcomes (patient satisfaction, service costs etc.). This means the conclusions that can be drawn from such diverse literature are limited.

The search and review of the support worker literature was conducted by only one researcher (myself). Whilst I have comprehensively detailed the search and review strategy, the process has not had the benefit of input from other researchers and therefore by default the review may be is less impartial.

The nature of the literature included in the review is diverse and inclusive of both qualitative and quantitative methods. While comments have been made as to the rigour of methodology, this was not used as an inclusion or exclusion criteria. Consideration has been given to the methodology and strength of evidence where recommendations have been made from the literature.

9.4.2 Cross sectional study limitations

Other studies of intermediate care (Martin et al., 2004, Nancarrow et al., 2005b) have shown that around forty percent of intermediate care services are jointly hosted by health and social

services (Table 9-1). However, this study has primarily captured the views of NHS led services, with only 13% of responding teams being jointly hosted by health and social services. The approach to sampling, in which the CRT network and PCT chief executives were sent the second survey is likely to account for the large number of health led organisations that responded to the audit. As a result, this audit cannot be said to be generalisable to all community and intermediate care services.

The response rate to the chief executive survey was lower than that recorded in previous, similar studies. The low response rate in this case may be due to the substantial reorganisational changes to NHS organisations at the time of the survey.

The collection of the WDQ data also has certain limitations. The overall response rate for the surveys was just over 45%. This may be due to the erratic nature of some of the CRT staffing. For instance, many staff work for a limited number of sessions per week, and most deliver care in the patient's own home or other community settings, which may make distribution of the surveys within teams more difficult than for a co-located group of staff. However, the potential for non-respondent bias cannot be eliminated.

Table 9-1 Intermediate care and community rehabilitation host organisations as reported by other studies

Host	(Nancarrow et al., 2005b) (n=33)	(Martin et al., 2004) (n=70)	This study (n=186)
Joint health and social services	45%	46%	13%
Health only (PCT, Acute or Mental Health Trust)	33%	29%	77%
Social services only	12%	3%	3%

Despite a reasonable overall sample size of 327 respondents, when this is broken down by professional groupings, the relative numbers of some of the professional groups were quite small. The proportion of responses reflects that of the overall CRT make-up (ie higher proportions of physiotherapists, nurses, occupational therapists and support workers and lower proportions of speech and language therapists and podiatrists, for instance). However, it means that a large sample is required to undertake meaningful sub-group analysis at a professional level. However, the results of non-parametric statistics were consistent with the findings of the parametric analyses of the same questions.

It must also be noted that correlation analysis does not imply causation it merely acts to demonstrate associations between variables. While I have demonstrated there are statistical associations between various staffing variables, this does not imply causation. Additionally, as further statistical analysis has not been carried out on these associations, there is a possibility that these associations are by chance alone (type I error).

9.4.3 Prospective study limitations

The prospective study drew on three main sources of data: patient level data, staff level data and team level data. Undertaking comparisons between the variables at a team level has meant aggregating the findings from some of these variables, reducing the numbers of observations to 19. Similarly, all analysis of team characteristics could only be based on 19 observations, reducing the strength of the study to draw conclusions at this level.

In addition, where WDQ data has been used to analyse the impact of seniority of role (pay band) on outcomes, it must be noted that some teams (C and T) did not have any support staff WDQ data even though support staff were part of these teams.

Patient outcomes (TOMs) data were collected by staff working with the patients. All staff were trained in the use of the collection of the data, and the tools have been demonstrated to have inter and intra rater reliability, however it is impossible to know how accurately staff collect the outcomes data, or whether they may have a tendency to exaggerate improvements in patient health status. This is, in part, overcome by the use of the EQ-5D, which is completed by the service user.

The selection of the particular outcome measures used in this study means there are potentially other outcomes that have not been measured which may have been more meaningful to services, policy makers or patients. In particular I have measured service capacity and efficiency through length of stay. More meaningful measures may have been the number of home care packages reduced or stopped or indeed the number of hospital or long term care admissions prevented. In addition, I have not measured levels of adverse patient outcomes which again may have had significant bearing on the conclusions drawn from the data were they measured.

Moreover the broader study included a health economics component which analysed the impact of different staffing configurations on costs with respect to outcomes. I have chosen not include this analysis in my thesis as it constitutes a different type of methodology and potentially could form a thesis in itself. Needless to say, I am aware that the addition of a cost analysis to this thesis would allow for a more meaningful interpretation of the results for service managers, commissioners and policy makers.

The assumptions within policy and the evidence base such as support workers increase the number of consultations performed by qualified staff; improve availability for appointments; expand services; and shorten waiting lists have not been analysed. There is therefore potential that support workers may have an impact on these areas within CRIACS that have not been measured by this study.

Furthermore although I have demonstrated there to be a link between greater proportions of care delivered by support workers and positive patient outcomes, I have not explored whether or not there is a 'cut off' point to this relationship. Nor have I been able to statistically incorporate into these findings the extent to which the intricate relationship and balance of input between support and qualified staff may account for these findings.

There are also limitations in the interpretation of the results with the analytical model I have utilised. Data in health research are frequently structured hierarchically. For example, data may consist of patients nested within teams, who in turn may be nested in Primary Care Trusts or geographic regions. Fitting regression models that ignore the hierarchical structure of the data can lead to false inferences being drawn from the data. Implementing a statistical analysis that takes into account the hierarchical structure of the data requires special methodologies (Austin et al., 2001). As such employing a more sophisticated

multi-level regression analysis would lead to more conclusive results.

Multi-level regression involves establishing a model to predict the proportion of support worker involvement in care by taking into account patient level factors and accounting for team and organisational level variance. The stepwise regression on the other hand gives a general indication as to whether or not the predictor variables have an effect on the dependent variables of interest without accounting for team level variance. It was not feasible however within this thesis to undertake multi-level regression analysis.

The interpretation of statistical results can also vary. The results in this study have shown there to be associations between the proportion of support workers in a team and the proportion of care carried out by different practitioners. I have interpreted these results as being statistically weak, with the correlation coefficients falling below r=0.5. Although associations have been demonstrated, they are weak and could potentially be a type I error. There is therefore a risk in drawing solid conclusions based on these analyses. However the results do demonstrate a 'trend' in the data and indicate the possibility for further statistical analysis to be conducted and/or further research.

This argument extends also to the results of the stepwise regression analysis. Although there were no clear or statistically significant associations among the variables chosen, I continued to conduct the regression analysis. My reasons for conducting the analysis even though the correlation results were inconclusive were twofold: first as a learning process and second to conclusively and statistically rule out any possibility of a predictive effect of the chosen variables. The results of the stepwise regression demonstrate some very weak statistical predictive effects of the chosen variables. Again the interpretation of these statistical results must be clear. Although the findings

indicate statistically significant results, they are far from conclusive and are certainly not clinically significant, predicting on average only 3% of the association. Given the lack of association found on the initial correlation analysis, these results are not surprising.

Conclusions have been drawn from data based on professional title or the difference between 'support worker' and 'qualified professional' rather than on the specific roles carried out. Although the evidence base has been accessed as an alternative to describe these roles and the qualitative study has illustrated some differences, given the propensity for large variations in support worker and qualified professional roles, the titles 'support worker' and 'qualified staff' used in the study are unlikely to be accurate reflections of the complexity of the work performed by these practitioners. A more ideal methodology would have been to incorporate an in depth observational study however this wasn't feasible within the scope of this research.

I have not used standardised interpretations of clinical significance for the outcomes data. As explained in the results section, this is because the goal of rehabilitation for many clients admitted to CRAICS is not to improve function but to maintain function or in some cases to decelerate decline in function (Department of Health, 2001c, Department of Health, 2006a, Godfrey et al., 2005). I have therefore interpreted outcomes data with the view that any impact on outcome in a positive direction, regardless of the size of the impact is clinically significant.

A large component of the data collection by staff involved the recording of staff contacts with each patient. Specifically, at each patient visit, staff were asked to record their professional title, duration of the visit, and purpose of the visit (ie direct patient care, administration, or travel time). There were inconsistencies in the way these data were recorded, and whilst we have

endeavoured to ensure the accuracy of these results, there are still potential inaccuracies.

In addition, the WDQ was administered at training sessions and although team managers or designated staff were instructed to deliver questionnaires to those staff who were absent, there is potential that some staff may not have had the opportunity to complete the questionnaire. The missing responses are likely to be random rather than systematic, however it should be noted that teams C and T had no support worker WDQ data even though support workers are present in both teams which may impact on the generalisability of results at a team level.

The overall response rates to the patient satisfaction questionnaires was lower than anticipated, at only 618 total responses, or around 33% of the total number of patients recruited into the study. This substantially reduced our ability to draw any conclusions about the patient satisfaction findings with respect to the workforce.

The inability of the multivariate models to accurately predict the outcomes across all teams demonstrates the enormous variability across the different teams for most of the variables investigated, and the difficulties drawing clear conclusions from the data.

The 19 teams included in the prospective analyses were diverse in terms of their host organisations (PCT, acute trusts, social services), urban or rural location, size (staff and patient throughput), and staffing models. It is difficult to determine whether these teams are truly reflective of the wider population of older peoples' community and intermediate care services, however they reflect a broad spectrum of team characteristics.

9.4.4 Qualitative study limitations

We worked with teams to ensure that as many staff as possible were able to participate in their team focus group. However, it

was not possible to ensure complete staff coverage due to staff rosters, and the need for the team to deliver their service, hence some staff views may be missing. The missing responses are likely to be random, rather than systematic, and the consistency of responses between teams indicates that the major themes are likely to have been covered.

Engaging with 'natural' groups, such as a team that works together, brings with it the internal dynamics that operate within the group on a daily basis. As a result it is possible that because of internal tensions or hierarchies, particularly between support and qualified staff, some participants may have participated less or been more outspoken than others. The only way to counteract this effect would be to undertake individual interviews with team members, which was not feasible within the time or resource available. Again, it is hoped that capturing the views of multiple teams will ensure that the breadth and depth of the key issues has been captured. Additionally, other methods of capturing individual staff perspectives have been used, which will be used to triangulate the overall findings in this study.

In opting to generate data via a focus group approach the intra-group consensus may be contentious but the inter-group consensus is, in this instance at least, undeniable. The consistency of the questions is constantly mirrored in the responses, where despite differences caused by local fluctuations in professional alignment or managerial make up, there remains a high degree of consistency.

The dynamic is premised on the interaction within the group that will produce data and perspectives on experience that would otherwise be unavailable. Here they are used as part of a menu of methods and act as a form of evidence to be incorporated with the other study results.

9.5 Further research

I feel this research has raised some important issues that would benefit from further research. There is a need to explore how the level of training and/or competency of support staff impacts on patient outcomes (including adverse events). This research has also raised the possibility that delegation practise has a significant impact on workforce efficiency and patient outcomes. I feel there also needs to be some kind of further analysis of results to see if support worker input is more or less effective for different levels of patient impairment.

This research has primarily analysed structure and outcome without only a small amount of attention given to 'process'. I therefore feel the next step for this research in this area is to examine the exact nature of what support workers do in the process of delivering care in CRAICS and how this directly impacts on outcomes. An observational research model would be required to pursue this question.

10 Implications for policy and practice

10.1 Implications for Policy

There needs to be greater acknowledgement of the complexities that can impact on workforce efficiency. In doing so, there needs to be acknowledgement that these complexities will have varying degrees of influence on how effective the addition of support workers to the skill mix is and consequently the impact this has on the desired effect they are intended to bring about.

The following table (10-1), taken from section 2.3, summarises the policy intentions for support workers and the corresponding findings from this research.

Overall this research has demonstrated that within CRAICS there is little evidence that the use of support workers enable qualified practitioners to undertake more complex care. Adding support workers to the skill mix does not necessarily mean a greater proportion of the workload will be undertaken by support workers or that the throughput of the service will be enhanced.

Equally, although policy directives have attempted to address the training and career progression needs of support workers, there was no evidence that support workers in CRAICS had benefitted from these measures. Indeed this research has highlighted an urgent need for improved access to and availability of formal training for support workers as well as better mechanisms for support workers to progress into qualified practitioner roles and/or access to greater levels of remuneration. If support workers are to be used as a solution to qualified practitioner shortages, then these issues need to be addressed otherwise similar retention and recruitment difficulties will arise in the support workforce.

As demonstrated in the below table (10-1), these findings are at odds with the intentions of several policy directives. Furthermore this research has demonstrated that there is a great deal of

potential for support workers to positively influence patient outcomes. The positive impact of support workers on patient outcomes has been largely overlooked in the policy literature.

Table 10-1 Policy directives and intentions regarding support workers

Directive / strategy	Intention	Results
Recruit/utilise more support staff	• Expand the workforce to cater for future service demand • Overcome difficulties recruiting qualified staff • Financially viable way to expand services	✓ Increases in numbers of support workers relative to qualified staff × costs not measured
Introduce new support worker roles / greater use of support worker roles	• Enable career progression for support workers • Greater retention of support workers and qualified practitioners • Deliver particular aspects of care to enable nurse and allied health practitioners to take on specialist skills transferred from medical staff • Deliver particular aspects of care to enable nurses and allied health practitioners to 'focus' their skills and knowledge more effectively • Enhance service capacity	× assistant practitioner and generic support worker roles did not lead to further career prospects (outside of the new roles) × support staff had highest intention to leave profession × no evidence support staff enabled qualified staff to 'concentrate' efforts on specific client types × no conclusive evidence that greater proportions of support staff equated to greater amounts of care undertaken × no evidence a greater proportion of support staff in the team led to enhanced service capacity (through length of stay)
Greater access to qualifications and training	• Enable career progression • Greater retention of	× overall poor access to formal training opportunities

	staff • Ensure patient safety and quality of care • Equip support staff with the skills to take on wider range of clinical tasks	× no evidence formal training linked to career progression outside of support roles × support staff had highest intention to leave profession × patient safety not measured
Improved pay and career system	• Enhance career progression prospects for support staff • A system to reward support staff for enhanced responsibility • Greater retention of staff	× support workers felt their pay did not reflect levels of responsibility × support staff had highest intention to leave profession
New training programmes and qualifications	• Enable career progression • Enable greater levels of autnomy	× support staff had lowest autonomy scores (WDQ)

10.2 Implications for Practice

The findings of this research demonstrate there is room for services to deploy their staff more effectively. Using tools such as the Levels of Care and TOMS to assess patient health and social care status on admission can assist services in matching the level of input required for clients and the types, roles and training of staff in the team. In doing this there is potential for benchmarking to identify areas which may be able to be made more efficient.

For example this study has demonstrated that a greater proportion of support worker input can lead to improved patient outcomes and that patients with more lower TOMS and EQ-5D admission scores and a level of care score between 2 and 5 showed a greater potential for gain in function. There is potential therefore to focus the use of support staff on particular groups of clients to enhance outcomes. Furthermore if staff truly accept the division of labour as found in the qualitative study, there is equally room to enhance the 'balance' of care delivered by

qualified and support staff without unduly affecting staff satisfaction or intention to leave. That is support staff should be delivering greater proportions of direct care and qualified staff fulfilling their expert role by assessing, triaging and establishing/overseeing care plans.

For these changes to take place, services must also acknowledge and where possible address some of the external factors (such as social services delays and equipment ordering) that impact on workforce efficiency. I acknowledge however that many of these services are already stretched for resources and time and will find this unfeasible and unworkable.

At a team or service level there also needs to be some attention given to the levels of and access to training for support staff. There is a need to support qualified staff in delivering training to support staff and also improve access to formal training opportunities. There may be some overlap of benefit from auditing patient needs such that support worker competency and training can be matched to levels of patient need. Furthermore there needs to be some accommodation, either through training or employment of specialist practitioners, of skills and knowledge that are potentially lacking in support staff due to the absence of particular types of practitioners such as podiatrists.

Finally where retention of support workers is a problem, where possible teams and services needs to address the underlying causes. These may include minimising 'deskilling' by ensuring support workers are fulfilled in their duties, where appropriate ensuring support workers have satisfactory degrees of autonomy, improving access to training and ensuring adequate levels of staffing to alleviate undue stress or workload.

The overall objective of the research was to identify factors that contribute to enhanced patent, service and staff outcomes where support workers are utilised to deliver care.

The following table (10-2) summarises factors I have identified from this research that services may find helpful when utilising their support workers with respect to enhancing patient, staff and service outcomes.

Table 10-2 Factors identified from research that may enhance outcomes when support workers are utilised

Patient outcomes	• Ensure support workers are trained and competent in the care they are delivering • Match support worker skill and competence to patient need: there may be potential for greater improvements in patient outcomes if support workers deliver care to more impaired clients • Ensure support workers focus on particular aspects of care: there may be some indication that a greater intensity of rehabilitation combined with supportive emotional care enhances patient outcomes • Ideally have all staff located in the same building / office • Ensure there are open and adequate channels of communication between qualified and support staff
Staff outcomes	• Ensure adequate and appropriate access to training • Ensure there are adequate pay and career progression opportunities • Ensure qualified staff are supported to train support staff • Ensure support staff are 'fulfilled' in their duties and have appropriate but adequate levels of autonomy • Ensure support staff have minimal role ambiguity
Service outcomes	• Ensure support workers are predominantly utilised to deliver greater proportions of direct care and qualified staff to assess, triage and establish care plans • Identify patient needs and existing resources to determine the role required by the support worker • Address external variables that adversely influence practitioner roles or the requirements of the service • Match support worker skill and competence to patient need: there may be potential for greater improvements in workforce efficiency if care is more clearly directed • Employ efficient delegation practise

11 Conclusion

The aim of this study was to explore the nature and extent of contribution support workers make to the delivery and outcomes of care for older people within community rehabilitation and intermediate care teams in England.

Support workers represent a significant proportion of the community rehabilitation and intermediate care workforce. It is likely that support workers are being utilized to increase service capacity and that the addition of support workers, as opposed to qualified staff, to the skill mix has financial motivations. Staff themselves perceive support workers to be essential to the ability of the service to meet service demand.

Support workers undertake a variety of roles which predominantly include provision of direct rehabilitative, medical and personal care; provision of emotional and psychological support; and patient advocacy to the multidisciplinary team. There was a perceived division of labour between qualified and support staff around assessment, which was the professional responsibility. The dominant role and function of support workers in a team was to deliver the majority of patient care followed by patient advocacy.

Although there was a perceived division of labor, support worker and qualified practitioner roles are highly fluid and interchangeable. It is this fluidity that may explain why no statistical patterns were found to differentiate who does what. The findings of this research also throw into question the assumption that support workers enhance the efficiency of a team and/or 'free up' professional time.

Contrary to policy expectations support workers were more likely to report an intention to leave the profession than their qualified colleagues. Lower levels of autonomy, poor pay and career progression opportunities, lack of access to training and high

levels of responsibility for significantly less pay than qualified practitioners may go some way to explain these findings.
Perhaps the most significant finding from this research is that a greater proportion of care delivered by support staff and a greater proportion of support workers in a team can positively impact on patient health and social outcomes. I have reasoned that this is due to the *type* of care delivered by support staff and potentially their unique approach to care.

The findings from this research have implications for both policy and practise. Policy makers and service managers alike must ensure there is access to formal training for support workers and that this training contributes towards pay and career progression opportunities. In this respect policy directives have failed this particular group of workers and therefore counteract the effect they were intended to bring about.

There is room for services to better utilise their support workforce. There may be potential for greater improvements in workforce efficiency if care provided by support workers is more clearly directed. Services need to better identify patient needs and existing resources to determine the role required by the support worker.

This study has highlighted discrepancies between common assumptions around the utilisation of support workers and the actual utilisation of and contribution support workers make to the structure, processes and outcomes of care in CRAICS. Further research needs to be undertaken to explicitly identify the exact components of support worker care that impact on outcomes.

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