Exploring the Unplanned and Unpredictable Factors Affecting Home Care Nurse Case Manager Workload

by

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Abstract

The purpose of this thesis is to explore the unplanned and unpredictable factors that affect home care nurse case manager workload. Two papers comprise this thesis. The first paper is an integrative literature review that focused on developing a more clear understanding of how the unplanned and unpredictable factors can affect the work and workload of the home care nurse case manager. I found that there is need for further research to uncover the complexity and causation of these factors from the home care nurse case manager perspective. The second paper is a secondary data analysis that utilized an interpretive descriptive approach. In this thesis, I provide a more clear understanding of the unplanned and unpredictable factors that affect home care nurse case manager workload. However, further research is needed to build on this work to investigate the effects of these unplanned and unpredictable factors in order to accurately measure workload, and determine case manager capacity and ultimately the effect of case manager work and workload on client outcomes. This work could inform intervention studies designed to improve case manager work and workload.

Preface

This thesis is an original work by Susan Labonté. No part of this thesis has been previously published. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name "Exploring the Unplanned and Unpredictable Factors Affecting Home Care Nurse Case Manager Workload", Study ID# Pro00058409, December 22, 2015.

Dedication

This thesis is dedicated to my father, the writer, who inspired me to fulfill this life goal; to my mother, who left us too early, but instilled in me her grit and determination; to my aunt Jeanette, who has always believed in my ability to succeed; to my children, Cidney and Caleb, who endured many countless hours without their mom as I worked through this process; and finally, to my incredibly loving and supportive husband Greg, with you at my side, anything is possible.

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CHAPTER ONE

Introduction

Home care is growing exponentially in Canada and other countries (Canadian Home Care Association, 2013; Canadian Nurses Association, 2013; Chappell & Hollander, 2013). It is increasingly considered a critical component of health care delivery systems and has the potential to deliver both cost effective and efficient health care (Canadian Home Care Association, 2013; Canadian Medical Association, 2009; Canadian Nurse, 2015; Chappell & Pedlar, 2009; Hollander, Miller, MacAdam, Kirby & Hurst, 2014; Labson, 2016; Mildon, 2011; Turjamaa, Hartikainen, Kangasniemi & Pietila, 2014). Between 2008 and 2011, there was a 55% increase in the number of home care clients in Canada with 1 in 6 seniors (65 years +) receiving home care (Canadian Home Care Association, 2013). As people are living longer, there is increased need for home care service with the largest population of home care recipients in Canada in the 76 to 85 year demographic (Canadian Home Care Association, 2013).

In Canada, both the provinces and the federal government have recently increased their emphasis on care in the home and community (Canadian Home Care Association, 2013). This new focus is creating a need for innovative knowledge around ways to improve the use and efficiency of home care resources including case management practices (Bain & Baguley, 2012; Canadian Home Care Association, 2013; Canadian Nurses Association, 2013; Cawthorn & Rybak, 2008; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009; Joo & Huber, 2014). Since knowledge grounded in evidence must form the basis for new policies, procedures, and efficient and effective care provision in health care, research initiatives in home care are currently front and centre amongst government health care administrators and researchers (Canadian Home Care Association, 2013).

Overview of the Problem

Case management is pivotal to home care service delivery, as it is the mechanism by which home care is accessed, coordinated, and monitored. The coordination of care and services in the home and community setting is a primary responsibility of a case manager and although the case manager may be any discipline, in home care they are most often a registered nurse (Collister, Slauenwhite, Fraser, Swanson & Fong, 2014,; Joo & Huber, 2013; Joo & Huber, 2014; Huber & Craig, 2007; Park & Huber, 2009; Park, Huber & Tahan, 2009). Through collaboration with the client and family, other members of the home care team, and other health care professionals, the home care nurse case manager (HCNCM) assesses and determines the nature, intensity and duration of services for the client. Focusing on a client-centered approach, they constantly reassess care and services and make necessary adjustments and referrals to ensure the client's needs are met (Canadian Home Care Association, 2013). They are often considered the gatekeepers of community home care (Fraser & Estabrooks, 2013; Hausdorf & Swanson, 2014).

Since effective and efficient health care service delivery is a priority based on the need "to do more with less in health care" (McMurtry, 2015), there is an increased emphasis to develop a better understanding of HCNCM work and workload. There is a paucity of literature about what HCNCM's do, how they perform their work, and what their workload encompasses (Park, Huber & Tahan, 2009). They often practice quite autonomously within a work environment not well understood by other sectors. Many different factors, which are difficult to measure, affect the work and workload of a HCNCM. Although researchers have made attempts to measure the work that HCNCM's do (Baldwin, 2006; Byrne, Brady, Griffith, MacGregor, Horan & Begley, 2006*;* Collister, Slauenwhite, Fraser, Swanson & Fong, 2014; Grafen & McKenzie, 2015; Kirby & Hurst, 2014; Storfjell, Easley Allen, & Easley, 1997) there are knowledge gaps. While some of

these tools may get close to some aspects of HCNCM work and workload, little is known about the unplanned and unpredictable factors that affect their workload.

Purpose and Significance of the Study

The purpose of my thesis is to investigate the unplanned and unpredictable factors that affect HCNCM workload. This will help to identify what HCNCMs actually do and how these factors affect their workload. I anticipate the results of this study will provide valuable insights about HCNCM workload. This information may inform future research particularly the development of more accurate workload measurement tools in home care.

Research Question

The research question I asked was: what are home care nurse case managers' perceptions of the unplanned and unpredictable factors that affect their daily workload? I achieved this work two ways. I first did an integrative literature review followed by a secondary analysis.

Literature Review

I carried out an integrative literature review guided by Whittemore and Knafl's (2005) framework. I found 12 studies that met my inclusion criteria. While the literature supported that there are unplanned and unpredictable factors that affect HCNCM work and workload, one of the significant gaps was the absence of consistent descriptions and the effect of unplanned and unpredictable factors on workload. They were described with non-specific, vague terms, and they lacked clear definitions (Baldwin, 2006; Evans, 2002; Jackson, Leadbetter, Manley, Martin & Wright, 2015). There was also evidence of a poor understanding of the effect of these factors on workload from the HCNCM's perspective.

Secondary Analysis

I conducted an interpretive descriptive (Thorne, 2008) study using a secondary analysis approach. I used this approach to generate "new insights", shape "new inquiries" and assist to apply "evidence to practice" (Thorne, 2008, p. 35). This approach required two considerations: a) a practice goal (clarity around the unplanned and unpredictable factors affecting HCNCM workload), and b) an understanding of what we know and don't know from available evidence (a current literature review investigating the unplanned and unpredictable factors affecting HCNCM workload) (Thorne, 2008).

I used a data set from data that was originally collected within my supervisors research unit. The data was extracted from transcripts and journals that were conducted with 17 different HCNCM's in Edmonton, Alberta, Canada. I chose this method for three reasons. It a) requires less time and monetary resources (Doolan & Froelicher, 2009; Dunn, Arslanian-Engoren, DeKoekkoek, Jadack & Scott, 2015), b) poses less risk to participants with de-identified data (Doolan & Froelicher, 2009; Dunn, Arslanian-Engoren, DeKoekkoek, Jadack & Scott, 2015); and c) can provide valuable evidence to increase knowledge, evidence-based care and contribute to policy (Doolan & Froelicher, 2009; Dunn, Arslanian-Engoren, DeKoekkoek, Jadack & Scott, 2015). The original research question was also relevant and pertinent to my research question, making a secondary analysis a good choice for this study.

Future Research

If we have a better understanding of HCNCM work and workload concepts and the factors that affect it, such as the unplanned and unpredictable factors, then we may be able to develop more accurate workload measurement tools in future research endeavors. Solid evidence based

tools could promote reasonable and equitable workloads for HCNCMs. Reasonable and equitable workloads for HCNCMs could lead to more efficient use of resources, improved client outcomes, increased morale and decreased overtime.

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CHAPTER TWO

Exploring the Unplanned and Unpredictable Factors Affecting Home Care Nurse Case Manager Workload: An Integrative Literature Review

Homecare is a critical component of health care service delivery in Canada and other countries (Canadian Home Care Association, 2013; Canadian Medical Association, 2009; Canadian Nurse, 2015; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009; Kirby & Hurst, 2014; Mildon, 2011; Turjamaa, Hartikainen, Kangasniemi & Pietila, 2014). Increased recognition about the significant role home care plays has led to increases in both the volume of home care clients who are not only sicker but also have increased complex care regimes (Bain & Baguley, 2012; Baldwin, 2006; Chappell & Hollander, 2011; Collister, Slauenwhite, Fraser, Swanson & Fong, 2014; Kane, 2009; Kirby & Hurst, 2014; Samia, 2012). The steady progression of services and the increase in utilization of home care is intended to keep people cared for at home as long as possible (Joo & Huber, 2013; Turjamaa, Hartikainen, Kangasniemi & Pietila, 2014).

In addition to client acuity and complexity, several other factors underpin the global growth of home care as follows:

1) People are living longer due to the advances in health care (Chappell & Hollander, 2013; McDonald, Frazer, & Cowley, 2013). In Canada, it is estimated that by 2030, the number of people over 65 will increase from 15% to 24.1% (Bain & Baguley, 2012);

2) There is a new focus on client-centered care. When given the choice, people prefer to be cared for at home as opposed to institutional care (Canadian Home Care Association, 2013; Canadian Nurses Association, 2013; Chappell & Hollander, 2013);

3) Clients are discharged earlier from acute care facilities causing an increase in home care referral rates. This practice is placing added pressure on home care caseloads (Kirby & Hurst, 2014; Kolehmainen, Francis, Duncan & Fraser, 2010; Mildon, 2011);

4) An increased availability of sophisticated medical technology in the home has increased the use of home care services (Chappell & Hollander, 2011; Pols, 2012); and

5) Recent research suggests home care provides economical care when compared to other health care expenditures (Hollander, Kadlec, Hamdi & Tessaro, 2009). This fact has increased political interest for home care expansion (CBC News, 2015; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009; Hollander, Kadlec, Hamdi & Tessaro, 2009).

The steady growth of home care is creating an emerging necessity to improve the use and efficiency of home care resources including case management practices (Bain & Baguley, 2012; Canadian Home Care Association, 2013; Canadian Nurses Association, 2013; Cawthorn & Rybak, 2008; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009; Joo & Huber, 2014). More now than ever, home care is on the radar of government health authorities, home care administrators and home care researchers.

Background

Home Care and Case Management

Case management, commonly referred to as coordination of care and services, is one of the unique responsibilities of the home care case manager (Collister, Slauenwhite, Fraser, Swanson & Fong, 2014, Joo & Huber, 2014; Joo & Huber, 2013). It is emerging as an increasingly important means of providing quality, cost-effective care to home care clients (Ervin, 2008; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009). The demand for effective and efficient case management within home care is growing globally (Joo & Huber, 2013; McDonald, Frazer & Cowley, 2013).

The goals of case management in home care include: 1) the reduction of hospital admissions; 2) cost containment; 3) enhanced client/family outcomes; 4) continuity of care; 5) client advocacy; and 6) reduction of barriers for assessment and treatment (Fraser, K. & Estabrooks, 2008; Joo & Huber, 2013). It has also been described as "the process of getting the right service to the right client" (Powell & Ignatavicius, 2001, p. 3).

Home care case management is a complex skill that is typically learned on the job by the clinician through experience and mentoring (Herleman, 2008). In their study, Park and Huber (2009) found that case management practice in community-based settings is not well conceptualized and lacks standardization. They stressed that the lack of standardization is a weakness in home care case management practice and therefore has led to a new focus on evidence-based research and practice initiatives in this area (Craig & Huber, 2007; Huber & Craig, 2007a; Huber & Craig, 2007b; Joo & Huber, 2014; Park, Huber & Tahan, 2009).

There is a new recognition around the need to develop an increased understanding of home care case manager work and workload because "hard data about what case managers do and how they perform their roles has been limited" (Park, Huber & Tahan, 2009, p. 694). Current studies lack full descriptions of case manager interventions and workload definitions (Park & Huber, 2009; Park, Huber & Tahan, 2009). Diem et al. (2001) suggest that if home care case manager work could be described more precisely by defining relevant activities and factors that influence it, then workload could potentially be measured more accurately. Research that investigates details around case manager interventions and the various factors that affect their workload, would promote rigorous evidence for accurate workload measurement resulting in the action of putting "realism into practice" and the avoidance of "reactive versus proactive" care (Jackson, Leadbetter, Manley, Martin & Wright, 2015, p. 130-131). It could also provide new recognition

of areas needed for case management education, as well as increase the utilization of research findings in practice (Park, Huber & Tahan, 2009).

The Role of the Nurse as Home Care Case Manager

A case manager can be from any discipline, but it is most often a registered nurse within the area of community home care (Huber & Craig, 2007a; Joo & Huber, 2013; Park & Huber, 2009; Park, Huber & Tahan, 2009). Statistics state that up to 93.3% of home care case managers are registered nurses (Park & Huber, 2009). Therefore, tasks specific to nursing must be considered when determining accurate measurement of their workload. Generally, nursing workload can be defined as "the amount of care allocated to patients based on an assessment of their nursing needs and the care they require" (Canadian Nurses Association, 2005, p. 3). In terms of home care, workload does not fit into this general definition. The type and number of clients on a caseload cannot be used solely to measure home care nurse workload because many other unique and complex factors have an effect on their daily workload (Baillon, Simpson, Poole, Colledge, Taub & Prettyman, 2009; Ferrant, 2004). Along with general case management duties, case managers who are registered nurses, play many additional roles for clients and families in the community. Nurse case managers (NCM) complete comprehensive assessments that include physical, mental and psychosocial assessments of clients and their caregivers in their home environment. They perform nursing diagnoses, provide treatment and interventions, identify barriers for care, teach symptom recognition and assist clients and families with determining their long-term health goals (Young Joo & Huber, 2014). NCMs are required to be autonomous decision makers with specialized clinical knowledge who can adapt their practice quickly, often in client-controlled environments (Mildon, 2011). They are required to manage "ever-changing and unexpected organizational and clinical demands including extensive documentation, multi-level communication and ethical dilemmas" that arise throughout their workday (Mildon, 2011, p.

143). These factors highlight that home care nursing is complex and can be unpredictable. Adding case management responsibilities to their workload further complicates their work. Thus accurate workload measurement in home care is very challenging.

Measuring Workload

When home care teams are unable to accurately measure NCM workloads, it can cause issues with staffing, caseload inequity and potentially negative client outcomes. Over the last 20 years, there have been approximately a dozen attempts to develop accurate workload measurement tools in home care. A list of some of the recent tools in the literature can be found in Figure 2.1. Some of these tools have been tested for accuracy and reliability, but imperfections in the various tools have been suggested. "It is important to acknowledge that there may not be one tool that will provide all the answers" (Jackson, Leadbetter, Manley, Martin & Wright, 2015, p. 127). It could be proposed that existing tools fail to capture and include all pieces, such as the unpredictable and unplanned factors that can affect a home care nurse case manager's workload on a daily basis. "Unless all parts of a nurse's assignment are considered, inadequate time may be available to deliver care in a timely manner" leading to decreased job satisfaction and potentially negative client outcomes (Ervin, 2008, p. 131). Justifiably, there are real opportunities to conduct research around the development of effective workload measurement tools in community nursing (Jackson, Leadbetter, Manly & Wright, 2015).

Figure 2.1
Workload Measurement Tools in Home Care

The *Caseload Intensity Tool (CIT)* (Collister, Slauenwhite, Fraser, Swanson & Fong, 2014)
The *Scottish Community Nursing Workload Measurement Tool* (Grafen & Mackenzie, 2015).
The *Safer Nurse Care Tool (SNCT)* (Kirby & Hurst, 2014)
The Warrington Workload Tool, and the *Case Management Acuity Tool* (Baldwin, 2006)

The *Community Client Need Classification System (CCNCS)* (Byrne, Brady, Griffith, MacGregor, Horan & Begley, 2006

The *Easley-Storfjell Instruments for Caseload/Workload Analysis* (Storfjell, Easley Allen, & Easley, 1997*)*

The Unplanned and Unpredictable Factors

Although the list of duties NCM's do is extensive, it fails to capture the less obvious aspects of their workload. This important piece has been labeled in the literature as "unplanned work", "unpredictable work", "indirect work", "hidden work" "unexpected work", "unrecognized work", "less tangible work" and "invisible work" (Baldwin, 2006; Brady, Byrne, Horan, Griffiths, MacGregor & Begley, 2007; Byrne, Brady, Griffith, MacGregor, Horan & Begley, 2006; Collister, Slauenwhite, Fraser, Swanson & Fong, 2014; Grafen & Mackenzie, 2015; Grange, 2011; Kirby & Hurst, 2014; Mildon, 2011; Pontin & Lewis, 2008; Reid, Kane & Currran, 2008; Stuart, Jarvis & Daniel, 2008; Willis, Henderson, Toffoli & Walter, 2012). These labels are all an attempt to characterize work that cannot be reasonably anticipated or predicted on a day-to-day basis. The literature acknowledges the existence of this work and lays claim to the "unpredictable nature of the job" (Stuart, Jarvis & Daniel, 2008, p. 3019). However, specific descriptions or details about what this work entails, and how it affects the workload of a home care NCM, has not yet been fully described. In this paper, I present a comprehensive understanding of the unplanned and unpredictable factors that affect workload from NCMs' perspectives to help us develop clarity around this important phenomenon of interest. Potentially, this information could assist with the future development of accurate workload measurement in home care.

Methods

Aim

The purpose of this integrative review is to identify, analyze and synthesize current evidence of the unplanned, unpredictable factors that affect home care nurse case manager (HCNCM) workload from their perspective. The research question was: What are home care nurse case managers' perceptions of the unplanned and unpredictable factors that affect their workload?

Design

This literature review is guided by Whittemore and Knafl (2005) integrative review methodology. Reasons for choosing this review type are three-fold: 1) integrative reviews are the broadest type of research review that have the potential to capture varied perspectives on a phenomenon of interest; 2) integrative reviews have the potential to play a greater role in evidence-based practice for nursing; and 3) this approach also allows for the inclusion of diverse methodologies (Whittemore, 2005; Whittemore & Knafl, 2005). Combining both qualitative and quantitative primary findings within one single research synthesis permits "a larger amount of data concerning one phenomenon of interest….in comparison to a mono-method synthesis relying on only one data type" (Heyvaert & Onghena, 2011, p. 18). The recent development of knowledge synthesis methodology has made the integrative review method the best choice "for synthesizing knowledge on primary research combined with methodological and/or theoretical manuscripts" (Whittemore & Jang, 2013, p. 458). In order to enhance rigor and to provide a comprehensive understanding of a phenomenon, Whittemore and Knafl (2005) recommend a 5-step approach originally adapted from Cooper's (1982, 1984) literature review process. Their strategy involves: a) problem identification, b) literature search, c) data collection, d) data analysis, and e) presentation (Whittemore & Knafl, 2005).

Term Definitions

The terms used in my research question are defined to provide conceptual clarity. *Home Care* is community-based health care provided by various health care professionals and non-licensed community workers. *Home care nurse case manager* is a registered nurse working in a case manager (care coordinator) role in community home care settings. *Factors* are events, experiences, elements, tasks, issues, reasons, circumstances and things that can affect (increase) home care nursing workload on a daily basis. Two terms, unplanned and unpredictable, are used to describe the type of factors that affect workload in this study. Each term is necessary to adequately capture the complex nature of the phenomenon of interest. *Unplanned* factors are unforeseen, unintended or not-planned-for things that affect workload. The term unpredictable adds merit to the fact that home care nurses have daily workload expectations, but does not insinuate that the nurse is not adequately prepared. Therefore, *unpredictable* is a factor that is not certain to occur, whose occurrence is difficult to foresee or not capable of being definitely ascertained. *Perception* is an insight, opinion, observation or interpretation in relation to a factor affecting home care workload. Finally, *workload* is the amount of work performed by a home care nurse case manager on a daily basis.

Literature Search

Key search terms were identified and several electronic databases were selected in consultation with a librarian. A search of the nursing literature was conducted in the Cumulative Index of Nursing and Allied Health Literature (CINAHL). The search was limited to this database because the study focus was limited to nurses in community home care. Search limiters included articles that were published from 1995 to 2015 and were in English. Only peer-reviewed manuscripts were considered due to their methodological rigor (Whittemore, 2005). Unpublished manuscripts were not included in this review as their inclusion "remains controversial" at this time (Whittemore, 2005, p. 58). Since my research question implies that

more than one factor can affect home care nursing workload, I decided that analyzing workload measurement tools in home care would yield more accurate results around the phenomena of interest. Therefore, a search was conducted with the search terms ["home care" or "community health"] and ["workload"] and ["measure*" or "tool*"]. This method yielded 137 articles. The titles and subject headings of the 137 articles retrieved were scanned for initial inclusion. I then read abstracts and full articles (if abstract absent) for further clarity to ensure they focused on home care and/or community nursing workload. This resulted in 25 articles for inclusion for full article review. Citations from these 25 articles were scanned resulting in 13 more articles for inclusion for a total of 38 articles. Key home care and case management journals were hand searched from 1995-2015, resulting in one more article for inclusion. A known expert in the field provided 24 more articles for initial review. From these additional 24 manuscripts, seven articles were duplicates, 16 were discarded as they did not meet the initial inclusion criteria, and one additional article was included in this review. Websites of relevant home care agencies and associations in Canada and the United States were searched resulting in 2 more articles of interest. In all, 42 articles were included for a full reading of the article (see table 2.1). Application of further inclusion/exclusion criteria (see table 2.2) resulted in a total of 12 articles for this review.

Table 2.1
Search Strategies

Search Criteria	Number of Articles Retrieved
CINAHL search using the terms "home care" or "community health" and "workload" and "measur*" or "tool*" Limited to 1995-2015 Peer reviewed only English Language	137
Scan title of article and subject headings, read abstracts and	25

full article (if abstract absent)	
Citations scanned for relevant articles	13
Key home care journals hand searched from 2000-2015	1
Consult with known expert in the field - duplicates removed	1
Websites of relevant home care agencies and associations in Canada and United States searched	2
Total articles for full read	**42**
Article Exclusion Criteria:	
• Articles removed because they were not primary research studies	11
• Articles removed because they didn't include discussion around nursing workload	4
• Articles removed because they didn't include discussion around factors that affect workload	5
• Article removed because it was on community mental health nurses	1
• Articles removed because it involved different disciplines not only nurse case managers	7
• Articles removed because they weren't peer reviewed	2
Total articles removed as per inclusion/exclusion criteria	**30**
Total articles for inclusion in literature review	**12**

Table 2.2
Additional Inclusion/Exclusion Criteria

Article Inclusion Criteria:

- Primary research study (containing theoretical or empirical data or mixed-method)
- Research on community nursing (defined to include terms from various countries - home care nurse, community matron, district nurse)
- Discussion of community nurse workload (may include general discussion and/or caseload analysis with tools and/or measurement of workload)
- Discussion of factors affecting home care nurse workload

Article Exclusion Criteria:

- Excluded if case managers include professions other than nursing

Data Collection

My first step was to extract pertinent data from each included manuscript. A table was created for this process. "Generally, tables document the evidence of individual studies, providing key details without superfluous data" (Whittemore, 2005, p. 60). Reducing each manuscript into manageable subgroups "provides succinct organization of the literature which facilitates the ability to systematically compare primary sources on specific issues, variables, or sample characteristics" (Whittemore & Knafl, 2005, p. 550). Data extracted from the included manuscripts in this review can be found in Appendix A.

Quality Appraisal

Once data was extracted, a quality appraisal of each article was conducted in the form of a quality appraisal checklist. A checklist is difficult to utilize with integrative literature reviews due to the methodological pluralism of the studies that are included in this type of review (Whittemore & Knafl, 2005; Whittemore, Chao, Jang, Minges & Park, 2014). Therefore, a tool that includes descriptive criteria to appraise methodological quality as well as examining authenticity, informational value and "representativeness of primary sources" is best suited for the studies included within integrative reviews (Whittemore, Chao, Jang, Minges & Park, 2014, p. 458). I chose the Mixed Methods Appraisal Tool (MMAT - Version 2011) for my review for the following reasons: 1) it is an effective tool to address the quality of qualitative, quantitative and mixed methods studies; 2) it has been pilot tested for reliability; 3) it is a peer-reviewed content validated tool; 4) it is based on constructionist theory and a literature review; and 5) it is used worldwide for at least 50 systematic mixed studies reviews (Pluye, P., Robert, E., Cargo, M., Bartlett, G., O'Cathain, A., Griffiths, ... Rousseau, M.C., 2011). This tool also allows for quality scores to be incorporated into the data analysis stage. Formal instruments that evaluate

each study with quantitative ratings ("scores") allow for appraisals across different studies to be compared (Loiselle & Profetto-McGrath, 2011; Whittemore & Knafl, 2005). A copy of the MMAT - Version 2011 along with the guidelines for its use can be found in Appendix B.

Scores for each study were calculated from the scoring metrics provided by the authors of the appraisal tool. Only three of the 12 studies received a 100% rating, three received a 75% rating, three studies received a 25% rating and three studies received a 0% rating. All 12 manuscripts were included in this review because "papers should not be excluded for reasons of quality, particularly where this might result in synthesizers discounting important studies for the sake of 'surface mistakes', which are distinguished from fatal mistakes that invalidate the findings" (Dixon-Woods, Agarwal, Jones, Young & Sutton, 2005, p. 52). Along with the metric scoring provided, I gave each article my own general impression score. Quality appraisal results from the 12 articles that were included in this review can be found in Appendix C.

Data Analysis: A Thematic Summary and Synthesis

Data analysis involved data comparison, conclusion drawing and verification (Heyvaert, Maes & Onghena, 2011; Whittemore & Knafl, 2005). "Thorough and unbiased interpretations of individual studies with clear, useful conclusions are the goals of this stage" (Whittemore, 2005, p. 60).

I used thematic analysis and a convergent qualitative synthesis design (Dixon-Woods, Agarwal, Jones, Young & Sutton, 2005; Pluye & Hong, 2014). I identified prominent or recurrent themes in the literature, and summarized the findings under thematic headings (Dixon-Woods, Agarwal, Jones, Young & Sutton, 2005). A "hybrid deductive-inductive approach" was utilized whereby predefined themes such as the unplanned and unpredictable factors that affect workload were characterized (Pluye & Hong, 2014). Summary tables were produced in order to provide comprehensible, organized descriptions of the key points and promote the development

and synthesis of common themes between study findings (Dixon-Woods, Agarwal, Jones, Young & Sutton, 2005). Data was then assigned to themes, revised with data or new themes were brought forth utilizing this approach (Pluye & Hong, 2014). I chose the summary synthesis method as it provides a visual representation of the relationship between codes, concepts and ideas of mixed-methods studies (Pluye & Hung, 2014).

Data Synthesis

First, I pulled data from included manuscripts as it related to the factors (words and concepts) that affect workload. Secondly, words and concepts that relate to the unplanned and unpredictable work of home care NCM's were collated and compiled. Lastly, concepts and quotes from the findings of each study were extracted when they related to the key factors that affect workload and the unplanned and unpredictable nature of home care nursing workload. Linking themes and concepts with quotes and excerpts from the primary source promoted accuracy and confirmability of the findings (Whittemore & Knafl, 2005). I then utilized colour coding and underlining of related themes and concepts in order to denote comparisons and frequency of occurrence within and between included studies for this review. Colour coding also provided a visual summary where new themes could be conceptualized. As colour coding cannot be distinguished with black and white manuscripts, the use of different fonts was utilized to denote comparison and frequency of themes and concepts. The summary of findings are provided in Appendix D.

Findings

A total of 12 papers were included in this review. One was quantitative, five were mixed methods, and 6 were qualitative studies. All were published between 2000 and 2015 (See Appendix A). The studies with a quantitative component involved workload measurement tools in home care or a general analysis and discussion around workload measurement through

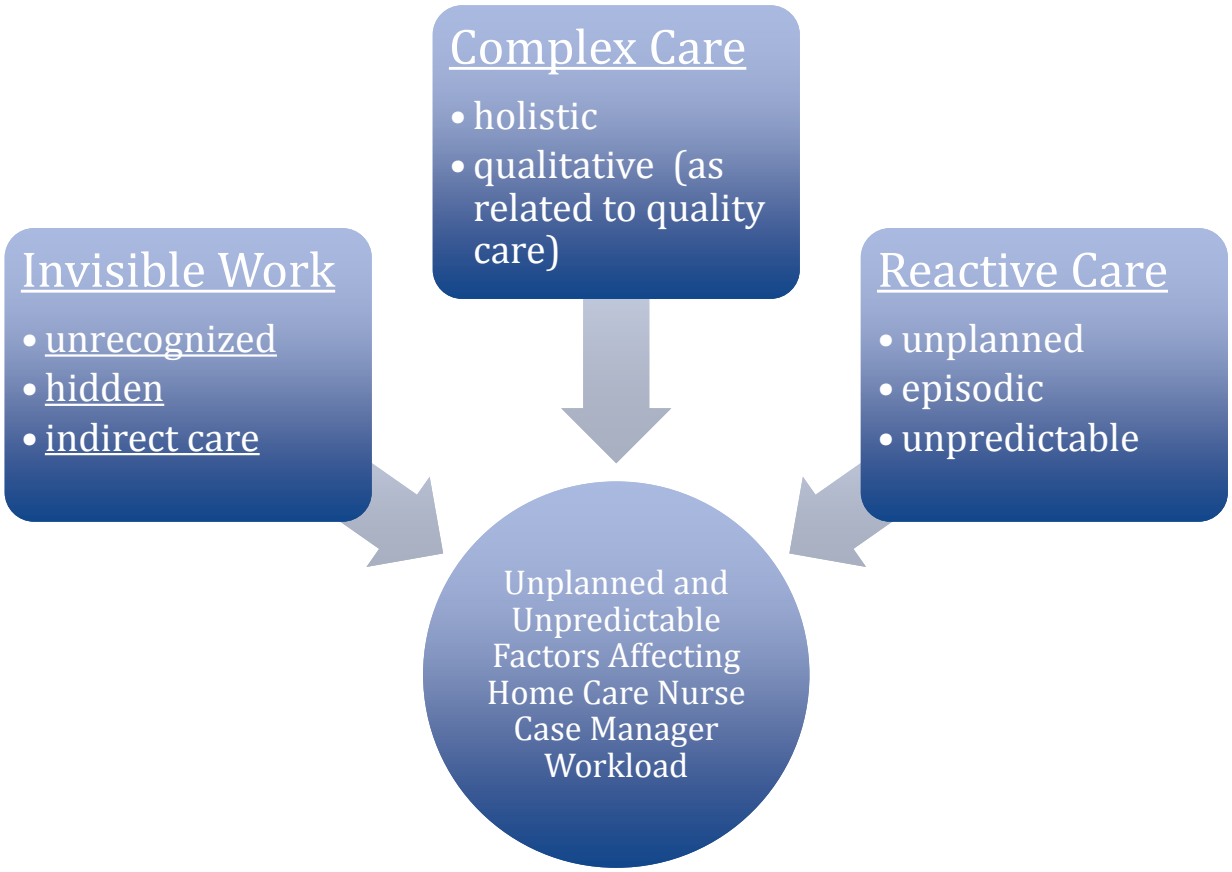
caseload audits, interviews and focus groups (Baldwin, 2006; Evans, 2002; Jackson, Leadbetter, Manley, Martin & Wright, 2015; Kane, 2008; Kemp, Harris & Comino, 2004; Kirby & Hurst, 2014). The qualitative studies included in this review utilized action research, interpretive, phenomenology and grounded theory methods, and two literature reviews (Auckland, 2012; Pontin & Lewis, 2008; Reid, Kayne & Curran, 2008; Sargent, 2008; Stuart, Jarvis & Daniel, 2008). Two articles included discussion around home care nurses' perception of their workload in some capacity but did not provide their perception of the unplanned and unpredictable factors that affect their workload (Evans, 2002; Pontin & Lewis, 2008). The term "invisible" work, also labeled "hidden", "unrecognized" or "indirect" work, was mentioned in six articles to describe home care nursing workload (Grange, 2011; Kane, 2008; Reid, Kayne & Curran, 2008; Kirby & Hurst, 2014; Pontin & Lewis, 2008; Stuart, Jarvis & Daniel, 2008). "Complex" factors were linked to holistic and qualitative work performed by home care nurse case managers in four studies (Auckland, 2012; Evans, 2002; Jackson, Leadbetter, Manley, Martin & Wright, 2015; Kemp, Harris & Comino, 2004). Six articles contained a focus on "reactive care" in relation to unplanned, unpredictable work by home care nurse case managers (Auckland, 2012; Grange, 2011; Jackson, Leadbetter, Manley, Martin & Wright, 2015; Sargent, 2008; Stuart, Jarvis & Daniel, 2008). Four studies provided potential reasons for unmanageable workload, such as lack of proactive planning, lack of coordination, limited capacity in terms of staffing and lack of accurate workload measurement (Auckland, 2012; Baldwin, 2006; Evans, 2002; Stuart, Jarvis & Daniel, 2008). Suggestions were provided in seven articles on ways to improve home care nurse workload and measurement, such as the need to further define role expectations, accurately measure workloads, implement new care models and the development of new visionary methodologies for care (Baldwin, 2006; Jackson, Leadbetter, Manley, Martin & Wright, 2015;

Kane, 2008; Kirby & Hurst, 2014; Pontin & Lewis, 2008; Reid, Jayne & Curran, 2008; Sargent, 2008).

The analysis revealed three over-arching categories relating to the unplanned and unpredictable factors that affect home care NCM workload: invisible work, complex care and reactive care. A diagram conceptualizing my analysis can be found in Figure 2.2.

Figure 2.2.

Unplanned and Unpredictable Factors Affecting Home Care Nurse Case Manager Workload.



Invisible Work

Five of the included studies discuss the "invisible" work of NCM's upon their examination of the factors that affect workload (Grange, 2011; Pontin & Lewis, 2008; Kane, 2008; Reid, Kayne & Curran, 2008; Stuart, Jarvis & Daniel, 2008). Additional terms used to describe this

work include “hidden work” and “unrecognized work” that NCM’s perform on a daily basis (Grange, 2011; Reid, Kayne & Curran, 2008). This “valuable” work has been missed in caseload analysis as the focus has been traditionally on the “mechanistic tasks” of home care nursing (Reid, Kayne & Curran, 2008, p. 528 - 529). Adding to this issue is the fact that “unrecognized work” is difficult to articulate with specific labels including time measurement and does not appear in the literature (Grange, 2011, p. 28). Thus making it more difficult to account for (Grange, 2011). One study suggested that when NCM’s were able to identify and label the invisible work, such as crisis situations due to family dynamics, health changes and agency relations, it enabled them to “develop a shared language for communicating their clients’ needs” (Pontin & Lewis, 2008, p. 33). However, the unpredictability of their work could make it difficult for them to articulate the reason for specific visits, which can lead to uncontrolled workload (Pontin & Lewis, 2008). The invisible work was also linked to the fact that NCM’s work in people’s homes. The uniqueness of each work environment was “likened to ‘a ward without walls’ a care environment which is constantly expanding as it is not contained by walls or limited bed spaces, unlike the acute setting,” adding to the unpredictable nature of the job (Stuart, Jarvis & Daniel, 2008, p. 3016). Adding to this issue is that NCM’s are expected to be a “jack of all trades” as they deal with the invisible work and unplanned issues that may arise throughout their work day (Stuart, Jarvis & Daniel, 2008, p. 3017).

Complex Care

NCM workload was stated to involve “complex” work that was not always captured well making it difficult to set caseload targets (Auckland, 2012; Jackson, Leadbetter, Manley, Martin & Wright, 2015). Reasons for this could be that qualitative (related to quality care) and holistic components that are linked to complex care add to the unpredictable nature of the work, making it difficult to capture or define (Kemp, Harris & Comino, 2004). Intrinsic or complex job

features where there was no time to adjust to change, plan or be proactive was stated as adding to unpredictable workload (Evans, 2002). When home care nurses are unable to predict their workload, it can negatively affect caseload manageability (Auckland, 2012; Sargent, Boaden & Roland, 2008). When case managers are "struggling" to manage their caseload, complex care causes increased stress and anxiety amongst case managers and home care teams (Auckland, 2012; Sargent, Boaden & Roland, 2008). The lack of available community services (i.e. appropriate day programs) for clients requiring complex care also leads to further caseload inequity as 'non-active' home care clients are being kept on caseloads by case managers. This action blocks new referrals, which further leads to caseload inequity amongst case managers (Auckland, 2012). Further research that explores complex care for community clients from all stakeholder perspectives would provide valuable insight around improving caseload manageability for home care case managers.

Reactive Care

A consistent theme found within 6 of the 12 articles was that unplanned and unpredictable work leads to "reactive versus proactive workforce activity" (Jackson, Leadbetter, Manley, Martin & Wright, 2015, p. 132). When caseloads become unmanageable, NCM's are forced into a reactive care mode (Auckland, 2012; Grange, 2011; Sargent, Boaden & Roland, 2008; Stuart, Jarvis & Daniel, 2008). They can become distracted/consumed by the unpredictable and unplanned factors that affect their workload. A lack of "proactive planning" has also added to the reactive care phenomenon (Kemp, Harris & Comino, 2004, p. 307). It was suggested "we need to move away from a reactive, unplanned and episodic approach to care" and be more proactive in our approach (Sargent, 2008, p. 44). However, how can we be more proactive in our approach when we are not clear about the factors that affect our workload in terms of definition and time? How can we plan when we do not have a well-defined understanding of what we are planning

for? More specifically, how can we develop accurate workload measurement tools when we do not fully understand the phenomenon of the unplanned and unpredictable factors that affect NCM workload?

Discussion

The literature on NCM workload predominantly focuses on procedural and mechanistic tasks based on client's health status and needs (Kane, 2008; Kemp, Harris & Comino, 2004; Kirby & Hurst, 2014; Reid, Kayne & Curran, 2008). Discussion on other complex factors that often lead to an unmanageable workload and reactive versus proactive care are absent from the literature (Auckland, 2012; Evans, 2002; Grange, 2011; Jackson, Leadbetter, Manley, Martin & Wright, 2015; Kemp, Harris & Comino, 2004; Sargent, 2008; Stuart, Jarvis & Daniel, 2008). There is lack of clarity among definitions that are often vague, referring to terms with an assumption that readers would understand the intended meaning. Herein lies one of the key problems in this field of study. For example, the literature mentions the "complex work" they do, labeling it as "qualitative" and "holistic" in nature, however this work is not fully understood and therefore it is not captured in existing workload measurement tools (Baldwin, 2006; Kemp, Harris & Comino, 2004).

"Unmanageable workloads" are described where NCM's "were expected to fill the gaps in management of acute-care clients in the community" (Kemp, Harris & Comino, 2004, p. 313) and that many nursing tasks "may be omitted or missed due to lack of time" (Jackson, Leadbetter, Manley, Martin & Wright, 2015, p. 128). However, there is a lack of empirical evidence around workload changes and the actual focus of their work (Kemp, Harris & Comino, 2004). Improved definitions around what "unmanageable" workload means could potentially shed some light on the individual factors that affect it. Workload measurement and simplistic caseload analysis that is based on client-to-case manager ratios is not effective. Due to the complexity and acuity of

home care clients, as well as the ever-changing and increasing role of the NCM in community care, an in-depth examination of the complex factors that affect workload is required.

References to the "unplanned" and "unpredictable" work that NCM's experience was noted in the literature, however specifics around what this includes were not found (Baldwin, 2006; Evans, 2002; Jackson, Leadbetter, Manley, Martin & Wright, 2015). In their study, Kemp, Harris and Comino (2004) discuss NCM perceptions of their work and the reality of their work. Their findings indicate that nurses' perceptions accurately reflected changes in service and delivery patterns and suggested that home care nurses "need to engage proactively in defining and promoting their role in the health care system" (Kemp, Harris & Comino, 2004, p. 313). However their perception of work and reality of their work did not make reference to the unplanned and unpredictable factors affecting workload.

Within the literature, additional labels have been placed on this work such as "invisible work", "indirect care" and "episodic care" but descriptions remain unclear (Kane, 2008; Kirby & Hurst, 2014). Many authors suggest that attention and new recognition of these factors needs further examination (Baldwin, 2006; Evans, 2002; Jackson, Leadbetter, Manley, Martin & Wright, 2015). An exploration of these factors would "help to identify how much work is planned and how much is unplanned" as well as enable "the analysis of reactive versus proactive workforce activity to balance the supply-and-demand-driven model currently pervading workforce planning" (Jackson, Leadbetter, Manley, Martin & Wright, 2015, p. 132). Capturing the amount of time these factors affect the daily workload would allow us to build capacity for this work within existing and future workload measurement tools in home care.

Limitations

This literature review included primary studies around home care *nurse* case manager workload. This inclusion criterion was applied as it made the results easier to manage;

nonetheless, case managers come from many disciplines. Additionally, the majority of home care case managers are nurses (Huber & Craig, 2007; Joo & Huber, 2013; Park, Huber & Tahan, 2009). However, including other disciplines would broaden the findings and add perspectives about the factors that affect workload for a variety of case managers in home care.

Another possible limitation of this study is that the researcher is an experienced home care NCM with preconceptions around workload. However, through reflexivity, I attempted to open up my unconscious motivations and implicit biases through journaling. I also included a methodological approach for research decisions throughout this literature review which would further prevent bias (Finlay & Gough, 2003).

Summary and Conclusions

This study highlights the fact that the work of a home care NCM is complex and can be reactive in nature. However, clarity is needed around further defining their workload and examining the connection between these two dynamics. A greater understanding of "unmanageable" workload could be achieved by an in-depth examination of the complex factors that affect it. Exploring the unplanned and unpredictable factors affecting their workload is suggested as a starting point for this work.

Existing and future workload measurement tools need to build capacity for these factors since workload equity amongst home care nurse case managers and home care teams is a desirable goal. However, before this can be achieved, we need a clear understanding of how this work affects their workload.

Future research is warranted in this area. An analysis of home care nurse case managers' perceptions of the unplanned and unpredictable factors affecting their daily workload is suggested as a way to provide us with a better and more well-defined understanding from a case manager perspective. It is important that we have a good interpretation of *what they do*, as well

as know *what is necessary for inclusion* in accurate workload measurement. Results from this study could ultimately lead to improved case management practice, equity of workload, more accurate staffing amongst home care teams and potentially better client outcomes.

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Conflict of Interest

The author has no conflict of interest to declare.

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Chapter Three

Exploring the Unplanned and Unpredictable Factors Affecting Home Care Nurse Case Manager Workload: A Secondary Analysis

Background

Home care is viewed as an increasingly important component of health care service delivery in Canada and other countries (Canadian Home Care Association, 2013; Canadian Medical Association, 2009; Canadian Nurse, 2015; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009; Kirby & Hurst, 2014; Mildon, 2011; Turjamaa, Hartikainen, Kangasniemi & Pietila, 2014). This increased recognition has lead to the continual growth of home care and is creating an emerging need to improve the use and efficiency of home care resources including case management practices (Bain & Baguley, 2012; Canadian Home Care Association, 2013; Canadian Nurses Association, 2013; Cawthorn & Rybak, 2008; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009; Joo & Huber, 2014). Understandably home care and case management practice has become an important health care focus that is being studied by government health authorities, home care administrators and home care researchers (Chappell & Hollander, 2013; Joo & Huber, 2014).

Due to the fact that people are living longer and the baby boomer generation is now entering the over 65 year demographic, there is an increasing strain on the health care system (Chappell & Hollander, 2013; Mander, 2014). Hospitals are discharging patients home earlier and relying on home care to provide both increased acute care and supportive living services for clients in their home environment. Since home care is considered a cost effective health care resource (Chappell & Hollander, 2013), it is becoming increasingly important to expand these services and ensure that we are able to provide effective and efficient home care that is sustainable in the years to come (Joo & Huber, 2013; McDonald, Frazer & Cowley, 2013). Additionally, due to the recent

emphasis on client-centered care, home care is increasingly viewed as an appropriate health care service. When given the choice and provided with the appropriate service and support, people choose to live at home (Alberta Health and Wellness, 2008; Turjamaa, Hartikainen, Kangasniemi & Pietila, 2014).

Home Care and Case Management

Case management is one of the unique and complex responsibilities of the home care case manager (Collister, Slauenwhite, Fraser, Swanson & Fong, 2014, Joo & Huber, 2014; Joo & Huber, 2013). A case manager is responsible for the coordination of care and services in the client's home and community setting. Additional case management responsibilities include: reducing hospital admissions, cost containment, enhancing client/family outcomes, ensuring continuity of care, client advocacy and reducing barriers to assessment and treatment (Fraser & Estabrooks, 2008; Joo & Huber, 2013). Home care case management is emerging as an increasingly important means of providing quality, cost-effective care to clients in the community (Ervin, 2008; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009).

Now, more than ever, there is an increased awareness of the need to develop a better understanding of home care case manager work and workload. Further research in this area is required because "hard data about what case managers do and how they perform their roles has been limited" (Park, Huber & Tahan, 2009, p. 694). The literature lacks adequate description of case manager interventions, case manager workload concepts and terms including factors that affect their workload (Fraser & Estabrooks 2008; Park & Huber, 2009; Park, Huber & Tahan, 2009). The lack of understanding makes it very difficult to accurately measure the workload of case managers on home care teams. Diem, Alcock, Gallagher, Angus, and Medves (2001) suggest that if home care case manager work could be described more accurately by defining related activities and factors that influence it, then workload could potentially be measured more

accurately leading to more efficient and effective delivery of home care services. Workload parity within home care teams would promote better client care and outcomes, increase team morale and decrease overtime amongst case managers. A greater understanding of case manager work would allow teams to organize and coordinate their workload more effectively. This could foster proactive care versus reactive care in the home (Jackson, Leadbetter, Manley, Martin & Wright, 2015). Further research could also provide the much needed support and recognition for formal case management education at the university level (Park, Huber & Tahan, 2009).

Factors Affecting Workload

Case management is a complex phenomenon within home care as there are many factors that can affect a case manager's daily workload. The home care environment and the everyday workload of case managers are unique when compared to other areas of health care delivery. The case manager has to travel by vehicle to and from each client and usually works independently in a client's home. There are other ill-defined factors that influence their work such as weather issues, difficulty obtaining access into a home, less than ideal work environments to carry out assessments and treatments, and a lack of necessary supplies to name a few. In addition, complex family dynamics can be challenging and time consuming to navigate. These and other factors are often unknown and unpredictable particularly with new, highly frail, or medically complex clients. Multiply these issues by each client and family on a case manager's caseload, and it is apparent how these things can have a substantial impact on a case manager's work and workload.

The literature is scant, as well as vague, in regard to unplanned and unpredictable factors affecting workload. This results in a poor understanding and explanation of what these factors may encompass, as well as their individual and overall impact on case managers work and workload (Baldwin, 2006; Brady, Byrne, Horan, Griffiths, MacGregor & Begley, 2007; Byrne, Brady, Griffith, MacGregor, Horan & Begley, 2006; Collister, Slauenwhite, Fraser, Swanson &

Fong, 2014; Grafen & Mackenzie, 2015; Grange, 2011; Kirby & Hurst, 2014; Mildon, 2011; Pontin & Lewis, 2008; Reid, Kane & Currran, 2008; Stuart, Jarvis & Daniel, 2008; Willis, Henderson, Toffoli & Walter, 2012). There is a need to first understand the nature of all the factors that affect case manager work and workload. Such insights may advance not only accurate measurement of work and workload, but also intervention studies that can improve case manager workload.

Methods

Aim

The aim of this exploratory study was to gain greater understanding of the unplanned and unpredictable factors that affect home care nurse case manager (HCNCM) workload. The specific aims were to identify and describe the factors that affect work and workload of home care nurse case managers. With greater understanding of the unplanned and unpredictable factors that affect workload, improvements could be made in assigning workloads that are fair, equitable and reasonable.

Ethics Approval

Ethical approval was received through the Health Research Ethics Review Board at the University of Alberta, Edmonton, Alberta, Canada. Informed consent was not necessary as this study was a secondary analysis, and the Primary Investigator (PI) for the original study had received informed consent for secondary analysis from the original participants.

Design

This study is a secondary analysis of an existing data set that was collected in 2012 through the *Data for Improvement and Clinical Excellence (DICE) Study (Substudy II - Case Manager)* with Dr. Kimberly Fraser as the Primary Investigator (PI). With secondary analysis, pre-existing qualitative data from completed research studies may be reanalyzed to answer different research

questions (Heaton, 2008). This method provides "a mechanism for extending the contexts of which researchers are able to use and interpret qualitative research data" (Thorne, 1998, p. 548). An overview of the benefits of conducting a secondary analysis can be found in Figure 3-1. The dataset for this study was obtained through a mode of secondary analysis called *informal data sharing* whereas the PI of the original study may or may not be involved in the analysis of the data (Heaton, 2008). Further details about the original study can be found in Appendix A.

Figure 3.1.

Benefits of Secondary Data Analysis

- Less time-consuming as data is collected and readily available
- Less cost as data has been collected and usually transcribed
- Low risk to participants (if data is de-identified)
- Researchers usually collect more data than they initially analyze
- Typically contain large data sets increasing the generalizability of findings
- May result in new findings that contribute to existing programs of research
- Fosters inter and intra professional relationships both within and outside of nursing
- Rich data is difficult to collect by one researcher (i.e. for a Master's thesis)

(Dunn, Arslanian-Engoren, DeKoekkoek, Jadack & Scott, 2015)

Dataset

Transcripts from semi-structured interviews (n=3) and three focus groups (n = 12 HCNCM's) were accessed. In addition, hand-written HCNCM journals (n=4) were also obtained. Two of the HCNCM's were involved in more than one data category resulting in a total of 17 HCNCM participants in this study. Although there were additional case managers from other disciplines (i.e., physical and occupational therapists, and social workers) in the

original study, they were excluded from this study as they did not meet the inclusion criteria that participants must be a registered nurse home care case manager. All participants referenced in this study are referred to using first name pseudonyms. The participants came from three different home care offices within the Edmonton Zone of Alberta Health Services in Alberta, Canada.

Data Analysis

The goal of this study was to uncover HCNCM perspectives on the unplanned and unpredictable factors that affect their work. The specific research question was: What are home care nurse case managers' perceptions of the unplanned and unpredictable factors that affect their workload?

Data analysis was conducted with an interpretive descriptive (ID) approach (Thorne, 2008). The overarching goal of ID is to answer an applied health research question that will create a deeper understanding of a phenomenon that is of practical importance to the applied disciplines such as nursing (Thorne, 2008). A qualitative exploratory approach was used for this study to investigate "a clinical phenomenon of interest to the discipline for the purpose of capturing themes and patterns within subjective perceptions and generating an interpretive description capable of informing clinical understanding" of home care nurse case manager workload (Thorne, Reimer Kirkham & O'Flynn-Magee, 2004, p. 5). In this study for example, I focused on the unplanned or unpredictable factors in a HCNCM's day from their individual perception and stated experiences so that a greater understanding of how this phenomenon affects their workday could potentially support improvements to workload assignments and inform further measurement and intervention studies on HCNCM work and workload.

Initially "broad-based" coding, such as "Category A" was used while looking for themes and patterns in the data (Thorne, 2008, p. 145). Care was taken to not fine-tune the coding too

early in the analysis process (Thorne, 2008). "Attention grabbers" such as asterisks in the margins of the transcripts as well as note taking and highlighting of apparent thematic similarities was used throughout the analysis process (Thorne, 2008, p. 148). These techniques are in line with developing analytic thoughts that are part of the process of interpretive description rather than any set or prescriptive coding system (Thorne, 2008). After the initial coding process was completed, two mind maps were developed to allow an evolution of the data analysis. This visual exposition of ideas was used to promote an overall holistic awareness and promote thinking that will illustrate further relationships among various themes, concepts and ideas (Mento, Martinelli & Jones, 1999). Throughout the mind map analytic activity, I discovered themes and patterns and subsequently fine-tuned them through a "descriptive coding" process (Saldana, 2013, p. 88). This process "leads primarily to a categorized inventory, tabular account, summary, or index of the data's contents" (Saldana, 2013, p. 89). It is the foundation for "Second Cycle coding" and assisted me to advance analysis and interpretation of the data (Saldana, 2013).

Rigor

I maintained the credibility, dependability and trustworthiness of this study (Guba, 1981; Guba and Lincoln, 1989) by a) the use of *audit trail*s to document my decision trail and increase transparency of my analysis process (Richards & Morse, 2013; Thorne, Reimer, Kirkham, O'Flynn-Magee, 2004), b) the use of an *inductive nature of inqu*iry (Thorne, 2008), c) the thorough, *in-depth description and direct quotes* of the data presented (Thorne, 2008), d) *triangulation* through the use of 3 different types of data sets to answer the research question (Morse, 2015; Streubert & Carpenter, 2011), e) the use of bracketing to prevent bias (Richards & Morse, 2013), and f) *validity check*ng to foster data credibility (Krefting, 1991). Confidence in the credibility of the data, as being an accurate reflection of HCNCM experience and perception of their workload, was achieved through researcher credibility, as I have more than 12 years of

recent HCNCM experience in the Edmonton zone of Alberta Health Services. As Maslow (1966) stated, "there is no substitute for experience, none at all" (p. 45). Through the use of bracketing (Richards & Morse, 2013) which included regular check in meetings with my supervisor to review findings, discussions with HCNCM colleagues and validity checking (Krefting, 1991) during data analysis, I was able to use my work experience, NCM intuition, self-reflection and thinking to confirm the validity of the findings, thus verifying the trustworthiness of the study (Finlay & Gough, 2003).

Results

I uncovered a number of unplanned tasks and the unpredictable work that case managers do in their workday. Four overarching themes were revealed: (a) unplanned time spent in consultation with others, (b) work related to unpredictable technology failures, (c) "do-overs" related to unexpected re-coordination and re-organization of workload, and (d) unexpected phone calls and voice messages requiring timely action. I have organized my results by first describing the context of each overarching theme in relation to home care and case manager work. Following that description, I illustrate related subthemes that were found under each main theme. An overview of the themes and sub-themes can be found in Table 3-1.

Table 3-1: Themes and Sub-themes

Theme 1: Consultation with others
Sub-theme: Access to support
Sub-theme: Mentorship
Theme 2: Technology failures
Sub-theme: Information technology (IT) support availability
Sub-theme: Hardware and software failures
Theme 3: Do-Overs
Sub-theme: Locating clients and families
Sub-theme: Poor or lack of communication
Sub-theme: Supply management

Theme 4: Phone calls and voice messages
Sub-theme: Urgency of calls and voice messages
Sub-theme: Required action related to call or voice message
Sub-theme: Sheer volume of phone calls or voice messages

Theme 1: Consultation with Others

The first theme that I discovered in the data was consultation with others. Home care teams usually start and end their day in a home care office. A team consists of case managers and while most tend to be registered nurses, there are also case managers who could be a physical or occupational therapist, or social worker for example. Other team members consist of clinical educators, professional practice leaders, program managers and a variety of direct care providers. The direct care providers do not case manage but provide interventions and care specific to their discipline for the clients that case managers oversee. These disciplines can include licensed practical nurses, occupational therapists, physiotherapists, social workers and dieticians for example. The team environment is such that it is very common to share information, ask for advice or offer assistance to each other. Usually this is formal discussion at team meetings, but it could also be informal discussion between small groups of two or three. Because of the nature of care being provided in the home, case managers and direct care provider staff spend a large part of their day working independently in the community. This can make it difficult to access team members, or have a question answered or concern addressed in a timely manner. This leads to many HCNCMs having to spend unplanned time attempting to find information or the appropriate person to help them with an issue, which adds time to their workday, and this time is usually taking away from time that could be spent with clients. That is, they might cut a visit short to get in their car so they can consult or reach people about a particular issue or concern that they need assistance with prior to providing care or implementing service. In addition, many new

employees require mentorship on a daily basis that isn't always planned for in daily staffing numbers. Therefore, in relation to the main theme of consultation are the subthemes of i) access to support, and ii) mentorship.

Access to support.

HCNCMs spoke about not being able to access more experienced staff or discipline specific assistance when needed. They needed this access for advice or to answer questions. When they can't reach the help they need, this adds to their workload and often unplanned overtime and increased stress. For example, one HCNCM states in her journal: "…there were fewer permanent position staff RN's on today so there were fewer people available to ask questions when needed." (*Penny*). Another exemplar is:

> "Very busy day today. Had a few people call in [sick] so had 2 people added to the list to see. Again not many permanent position RN's on today, many casuals. Got my questions answered, just took a bit longer. I was unable to finish on time, needed an extra hour to get my work done" (*Penny*).

The lack of available experienced staff leads to unexpected increased case management workload and stress.

> "I find that when there are few regular staff RN's on I get more of the 'case management' issues that I may or may not be familiar with, with fewer people to ask. Suggested that maybe I could get more 'case management' issues when there are more regular staff there as well so I will feel more comfortable and less stressed when presented with these issues" (*Sarah*).

Other case managers elaborated on the effect of lack of supports. In her journal, one HCNCM talks about how time is unexpectedly 'wasted' in her day when she can't find experienced staff to help her:

> "No one able to help as not in office this am. At times being in a rural office with few supports it is a lot of self-learning between cm [case manager] and finding things out on our own. A lot of time gets wasted trying to figure out all the steps….." (*Jana*).

She had another entry in her journal demonstrating the feelings she experienced with unexpected time management challenges and how limited access to support can stop them from doing their intended work such as documentation:

> "Frustration with meditech [home care documentation software] for service auths [authorizations] and no one being able to answer questions about whether wellness choice is appropriate for clients only receiving injections" (*Jana*).

Mentorship.

HCNCM's talked about how they were approached frequently by inexperienced or casual staff that required unscheduled mentorship throughout the day. HCNCM's perceived this extra-unplanned work as a factor that they knew would lead to unplanned overtime, but they felt compelled to help their colleagues. One HCNCM, in a focus group, explains:

> "And there's a fair amount of casuals that are stuck [not knowing what to do] so we're spending time at the end of the day or whatever and no one gripes about it 'cause they're all really good in this office to just come along side someone and help them through" (*Amy*).

Unplanned but necessary mentorship required by new, less experienced, or casual staff added to the workload and stress by the regular staff. HCNCM come to resent this added unexpected responsibility when they perceive it is something that the organization should have built into the system. One HCNCM in her journal notes her frustration with having to help others unexpectedly while managing her own workload as follows: "Frustrated [today]. RN unfamiliar with rural area and clients so I had to explain treatments, where to drive, how to get there etc…"

(*Gail*). Although HCNCMs shared that they know it is an expectation that senior staff assist and mentor casual and junior staff, this requirement is not scheduled into the case manager's day and at times can be an excessive time demand. The informal mentoring is often unpredictable and detracts HCNCM's from their workload and often leads to unplanned overtime at the end of their workday.

Theme 2: Technology Failures

The second theme that came through in the data involved technology failures. Accessing information technology (IT) support both in the office and from the client's home can be an unexpected addition in time required to their workday. Case managers described both a lack of timely support for IT failures, as well as hardware and software issues, as unpredictable events affecting their workload.

Information technology (IT) support availability.

When equipment or software is not working, or staff members have an IT question while doing point of care charting in the client's home for example, a timely response from IT is necessary. Case managers reported much frustration with the lack of access to IT support staff. One HCNCM expresses her frustration with IT support as follows: "The timeliness of our helpdesk people getting back to us from IT; stuff like that has been big barriers" (*Winonna).* Another HCNCM in her journal writes: "frustration with Meditech [home care documentation software] for service auths [authorizations] and no one being able to answer questions …" (*Sarah*). Another HCNCM writes in her journal:

> "Completed my first reassessment after one year in Meditech and tools to do this were inaccurate, not working. No one able to help as not in [the] office this am. At times being in a rural office with few supports it is a lot of self-learning between cm [case management] and finding things out on our own. A lot of time gets wasted trying to

> figure out all the steps of Meditech. The tools are so cumbersome and not user friendly" (*Penny*).

Many offices have 'superusers' who have advanced training in Meditech; however sometimes even advanced users don't have the answer for staff and this leads to more unplanned time spent trying to figure out how to document and request services for a client. For example one HCNCM states: "I tried twice to put in the services that this family is looking for and I couldn't do it, and I've had two super users [help me]. And the super user, it took her an hour and a half to figure out how to put the package together" (*Sarah*).

A HCNCM talks about how dealing with technology failures in the home and difficulty with receiving timely IT support takes away from the ability to develop good client rapport. The case manager can be unexpectedly focused on a computer glitch, and the unplanned task of contacting IT for example, and this takes away from the care she could provide. She states:

> "We're unable to develop a rapport with our clients. The system and the technology undercut us at every turn and so not only do they (clients/families) have high expectations of us, but we look like idiots because we can't provide. We care, we want to and it affects us in every way profoundly" (*Leah*).

Hardware and software failures.

In addition to difficulties with accessing appropriate IT support, specific problems related to software and hardware were often unpredictable and reported by case managers to add to their daily workload unexpectedly. One HCNCM discusses the result of poor internet connectivity in the community often led to additional unplanned workload later in her day. She states in her journal: "Loss of programming has led to > 24hr [more than] of lack of internet, community access. Cannot take computers out so part of assessments missed and return phone calls had to be made later" (*Gail*). One case manager wrote about various software/hardware issues in her

journal: “Called IT because air card did not work with new tablet, needed new software installed … called IT because I could not transfer a client into Pixelaire [wound care software]” (*Sarah*). Another HCNCM states: “called IT because I could not log on to computer in clinic room” (*Paul*). Case managers said they are encouraged to use their computer in the home for point of care charting as it is considered best practice and should be ultimately time efficient. Ironically, with hardware or software issues, time can be lost. One HCNCM shared how slow computers affect her day:

> “I found again that my job is so much easier if I just go out there with a piece of paper instead of a computer screen and waiting for it to load or type something in and then it doesn’t show up and it shows up and you’ve already tried again and then you have to delete. That happens a lot.” (*Cora*).

During an interview, one HCNCM describes her frustration with hardware and how it takes away from time with the client:

> “Fighting with the tablet ….often I’ve been taking a paper copy and I was jotting lots and lots of notes on the paper copy and I go back and enter it ’cause then I have a better opportunity to actually focus on the client instead of fighting with the tablet and then it doesn’t work and you’re wondering if the wireless is gonna work” (*Laura*).

Internet connectivity and the use of aircards particularly in rural areas is also a problem that unexpectedly affects time management. “Yeah, it’s [the aircard] really slow; seriously slow”. Issues with technology, specifically hardware and software are usually not expected. In this study, when these problems occur in the community during home visits, they create great problems not only with time, but also with their ability to do their job well. With limited IT support as well as unplanned interruptions including poor internet connectivity, these technology

failures add to the unplanned and unpredictable events affecting the daily workload of the HCNCM.

Theme 3: Do-Overs

Coordination of care and services for the community-based client is one of the main functions of HCNCMs. They spend a large part of their day coordinating and organizing care of client's needs. However both client-related factors and system-related factors create unpredictable events and issues for HCNCM that affect their work. HCNCMs reported that they were having to re-organize and re-coordinate client's needs and services and that took up extra-unplanned time during their workday. These "do-overs" were related to locating clients and families, poor or lack of communication between stakeholders, and supply management.

Locating clients and families.

The coordination of a home visit, tracking down clients, or family members if the case manager is unable to contact the client, can add unexpected time to the HCNCM's day. This affects case mangers whether the clients live in their own single-family dwelling or a congregate setting such as a senior's lodge (where seniors live independently in a small apartment) or an assisted living facility. Attempting to locate clients for timely home visits in the lodge environment were found to be exceptionally difficult. One HCNCM wrote two entries that illustrate this:

> "It is sometimes difficult and time consuming to locate your clients [in a lodge environment] since a lot of them spend most of their time outside their rooms (especially if you do not know what they look like)" (*Gail*).
>
> "It look a lot longer to finish my client list today because I went to [a lodge] in the afternoon and absolutely none of my clients were home at that time. It took me three tries to get three out of the four clients I needed to see." (*Gail*).

Another HCNCM commented that "seeing clients in the lodge as they go for recreational activities in the afternoon (after lunch), making your day a wild goose chase" (*Brooke*).

Poor or lack of communication.

Ineffective communication by the client or family can cause issues that lead to increased and unplanned time at a home visit. For example, one HCNCM wrote about her frustration with not being informed by the family caregiver about a lock change:

> "Caregiver was not at home! Very frustrated as door was locked, combination on lock apparently changed, as I cannot open the lock box to get the key to open the door. Finally after a half hour, caregiver came home as was to report to home care case manager if there are any changes so home care staff can get access into client's home." (*Sarah*).

This illustrates the time spent sitting waiting for someone to come home, or going back if they don't show up. Time that could have been effectively utilized as planned if someone had notified the HCNCM of the change.

Poor communication by other health care providers, particularly in other health care sectors, can also lead to unpredictable workload. This often happens around changes in physician orders, a prescription, or a hospitalization. For example, one HCNCM comments in her journal how she was not informed of hospital admissions: "I went to visit 3 people today and all were in hospital and neither service provider [agency] or myself was notified" (*Gail*). The HCNCM took the time out of her/his day to do the home visit as planned, but the lack of communication by the acute care sector in this situation has created additional unplanned work for the HCNCM. This creates a ripple effect as the HCNCM will make additional phone calls to determine what is happening, how long the client is in hospital, put other visits on hold and do the necessary extra documentation for follow up.

Supply management.

HCNCM frequently spoke about how the current policy and procedures around supplies negatively affect their workload because it leads to unplanned work and unexpected extra home visits. For example, since HCNCMs work is primarily out of the office and throughout the community, they need to organize their supplies needed for the day for various tasks. This might include supplies for wound care, home parental therapy and other clinical procedures for the client. Since formal supply inventory lists do not exist for individual clients, case managers rely on each other to order or suggest supply needs for the client's next home visit.

The lack of organization or standard processes for supply inventory in individual homes can lead to the case manager gathering supplies at the last minute or it can necessitate a trip back to the office if supplies are missing. This kind of unexpected event is not planned and creates a disruption to the HCNCM's day. One HCNCM describes her frustration:

> "No supplies [were there] for me to do a complicated vac [vacuum sealed] dressing. Supplies ordered last week and no notes left from other staff members that they looked into it. This delayed my exit from the building to start my day because I was scrambling to get supplies delivered and had to call several people" (*Linda*).

Another HCNCM commented:

> "If we're way in the north by Capilano or by Ellerslie and you're like, "oh my, I have to come back to get a catheter, because that catheter, they didn't have any or whatever, you know, it's a lot of unexpected travel time to go there and back" (*Teresa*).

Lack of a formal process for supply management with individual clients can add unexpected workload for the HCNCM. They are unexpectedly scrambling to figure out what they need for specific tasks prior to starting their day. Unexpectedly they may need to double back to the office to pick up more supplies that were supposed to be available in the client home. This can make them late for scheduled home visits and then they are forced to cut valuable time spent with

the client in order to make it on time to their next home visit. This creates a ripple effect of less time spent with clients and families.

Theme 4: Phone Calls and Voice Messages

HCMCMs make and receive phone calls and voice mails on a daily basis. The volume and urgency of calls and messages vary day-to-day, both of which HCNCMs say are difficult to predict. Many HCNCMs made reference to the excessive time spent dealing with phone calls and messages that required them to take some form of action and often in an urgent manner. The call to action, whether urgent or not, may be as simple as returning a call. Case managers reported that these messages, along with additional phone calls that are both received and returned, often significantly alter their planned workload for the day. Three sub-themes emerged within this category: (i) urgent nature of phone calls and voice messages, (ii) action-necessitating phone calls and voice messages, and (iii) excessive volume of phone calls or voice messages dealt with each day.

Urgency of calls and voice messages.

HCNCMs constantly need to reorganize their workload due to the urgent nature of the calls or messages that they receive. Issues that arise can have an influence on each other and are not always mutually exclusive. One case manager explains "10 messages on my phone. Each one with something to be addressed ASAP…I think it's those messages on the phone that keep coming with different issues that have to be dealt with now…. and you feel like can't this wait for another day" (*Sadie*). With home visits and other case management duties already booked into their daily workload, the additional unexpected issues that arise from the calls and messages they receive cause HCNCMs to have an excess of tasks and priorities that the only strategy to meet the daily need is to miss their breaks or log overtime. One HCNCM states: "I have to do overtime to finish my assignments…. I was tired" (*Holly*). Another HCNCM describes her day: "Bad day,

lots and lots of overtime, trying to finish off little bits ….[I had to] phone the doc [doctor] at home…" (*Sarah*).

The urgency of these messages particularly adds to a HCNCMs daily work and leads to feelings of being overwhelmed with their workload. In her interview, one case manager told us how urgent calls and messages affected her:

> "….coming out of the meeting with a big list and then coming in to 12 messages on my phone all with different issues to be dealt with now; so that's immediately overwhelming and you think, How am I gonna do this? Just that moment when you're trying to get out of the office and the phone rings and you're like 'Oooh,' and you just feel like, 'Oh my God, I can't do this" (*Teresa*).

Less urgent calls and messages can also cause havoc with previously laid plans requiring last minute reorganization as one HCNCM explains:

> "We'll do our planning meeting in the morning, get all sorted in that respect and then I do all my telephone call stuff and then of course things change, right? The nurses start phoning, people/things change. As well as your 15 messages that are probably on your phone in the morning, so it can kinda change your day" (*Jana*).

So, not only do the actual phone calls, voice messages, documentation take time to deal with but the effect on time and work is cumulative or growing, or morphing as they need to take time away from their intentional work and take some time to rework their day, which could involve more phone calls to reschedule and often giving the client advice or guidance until they can come out to see them.

Required action related to call or voice message.

The nature of the call or message was related to the unpredictable impact on their workload. For example, HCNCMs spoke about different clinical issues whereby clients or family members

call needing a somewhat urgent intervention such as fixing a leaking ostomy wafer, dealing with a plugged peripheral inserted central catheter (PICC) line, or reporting high blood glucose levels. Although unexpected clinical problems are known to arise, home care is not yet organized in a way that makes it easy to deal with more urgent issues. When calls come in that require an urgent unplanned home visit, most often it falls to the client's case manager, or if they are not there, to the covering case manager. The time needed for the staff member to get out to the home as soon as possible often affects more than one HCNCMs time to make it happen. HCNCMs shared that it can take substantial unexpected time to plan and organize. Penny explains in her journal:

> "I had a huge dilemma this morning. I had a catheter that had to come out before noon and a very sick client that called requesting a nurse to come out and check his blood sugar and make him some toast and stated he had had some falls the previous day, but was refusing to call his daughter or an ambulance. Fortunately Marianne had some time to go out to see my sick client (who I was initially only going to see for a toe dressing). She convinced him and his daughter to go to emerg, where they assessed he had a stroke. If Marianne couldn't have gone out, I would have had to pull the catheter during my lunch hour and I had a pre-arranged visit with the ET [enterostomal therapy] nurse at 1300-1330h. This made for a very stressful day……" (*Penny*).

These types of scenarios lead to last minute, unexpected increases in their workload and quite often, also unplanned overtime for the HCNCM. Amy explains in her interview:

> "I'm running late coming back and I've got so much work to do from the day already, but then there's those [phone] messages that have to be dealt with too … it's 4 o'clock [workday ends at 4:30] and …. I know I'm gonna have to be there every last minute 'til 6 o'clock to get all that [dealing with phone messages] done, otherwise tomorrow it

> [workload from dealing with phone messages] rolls onto tomorrow …[and] I'm not there tomorrow and I have to come in [on my day off to deal with the extra work from the phone messages]..." *(Amy*).

Frequently HCNCMs receive phone calls or messages that require them to drop what they are doing in order to accommodate an extra-unplanned home visit. Tara explains, "…you can get a call and you have to do an extra home visit or something changes" (*Tara*). Then upon return to the office they will need to regroup and finish what they were working on. These types of distractions can require the case manager to be constantly reprioritizing their workload throughout the day leading to extra time spent at work.

Sheer volume of phone calls and voice messages.

Many HCNCMs talked about "excessive" phone calls and messages during their workday. While HCNCMs expect phone calls, some days it seems like the phone never stops ringing and expectations of clients can cause unplanned reprioritizing of home visits. Penny explains in her journal, "Overwhelmed today, lots of phone calls and things. Danielle came to help but one client I asked her to call said that I was his CM [case manager] and I should be calling him. This made me angry…." (*Penny*). She also talks about her frustration due to the unpredictable timing and number of voice messages she receives,

> "I think of those days where things get thrown in and you thought you could come back and get all your work done and be out of there on time and then the six messages, those days are days when I think I can't do this job, it's too much" (*Penny*).

In her journal one HCNCM writes about the number of calls made and received in one day and how these unplanned calls can alter her workday. She writes that she received "multiple calls from the agency about clients…. Several calls from acute care hospital wanting to discharge a client home before he was truly ready…..unplanned lengthy conversation with mental health

nurse" (*Sarah*). At the end of the day, she writes about the effects from the excessive number of unexpected phone calls she receives in addition to other factors and workload: "I am annoyed that I had to stay late once again to complete my work. I don't feel we have sufficient staff at our … location to get all the work done considering our driving distances and excessive phone calls we need to make." (*Sarah*).

Being unexpectedly short-staffed also leads to an increase number of calls for HCNCMs. One explains, "Being the only case manager on, ended up taking multiple calls for many clients due to case management needs" (*Winona*). Winona also discusses the effect on her workload when short-staffed and having to deal with increased volume of messages that come from other HCNCM's caseloads:

> "So I think it's those messages on the phone that keep coming with different issues that have to be dealt with now and other people's caseloads too. When they're not there, those desks aren't covered by, a casual doesn't come in and be somebody for the day, they just take up the extra work. So issues that come in, if you're one of two or one of only people on that team, you get all the messages without everybody else. So you don't know that client, go searching into them and then you feel like can't this wait 'til another day? Give it to the case manager….. so it's those extra things that come into the mix that really make it a bad day for me." (*Laura*).

HCNCMs perceived the urgency of some calls, the required action, and the sheer volume of calls and voice messages that they must deal with on a daily basis as often unpredictable thus altering their workday and often leading to increased stress and overtime. Covering for other case managers, due to inadequate staffing levels also affected the volume of calls and unpredictability of new issues requiring action by the covering case manager. As HCNCMs reported, these factors presented frequently and led to increased stress, anxiety, and overtime in

many cases. "It [workload] feels like an avalanche always just about to come on to you" (*Sabrina*).

Discussion

This study is the first study that I am aware of that focuses on the unplanned and unpredictable factors affecting HCNCM workload. HCNCM's work within a system designed to provide quality client care for optimal client outcomes. The work they do has implications for both the clients they serve, as well as the home care program and the health care system of which home care is a part. I will draw attention to three significant areas in this discussion including HCNCMs' work and its effect on: (a) client-centered care and client outcomes, (b) available health human resources and home care funding, and (c) case manager job-related stress and frustration with the described workload. While most of what was uncovered can be said to be a part of the case managers work and workload, it is the nature of the findings and the fact that they are either unplanned or unpredictable that need attention.

Effect on Client-Centred Care and Client Outcomes

Client-centred care, also referred to as patient-centred care, is defined as "as a way of providing care that incorporates valuing patient differences, including the patient in decisions, listening, advocating, and coordinating care, as well as promoting health, wellness, and disease prevention" (Lusk & Fater, 2013, p. 91). This time consuming holistic approach to care is desired by HCNCMs. However, as various unplanned and unpredictable factors arise throughout their workday, HCNCMs have difficulty maintaining all aspects of this approach. They constantly need to reprioritize their tasks and their work to ensure that clients receive the care that they need. The reprioritizing and juggling that they do on a daily basis has a direct effect on client care as case managers can be unexpectedly and unintentionally pulled away from specific visits, important discussions with clients and families and planned client follow up. For example,

HCNCMs talked about having to do time sensitive home visits, to fit in a more urgent or time sensitive task. The time HCNCM invested to deal with IT issues and failures ended up sacrificing time intended to be spent on clients and families. It was evident that the concerns HCNCM raised about the unplanned and unpredictable work they juggled with on daily basis affected their ability to be as client-centred as they intended and desired to be.

The unplanned and unpredictable work affected the coordination of care on a broader level as well. For example, when HCNCMs have to deal with administrative tasks, juggling their visits and phone calls or IT issues that prevented them from accessing pertinent client information or doing timely documentation (for example when charting the Resident Assessment Instrument - RAI's), other home care staff such as transition coordinators, practice leads or the case manager on nights and evenings may not have access to important information. It can cause care coordination delays and negatively affect clinical and administrative workflows between the members of the interdisciplinary team. Effective care coordination amongst an interdisciplinary home care team requires the capturing and sharing of timely vital information if positive client outcomes are the ultimate goal.

A recent study conducted by Koru, Alhuwail, Topaz, Norcio and Mills (2016) suggested that a focus on "quality improvement" in the area of IT and home care is needed if we are going to strive towards higher quality of care, improved outcomes and cost effectiveness. This study clearly supportes the authors' findings. Case managers told us that interruptions, failures, and software challenges affected their clients and their intentional work with clients. Clearly, an increased quality improvement focus as well as increased funding are required if we are to achieve a better interaction and result with IT in home care.

HCNCMs were specific when they talked about the sheer volume of phone calls and voice messages they received throughout the day and the effect on their clients. Although making and

returning calls and messages is an expectation of their job, at this point there is not a way to predict how many calls they get and when they are most likely to occur. Often important and urgent calls would affect their daily schedule making them late for a home visit or requiring urgent re-coordination of care with a colleague. HCNCMs gave examples of negative client outcomes, for example not being able to deal with a leaking ostomy wafer or blood glucose issues that come through as urgent messages that require a timely response. Home care is not an urgent care service, nor is it staffed or funded to deal with urgent calls requiring immediate unplanned home visits. Yet, there is an expectation that HCNCMs will deal with pressing types of issues that can prevent hospital emergency room visits or admissions. If HCNCMs are expected to provide client-centred care and service levels that will result in optimal client outcomes, they need more support to deal with the unpredictable volume of phone calls, messages and the issues that arise from them.

Effect on Available Health Human Resources and Home Care Funding

Home care teams are typically staffed with case managers that are matched with caseloads and number of clients according to their full-time equivalency (FTE) (Abell, Hughes, Reilly, Berzins & Challis, 2012; Auckland, 2012). Although an attempt is made to consider the type(s) of clients and their unique needs when looking at daily staffing numbers on a home care team, it is not current practice to add case managers for "just in case" situations or to deal with any unpredictable or unplanned work that may arise. This causes many HCNCMs to create "work arounds" where they implement a stopgap solution in order to temporarily address an urgent issue.

It is often the unplanned and unpredictable work that leads to overtime in many instances. This directly adds to home care expenditures that were not included in the budget and contributes to increasing job stress that can lead to burn-out for case managers (Baillon, Simpson, Poole,

Colledge, Taub & Prettyman, 2009; Collister, Sauenwhite, Fraser, Swanson & Fong, 2014). Home care is continuing to grow with a 46% workforce increase predicted in the coming years (Samia, Ellenbecker, Friedman & Dick, 2012). There are gaps in current health human resource (HHR) needs predicted (Whittaker, Birch, MacKenzie & Tomblin Murphy, 2016) and home care will make up part of the overall HHR needs of the future. Home care administrators need to address this urgent human resource gap in their planning and ensure it is in line with home care growth expectations in order to meet future needs. HHR planning needs to include HCNCM job roles and responsibilities as well as the understanding that there will likely continue to be unplanned and unpredictable factors that affect HCNCM workload if it is their desire to decrease rates of overtime, HCNCM burnout and ultimately better client outcomes.

Case Manager Stress and Frustration with Workload

In this study, there were many examples of when HCNCMs were frustrated with the unplanned and unpredictable factors that affected their workload. HCNCMs spoke about working "overtime again" and "missed breaks" but still expressed their desire to provide quality care and positive client outcomes to their clients. Samia, Ellenbecker, Friedman and Dick (2012) state that home care work environments "have become increasingly stressful …..due to cutbacks in work resources, patent complexity and the introduction of new technologies" (p. 244). A major stressor uncovered in this study was that of "role overload" (Samia, Ellenbecker, Friedman & Dick, 2012). "Competing demands", such as the unplanned and unpredictable factors that HCNCMs experience, were compounded by other factors such as large caseload size, documentation demands and overtime (Samia, Ellenbecker, Friedman & Dick, 2012, p. 250). Additionally, the authors state "in home care there are more unknowns, each patient and home is unique and unpredictable" (p. 244) which also increases the stress a HCNCM can experience.

Job stressors perceived as unmanageable by HCNCMs in this study lead to burnout, job dissatisfaction and high turnover (Samia, Ellenbecker, Friedman & Dick, 2012).

Stress on the job is the "strongest predictor of nurse satisfaction and intent to leave the job" (Samia, Ellenbecker, Friedman & Dick, 2012, p. 244). As HCNCMs work through the unplanned and unpredictable factors that affect their workload during the day, many believe they have no choice but to work over their scheduled hours if they are to meet the most urgent needs of their clients. In spite of this, their work still piles up. Similar to Burke (2013), the HCNCMs in this study spoke about working through breaks and often taking home work. Inevitably, just as Burke (2013) and Samia, Ellenbecker, Friedman and Dick (2012) reported, case managers feared that their increasing job stress due to extra and unpredictable workload was contributing to job dis-satisfaction, more sick time and HCNCMs leaving the profession all together. Finding ways to support HCNCMs in their daily work, especially considering the unpredictable factors, has the potential to reduce sick time, staff turnover and ultimately result in better client care and outcomes.

Understanding the complex and often unique factors affecting their workload is a prerequisite to developing accurate human resource needs and workload measurement approaches in home care. There has been an ongoing debate with regards to the optimum number of clients per caseload that would allow a HCNCM to function effectively (Auckland, 2012; Cawthorn & Rybak, 2008). It has been a challenge for managers and home care administrators to ensure workload parity and accurate staffing levels as caseload transparency, along with an in-depth understanding of case manager work, are lacking (Brady, Byrne, Horan, Griffiths, MacGregor & Begley, 2007). The need to fully understand the work that case managers do is evident. Improved knowledge in this area has potential to increase the transparency and to support more accurate workload measurement in home care (Wright, Jackson, Manley, Martin &

Leary, 2015). Uncovering some of the unplanned and unpredictable work provides us with some insight on the effect it has on client-centred care and outcomes, HHR and case manager job related stress.

Study Limitations and Strengths

This secondary analysis of data from 17 HCNCMs was originally obtained in 2012. There may be a few changes or improvements. For example, the software program was fairly new to the included home care offices at the time, and it is now fully implemented. However, the fundamental approach, processes, and practices of home care case managers have not changed. Another limitation is that this study involved home care "nurse" case managers. The inclusion of other case manager disciplines could have broadened findings. However, it is important to note that home care case managers in Canada are predominantly registered nurses (Huber & Craig, 2007a; Joo & Huber, 2013; Park & Huber, 2009; Park, Huber & Tahan, 2009). Finally, the fact that this study is a secondary analysis, whereby primary data collection is not conducted is a general weakness. Additional one-to-one interviews after data analysis may have strengthened the credibility of the study results.

A strength of this study is that data was pulled from three types of sources (one-to-one interviews, focus groups and journals). This triangulation of the data adds to the robustness of this study.

Summary

To my knowledge, this is the first study that examines the unplanned and unpredictable factors affecting home care nurse case manager workload. Due to the aging demographic and the fact that people are living longer, we need to look at ways to ensure that all health care systems are efficient in including the practices and work of home care case managers, the gatekeepers of home care in Canada (Fraser, Estabrooks, Allen & Strang, 2009). In order to ensure HCNCMs

work efficiently and effectively within our health care system, we need to have a solid understanding of their work and workload. This information will assist us to provide better client care and positive client outcomes.

These findings uncover the unplanned and unpredictable factors that affect case manager work and provide a more full understanding of their effect on case manager workload. These unpredictable and unplanned factors ultimately affect the time case managers are spending with clients. This time challenge, although unaccounted for in planning, does lead to overtime costs as well as work related stress for case managers. Addressing the cause and effects of this added workload, with the goal of finding solutions to address it, will ultimately lead to a "win-win" situation for case managers, health care providers and the clients they serve in the community.

Further research is needed to build on this work and investigate the effects of these factors on workload planning, on measurement of case manager workload, and importantly with intervention studies that can improve case manager work and workload. After all, fair, equitable, and reasonable workloads will ensure more case manager time is spent on clients, their needs and desired outcomes.

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Conflict of Interest

The author has no conflict of interest to declare.

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CHAPTER FOUR

Summary

There is a recent increased awareness to expand home care to address the needs of our aging population. Due to the fact that people are living longer and the baby boomer generation is now well into the 65+ age demographic, there is a shift to focus our health care resources in areas that not only makes financial sense, but also allows people to live where they want to: at home (Canadian Home Care Association, 2013; Canadian Medical Association, 2009; Canadian Nurse, 2015; Chappell & Hollander, 2013; Hollander, Miller, MacAdam,; Kirby & Hurst, 2014; Labson, 2016; Mildon, 2011; Turjamaa, Hartikainen, Kangasniemi & Pietila, 2014). In order to meet the needs of the increased number of clients requiring home care in the future, there is new interest in discovering new and innovative ways to deliver home care that is both cost effective and efficient with positive client outcomes as the ultimate goal (Bain & Baguley, 2012; Canadian Home Care Association, 2013; Canadian Nurses Association, 2013; Cawthorn & Rybak, 2008; Hollander, Miller, MacAdam, Chappell & Pedlar, 2009; Joo & Huber, 2014; Reckrey, Soriano, Hernandes, DeCherrie, Chavez, Zhang & Ornstein, 2015).

This paper-based thesis was designed to closely examine a key feature of most home care programs that affect the client experience, case manager work and workload, specifically the unplanned and unpredictable factors HCNCMs experience in the course of their work. I carried out two research studies. Chapter two consists of my integrative literature review (Whittemore & Knafl, 2004), and chapter three is the report of my secondary data analysis using interpretive description (Thorne, 2008).

The literature review uncovered descriptions and increased my understanding about the unplanned and unpredictable factors that affect HCNCM work and workload. The results of my review revealed a gap in the literature. The lack of available information substantiated the need

for further research in order to unravel the complex unplanned and unpredictable factors of HCNCM work and workload.

I then did a secondary data analysis. My data set included transcripts from one-to-one interviews, focus groups and hand-written journals from HCNCMs. This study revealed factors that helped me gain a better understanding of what HCNCMs do, juggle and manage throughout their daily work. These findings can inform the development workload measurement tools in home care, as understanding HCNCM work and workload and striving for reasonable and equitable workloads can create a positive ripple effect for all stakeholders, importantly for clients and families. Based on these findings, I am able to make several recommendations from this research. They are related to quality of care and client outcomes, efficiency, and cost-effectiveness.

Recommendations for Quality Client Outcomes in Home Care

Attention on technology.

Technology failures, including lack of available information technology (IT) support, were one of the main findings in the secondary data analysis. I suggest that providing HCNCMs with enhanced software and hardware and better access to IT support would support case managers work with their clients. Since HCNCM's ought to be doing client documentation at the point of care (i.e., in the home), it is important that they have the right tools and support in order to do their job efficiently and effectively.

Team-based model of care.

Although HCNCM's already work within team environments in home care Alberta, perhaps a different approach to a team-based model of care would be more suitable to meet the complex needs of the clients we serve in the community. For example, smaller teams looking after a collective of clients. My secondary data analysis study revealed that HCNCM's workload is

affected by unpredictable large volumes of phone calls, unplanned time searching for assistance with clinical or case management questions, and unplanned work looking for supplies and re-coordination with others. Using a model of small teams could be more effective. For example, 5 - 10 HCNCM's could work with one physician, one nurse practitioner (NP), one clinical nurse educator (CNE) and/or case management practice lead (CMPL), one or two licensed practical nurses (LPN) and one clerical support person. Similar to primary care models, this approach would allow all team members to have better awareness of all clients within that caseload such as client concerns or issues, their care requirements, who their family caregiver is, and who are their care provider staff.

Such an approach would be conducive to working together more consistently and effectively, with the goal of creating a better client experience and better outcomes at a reduced cost. Another goal would be to utilize all members of the team more efficiently, maximizing everyone's scope of practice in order to increase capacity for a group of clients. A recent study conducted by Reckrey, Hernandes, DeCherrie, Chavez, Zhang and Ornstein (2015) revealed that a smaller team-based approach that appeared to cost more initially when considering the client to provider ratio, actually resulted in a cost savings particularly with access to a Nurse Practitioner (NP). The study also underscored the importance of "assessing the needs and capacity of non-physician members of the team" so that all team members are able to contribute to the needs of the client to their full scope and capacity (Reckrey, Hernandes, DeCherrie, Chavez, Zhang & Ornstein, 2015, p. 362). This approach to client care and management could promote 'the right job by the right person'.

Recommendations for Efficient and Cost-Effective Home Care

Supply management.

In my study, another finding involved the unpredictable amount of time HCNCMs spent locating clients and families for home visits as well as obtaining and ensuring supplies were in the home. As wound care accounts for about 50 percent of HCNCMs daily workload (Fraser, Lai, Nissen, Choo, Davenport & Gutscher, 2015; Hurd, Zuiliani & Posnett, 2008) and our wound care clinics are operating mostly full capacity in the Edmonton Zone of Home Living (Personal Communication, Anita Murphy, September 9, 2015), an innovative approach might be to utilize a mobile wound clinic that could move to where the need was greatest in the community. This would reduce the need for higher infrastructure costs, provide a visual community presence, be flexible to meet the needs of ambulatory clients, and also provide an additional wound care supply hub for HCNCM's doing home visits. It would also be more cost effective to establish more wound care clinics so capacity at the clinics would grow and home visits could be decreased. This is appropriate where clients still need type of home care service or support (i.e. for a wound vacuum system or home parental therapy), but are mobile and able to get out of their home for their physician appointments, hair appointments, and shopping for example.

In order to avoid unexpected return visits back to the home care office for missing wound care supplies in the home, another viable option is to provide a locked box in the home for client supplies. This is appropriate where the only option is for wound care to occur in the home. The locked box could be accessible to only home care and would maintain the integrity (clean and sterile) of the supplies. This supply box would potentially eliminate the need for extra home visits as well as result in significant waste reduction of supplies because unused supplies could be brought back to the home care office and put back into supply inventory.

Recommendations for Education and Training

Formal home care and case management education.

Another main finding in my study revealed the fact that HCNCM's spend a lot of unplanned and unpredictable time either mentoring others or seeking mentorship. Case management in home care is a complex skill that is currently learned on the job (Collister, Slauenwhite, Fraser, Swanson & Fong, 2014, Fraser & Strang, 2004; Joo & Huber, 2014; Joo & Huber, 2013; Herleman, 2008). The lack of a home care and case management component within the undergraduate nursing degree is a contributing factor as to why there is considerable time required by HCNCM's to mentor on the job. In my own experience in lecturing 4th year nursing students at the University of Alberta, when questioned only a few knew and understood what home care provides to clients in the community or what case management in home care entailed. If we are to expand the scope of home care in the future, we must consider providing increased formal education to the future nurses expected to provide the home care case management.

Formal mentorship programs.

Formal mentorship programs that are sustained within home care are needed. Although a mentorship program was recently trialed in the Edmonton Zone, funding and staff shortfalls prevented the sustainability of the program. Many case managers and home care leaders believe that mentorship is a necessary strategy to support case managers in their practice (Fraser, 2016). Currently in Canada, only 4% of the health care budget is spent on home care delivery (Canadian Home Care Association, 2013). Governments cannot expect to successfully expand future community-based home care without considering a substantial funding increase to the program, including formal mentorship programs.

Knowledge Translation

I will implement several knowledge translation (KT) strategies that will contribute to closing the "knowledge-to-action" gap in health care practice and health systems management (Straus, Tetroe & Graham, 2013). The results of this study will be shared with home care leaders

and decision-makers to support their work in creating system efficiencies related to case manager work and workload in home care. I will prepare and executive summary to submit to leaders and decision-makers. I will present this information at team meetings as well at provincial working groups such as the Home Care Development Steering Committee.

In addition to dissemination at the local and provincial levels, I will submit two peer-reviewed manuscripts: a) the integrative literature review, and b) a findings paper based on the secondary data analysis. I am targeting journals relevant to home care leadership such as *Home Health Care Management and Practice* or *Professional Case Management*. I will submit an abstract to present my work at the national Canadian Home Care Association (CHCA) Summit in 2017. I expect to facilitate conversations at this national conference with those who may be interested in further exploration of case manager work and workload in home care.

Conclusion

The findings of my research support a more full understanding of the work and workload of the HCNCM. It provides timely evidence that supports the need to consider the implications of HCNCM work and workload as we strive for optimal client and family outcomes in home care. If indeed case managers are the gatekeeper of home care in Canada and are the access point for clients and family caregivers, their role and function within home care programs needs adequate attention including funding and administrative and system structures that support them in their work. Tools and strategies to understand and measure HCNCM work and workload will help to ensure their workloads are reasonable and equitable. Reasonable workloads will ultimately support better experiences and outcomes for clients and families as case managers will have the appropriate time and capacity to case manage.

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Appendix A

Summary of Manuscripts for Inclusion

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Jackson, C., Leadbetter, T., Manley, K., Martin, A., Wright, T. (2015)	What workload measurement tools are in existence? Strengths? Limitations? Gaps? How can existing tools and/or benchmark tool be used for effective workforce planning of nursing services? What would a community-nursing workforce look like to deliver this model? How can a benchmark tool be used by commissioners to lobby for nursing skill mix, delivering value for money, effectiveness and	Descriptive Quantitative - Mixed Methods study on the effectiveness of workload.	The Cassandra workload activity tool. Electronic survey and paper-based tool to collect workload activity over 10 working days	Self-selected sample (n=24) Nurses working in general and specialist community nursing roles in 3 community organizations in England	Nurses were more involved in procedural tasks than holistic work and are required to draw on a broad spectrum of skills. Many factors affect nursing workload in the community: Care planning and evaluation; caseload management; symptom control; giving advice; promoting self-management; reassessments; handovers; administrative tasks; travel time; health education, hospital avoidance, care	Building accurate workload measurement tools "will help to identify how much work is planned and how much is unplanned" as it allows for analysis of "reactive versus proactive" workforce activity (p. 131). This study highlights the fact that unplanned factors affect workload and workload measurement tools need to be developed that will capture this work.

	economic benefits for patient outcomes?				coordination, risk assessment, chasing referrals and results, rescue work, caregiver support, social assessment, safeguarding the vulnerable, mediation of relationships, social advice, psychological assessments, advocacy, and joint assessments with others.	

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Kirby, E. & Hurst, K. (2014)	Preliminary evaluation of a workload tool designed to equalize workload of community district nursing teams.	Mixed Methods Study of workload using audit tool through Action Research - June '06 - July '07	Staffing Methodology Equalization Tool (SMET) Safer Nursing Care Tool (SNCT) Focus Groups Individual Interviews Staff kept a diary for up to 7 days recording how they spent their time and with what type of client. Service quality questionnaires	Community nursing staff - both community and mental health nurses (n=394) in South Australia	The tool increased transparency and equity in community nursing workloads through recognition of other responsibilities (other than case management), for example "episodic care" that could be captured by caseload intensity measurement. Although the author mentions that further work on the tool is required to capture specific information around "episodic care" and work-load intensity.	This study highlights through this workload tool audit, that community nurses do have daily episodic care outside of regular workload that could be sporadic or unpredictable in nature. However, the study did not provide specific information or definitions around "episodic care" or unplanned factors and/or events that affect home care nurse workload.

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Kane, K. (2008).	To review and analysis district nursing caseloads as a method with the goal of achieving caseload equity (in terms of care provided and access to service).	Quantitative - Descriptive Statistics Four phase caseload analysis study. 1) Basic assessment in terms of client numbers and case mix; 2) Compare caseloads with an attempt to identify variables that affect nursing workload through focus groups; 3) Caseload audit leading to team allocation based on geographical boundaries 4) Implementation of analysis	Focus groups Caseload audit	10 year analysis of community nursing caseloads in Ireland No sample size or specifics on setting were provided	A large range of indicators (i.e. caseload size, # of clients, type of client group, complexity of client, etc.) was identified as important to understand community nurse workload and practice. Findings indicate that these factors impact home care nurse workload: client needs assessment/analysis, time out for education, client dependency, clinical decision making about care/visits, planned reviews,	This study includes many indicators and factors that affect home care nursing workload, however study findings did not mention the unplanned and unpredictable work that affects the workload of home care case managers.

					discharge planning and medical practice of the GP. "We can only be sure to improve what we can actually measure" (p. 572)	

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Kemp, L., Harris, E. & Comino, E. (2004)	To assess client and service delivery profiles; to determine the congruence between community nurse perceptions of their work and the reality of their work.	Mixed Methods Quantitative/ Qualitative	Data Sets from health databases: administrative, occasions of service and staffing numbers Interviews with home care nurses	Interviews with 14 community nurses in a large health service in Australia over a 5-year period - 1995-2000.	"Nurses' perceptions of changes in their workload accurately reflect changes in service and delivery patterns" (p. 314) Factors affecting workload: Clients are receiving more intense service with more complex procedures, community nurses are experiencing more stress due to demanding workloads, community nurses are expected to "fill the gaps" for the management of clients discharged early	This study indicates that nurses perceive changes in their workload as a factor that can affect they care (quality and quantity) they provide. Many factors affecting their workload are provided however, the unplanned and unpredictable factors are not mentioned. This study highlights that nurses need to be proactive in defining their role, adding that by outlining the unplanned and unpredictable nature of their daily workload would help fill the definition. This study highlights that home care nursing workload does include holistic, complex

					from hospital, lack of community nursing leadership and proactive planning to deal with the complexity of community nursing workload. "Community nurses need to engage proactively in defining and promoting their role in the health care system" (p. 313). Study Limitation - Community health databases that were utilized in this study fail to capture the holistic, qualitative and complex nature of community nurses' work.	qualitative work that could be unplanned and unpredictable in nature.

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Evans, L. (2002)	To explore community nurses' experiences of work stress. Research Question: Which aspects of work are perceived by district nurses to be the most stressful and with what intensity	Mixed Methods-Descriptive, non-experimental integrating quantitative and qualitative approaches.	Cross-sectional survey. Data collected using the *Community Health Nurses' Perceptions of Work-Related Stressors Questionnaire* - structured, self-administered questionnaire with 50-item checklist combined with open-ended questions.	Non-probability, convenience sampling of district nurses employed in Yorkshire, England. Female participants (n=38) worked in rural, urban, and inner city areas	Six key findings in this study. Workload factors perceived by community nurses that increase stress in their work day: heavy, excessive workload, climate of change (no time to adjust to change, plan or be proactive), lack of management support with complex clients (little professional freedom), lack of teamwork with other departments (poor liaison and communication) and home/work balance.	Study findings indicate many factors that home care nurses perceive to increase stress in their day, but do not discuss the unplanned and unpredictable factors that may also add stress to their day. However, the "Climate of Change" finding could be interpreted to include the unplanned and unpredictable factors that may affect their day. Lack of time to complete their work could be due to the unplanned factors.

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Baldwin, M. (2006)	An audit on a workload tool to determine the accuracy with which the tool was being used as well as to identify the training needs of those using the tool.	Audit through a systematic and critical approach that qualitatively analyzes the quality of care, diagnosis, treatment and resources utilized to provide care.	An adaption to *The Warrington Workload Tool* Interviews with use of focused questionnaire	District nurses (n-9), one from different district nursing services in Wales, England	Six participants acknowledged that they used the tool to record a change in workload when their original predicted workload changed due to new and additional work that had unexpectedly come up during their workday. Participants reported predicted work as: travel, client contact, documentation, liaising/arranging services and resources as well as care giver support and advice. There is a need for accuracy in	It was suggested that direct client care should average no more than 60% of a district nurse's time but acknowledged that "unplanned visits" do occur and therefore place additional stress on the home care team. Participants were able to record predicted units of activity but acknowledged that definitions of other specific activities (i.e. unpredictable units of activity) should be included in the workload tool. This study discussed the home care nurse activities that are include in predicted

					workload measurement of district nurse workload to reduce stress to nurses and provide equitable service to clients.	units of time but did not capture or define the “unpredictable activities” that district nurses experience on a daily basis.

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Sargent, P. (2008).	To describe LTC caseload size and explore the issues that affect caseload manageability	Qualitative Study with Grounded Theory analytic principles	In-depth interviews	46 Case Managers across six Primary Care Trusts (PCT)	Case Managers had 10-55 clients each that fluctuated week to week. Caseloads were difficult to manage. The larger caseloads resulted in reactive care versus more desirable proactive care resulting in decreased quality of care and increased hospital admissions. Nine factors that affect workload: excessive workload and job stress (fear of inability to cope); service barriers; caseload risk strat-ification; client	Caseload sizes need to be accurately measured because equitable caseloads between case managers lead to proactive care. In order to accurately measure a home care nursing caseload, all factors, including the unpredictable factors that affect the daily workload, need to be considered and captured. Further qualitative research with a proactive focus is required to provide more accurate information about caseload manageability and why some case manager's struggle to manage a caseload. "We need to move

					discharge, social, geographical and individual client variables; non-clinical tasks; education and training; reactive versus proactive care; reduced impact on hospital admissions (unmanageable caseloads were perceived to inhibit the reduction of hospital admissions). "The findings of the study underscore the importance of considering multiple and often complex factors when setting caseload targets" (p. 45).	away from a reactive, unplanned and episodic approach to care" (p. 44).

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Auckland, S. (2012).	The aim of the article is to fuel the debate around caseload numbers for community matrons and manageability of workload.	Literature Review - details not provided in article	The author used the nine factors (findings) from the Sargent (2008) study as the framework to structure the discussion and analysis of the literature review.	Details on articles for inclusion not provided in paper.	Community home care nurses struggle to achieve and maintain caseload targets due to many factors. This study outlines the many factors affecting home care nurse workload as follows: high dependency/complex clients; social care, position and availability of staff bases; type of caseload, team working, staff mix; skill mix; interdisciplinary liaison, teaching, travel, covering other desks, clinical supervision; team meetings;	Further studies are required to determine other variables that affect caseload manageability. This will result in better quality of care and client satisfaction. "Community matrons are in an ideal position to drive these new studies forward and unravel the complex factors when setting and influencing caseload targets within their organization" (p. 497).

					keeping inactive clients on caseload (blocks new referrals); rural and remote client locations; managerial duties, administration tasks, study commitments, and meetings.	

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Reid, B., Kayne, K. & Curran, C. (2008).	To critically analyze current district nursing workforce planning and development methods with the goal of finding a suitable method for Northern Ireland	Systematic Literature Review - from 5 databases with key words: community /district nurses; caseload; workload; workload planning/development; patient/client dependency; nursing activity and patient/client/population health studies.		Specific details on articles for inclusion not provided in paper.	Systematic Review reveals four broad workforce planning and development methods: professional judgment; population and health needs-based methods; caseload analysis; dependency-acuity methods "Caseload analysis as been criticized as an attempt to reduce district nursing to a list of mechanistic tasks, mitigating against the valuable 'hidden' aspect of nursing" (p. 528).	Dependency-acuity workload measurement tools capture "predicted" workload but do not capture unpredicted or unplanned workload. They fail to measure individual client and case manager characteristics that may affect home care nurse workload as well as the psychosocial component of care that home care nurses regularly provide to clients. A "mixed-method" approach to caseload analysis would then also capture the "qualitative" aspect of home care nurse workload.

					Dependency-acuity workload measurement methods generate a “predicted” amount of time for home care nursing workload. A mixed methods approach to workload measurement is suggested as a more accurate way to measure workload.	

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Pontin, D. & Lewis, M. (2008).	To explore how Community Children's Nurse's (CCN's) deliver care to children with life-limiting, life-threatening and chronic conditions. "What phenomenona contribute to CCNs' perceptions of workload for a CCN service that uses a family-nursing model?	Qualitative, Action Research	In-depth interviews Templates created to generate data that characterized high, medium, and low CCN input for children and families	No sample size or setting was provided. It was only mentioned that pediatrics was involved and a years worth of input was collected.	"Actual events sometimes supersede the original planned visit due to changes in the circumstances of clients" (p. 31). Examples of unpredictable or unplanned circumstances may be a crisis situation (family dynamics, agency relations, health changes) or simply the client does not agree to move forward with original purpose of the visit. Other examples of factors that affect workload may include: events running over allotted time, nursing	Findings indicated four main themes that contribute to their workload: strategy (formal/informal protocols), being proactive (address issues early and avoid problems), purposeful visits (articulating reason for visits), and knowing families (to maintain a trajectory of care). Although study findings indicate some insight about the phenomena that contribute to the CCN's perceptions of workload, the scope of this study is limited because it was based on caseload management of children with life-limiting, life-threatening and chronic conditions.

					judgement around time allotment, additional travel time and parking. "One of the outcomes of this action research project was the way that CCN's were able to make extant that invisible work and start to develop a shared language for communicating about their clients' needs" (p. 33).	CCN's brought attention to the "invisible work" that they do. This study permitted them to develop a shared language around this work with the goal of communicating the needs of their clients. In order to develop a full understanding of the unplanned and unpredictable factors that affect home care nurse workload, further research is required to explore the home care nurse perception of the unplanned and unpredictable factors that affect different types of adult caseloads.

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Stuart, E., Jarvis, A. & Daniel, K. (2008).	To explore district nurses' (DN) workload management, their job satisfaction and the challenges they face Research Questions: How do DN's prioritize their work? How do DN's manage their workloads and time? How do DN's perceive work that does not involve 'hands on' clinical care giving?	Qualitative interpretive study 8 Focus groups and 8 individual interviews	The PI using evidence from the literature review designed data collection tools. A topic guide and interview guide was created and is included in the article.	31 District Nurses and senior managers in Scotland in 2005	Three themes emerged: 1) Workload priorities and views on work unrelated to 'hands on' clinical care. 2) District nursing has stressful aspects in their workday. 3) Job satisfaction is related to impact of workload Workload was prioritized firstly by clinical need, consideration of geographical location of clients, skill mix and experience of staff, weather and road conditions and necessary administrative work.	"Community nursing can be likened to 'a ward without walls,' a care environment which is constantly expanding as it is not as contained by walls or limited bed spaces, unlike the acute setting" (p. 3016). This fact adds merit to the unpredictable nature of the job. "The changing role of the DN's is of concern to many participants who feel that the all encompassing 'jack of all trades' element of the role though formerly one of its most important features, is placing the profession in danger of work overload as they take on patients whose needs are not met by other agencies" (p. 3017).

						Being a “jack of all trades” may assist the DN to deal with the unplanned and unpredictable factors, but the shear number of events in a workday may add to the already large workload they deal with on a daily basis.

Author/Year	Aim/Objective/ Research Question	Design / Methodology	Instruments Used	Sample / Setting	Results	Conclusions / Recommendations
Grange, M. (2011)	To explore community matrons' experience of caseload management and to identify situations that may restrict or enhance client care and outcomes	Qualitative - Phenomenological approach to data analysis	In-depth Interviews	Purposive sample of 6 community matrons in two South West Trusts	Caseload numbers and geographical area affected workload and effective caseload management. Participants felt they were forced into reactive way of working (instead of proactive) due to demand outweighing resources. Participants stressed that their ability to make a difference was affected by other team members, therefore they had no control over their workload	Unplanned and unpredictable events could a result of interaction with other team members (covering desks, answering questions from colleagues, doing tasks for colleagues). "Although there may be recognized tasks that determine nurse resource used, it is more difficult to account for unrecognized tasks, such as psychological care (p. 28). "Multiple complex factors need to be considered when setting caseload targets" (p. 29). Factors such as geographical area,

						non-clinical time, resources and characteristics of the target population need to be considered. Further research that explores the "unrecognized tasks" could warrant increase in staff resources as well as better use of nursing resources (staff).

Appendix B

Mixed Methods Appraisal Tool (MMAT) - Version 2011

Mixed Methods Appraisal Tool (MMAT) – Version 2011
For dissemination, application, and feedback: Please contact pierre.pluye@mcgill.ca, Department of Family Medicine, McGill University, Canada.

The MMAT is comprised of two parts (see below): criteria (Part I) and tutorial (Part II). While the content validity and the reliability of the pilot version of the MMAT have been examined, this critical appraisal tool is still in development. Thus, the MMAT must be used with caution, and users' feedback is appreciated. Cite the present version as follows.

> Pluye, P., Robert, E., Cargo, M., Bartlett, G., O'Cathain, A., Griffiths, F., Boardman, F., Gagnon, M.P., & Rousseau, M.C. (2011). *Proposal: A mixed methods appraisal tool for systematic mixed studies reviews.* Retrieved on [date] from http://mixedmethodsappraisaltoolpublic.pbworks.com. Archived by WebCite® at http://www.webcitation.org/5tTRTc9yJ

Purpose: The MMAT has been designed for the appraisal stage of complex systematic literature reviews that include qualitative, quantitative and mixed methods studies (mixed studies reviews). The MMAT permits to concomitantly appraise and describe the methodological quality for three methodological domains: mixed, qualitative and quantitative (subdivided into three sub-domains: randomized controlled, non-randomized, and descriptive). Therefore, using the MMAT requires experience or training in these domains. E.g., MMAT users may be helped by a colleague with specific expertise when needed. The MMAT allows the appraisal of most common types of study methodology and design. For appraising a qualitative study, use section 1 of the MMAT. For a quantitative study, use section 2 or 3 or 4, for randomized controlled, non-randomized, and descriptive studies, respectively. For a mixed methods study, use section 1 for appraising the qualitative component, the appropriate section for the quantitative component (2 or 3 or 4), and section 5 for the mixed methods component. For each relevant study selected for a systematic mixed studies review, the methodological quality can then be described using the corresponding criteria. This may lead to exclude studies with lowest quality from the synthesis, or to consider the quality of studies for contrasting their results (e.g., low quality vs. high).

Scoring metrics: For each retained study, an overall quality score may be not informative (in comparison to a descriptive summary using MMAT criteria), but might be calculated using the MMAT. Since there are only a few criteria for each domain, the score can be presented using descriptors such as *, **, ***, and ****. For qualitative and quantitative studies, this score can be the number of criteria met divided by four (scores varying from 25% (*) -one criterion met- to 100% (****) -all criteria met-). For mixed methods research studies, the premise is that the overall quality of a combination cannot exceed the quality of its weakest component. Thus, the overall quality score is the lowest score of the study components. The score is 25% (*) when *QUAL=1 or QUAN=1 or MM=0*; it is 50% (**) when *QUAL=2 or QUAN=2 or MM=1*; it is 75% (***) when *QUAL=3 or QUAN=3 or MM=2*; and it is 100% (****) when *QUAL=4 and QUAN=4 and MM=3* (QUAL being the score of the qualitative component; QUAN the score of the quantitative component; and MM the score of the mixed methods component).

Rationale: There are general criteria for planning, designing and reporting mixed methods research (Creswell and Plano Clark, 2010), but there is no consensus on key specific criteria for appraising the methodological quality of mixed methods studies (O'Cathain, Murphy and Nicholl, 2008). Based on a critical examination of 17 health-related systematic mixed studies reviews, an initial 15-criteria version of MMAT was proposed (Pluye, Gagnon, Griffiths and Johnson-Lafleur, 2009). This was pilot tested in 2009. Two raters assessed 29 studies using the pilot MMAT criteria and tutorial (Pace, Pluye, Bartlett, Macaulay et al., 2010). Based on this pilot exercise, it is anticipated that applying MMAT may take on average 15 minutes per study (hence efficient), and that the Intra-Class Correlation might be around 0.8 (hence reliable). The present 2011 revision is based on feedback from four workshops, and a comprehensive framework for assessing the quality of mixed methods research (O'Cathain, 2010).

Conclusion: The MMAT has been designed to appraise the *methodological quality* of the studies retained for a systematic mixed studies review, not the quality of their *reporting* (writing). This distinction is important, as good research may not be 'well' reported. If reviewers want to genuinely assess the former, companion papers and research reports should be collected when some criteria are not met, and authors of the corresponding publications should be contacted for additional information. Collecting additional data is usually necessary to appraise *qualitative research and mixed methods studies*, as there are no uniform standards for reporting study characteristics in these domains (www.equator-network.org), in contrast, e.g., to the CONSORT statement for reporting randomized controlled trials (www.consort-statement.org).

Authors and contributors: Pierre Pluye[1], Marie-Pierre Gagnon[2], Frances Griffiths[3] and Janique Johnson-Lafleur[1] proposed an initial version of MMAT criteria (Pluye et al., 2009). Romina Pace[1] and Pierre Pluye[1] led the pilot test. Gillian Bartlett[1], Belinda Nicolau[4], Robbyn Seller[1], Justin Jagosh[1], Jon Salsberg[1] and Ann Macaulay[1] contributed to the pilot work (Pace et al., 2010). Pierre Pluye[1], Émilie Robert[5], Margaret Cargo[6], Alicia O'Cathain[7], Frances Griffiths[3], Felicity Boardman[3], Marie-Pierre Gagnon[2], Gillian Bartlett[1], and Marie-Claude Rousseau[8] contributed to the present 2011 version.

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PART I. MMAT criteria & one-page template (to be included in appraisal forms)

Types of mixed methods study components or primary studies	Methodological quality criteria (see tutorial for definitions and examples)	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	• Are there clear qualitative and quantitative research questions (or objectives*), or a clear mixed methods question (or objective*)?				
	• Do the collected data allow address the research question (objective)? E.g., consider whether the follow-up period is long enough for the outcome to occur (for longitudinal studies or study components).				
	Further appraisal may be not feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?				
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?				
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?				
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?				
2. Quantitative randomized controlled (trials)	2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?				
	2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?				
	2.3. Are there complete outcome data (80% or above)?				
	2.4. Is there low withdrawal/drop-out (below 20%)?				
3. Quantitative non-randomized	3.1. Are participants (organizations) recruited in a way that minimizes selection bias?				
	3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?				
	3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?				
	3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?				
	4.2. Is the sample representative of the population understudy?				
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?				
	4.4. Is there an acceptable response rate (60% or above)?				
5. Mixed methods	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?				
	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?				
	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?				
	Criteria for the qualitative component (1.1 to 1.4), and appropriate criteria for the quantitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4), must be also applied.				

*These two items are not considered as double-barreled items since in mixed methods research, (1) there may be research questions (quantitative research) or research objectives (qualitative research), and (2) data may be integrated, and/or qualitative findings and quantitative results can be integrated.

PART II. MMAT tutorial

Types of mixed methods study components or primary studies	Methodological quality criteria
1. Qualitative Common types of qualitative research methodology include: A. Ethnography The aim of the study is to describe and interpret the shared cultural behaviour of a group of individuals. B. Phenomenology The study focuses on the subjective experiences and interpretations of a phenomenon encountered by individuals. C. Narrative The study analyzes life experiences of an individual or a group. D. Grounded theory Generation of theory from data in the process of conducting research (data collection occurs first). E. Case study In-depth exploration and/or explanation of issues intrinsic to a particular case. A case can be anything from a decision-making process, to a person, an organization, or a country. F. Qualitative description There is no specific methodology, but a qualitative data collection and analysis, e.g., in-depth interviews or focus groups, and hybrid thematic analysis (inductive and deductive). Key references: Creswell, 1998; Schwandt, 2001; Sandelowski, 2010.	**1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?** E.g., consider whether (a) the selection of the participants is clear, and appropriate to collect relevant and rich data; and (b) reasons why certain potential participants chose not to participate are explained.
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)? E.g., consider whether (a) the method of data collection is clear (in depth interviews and/or group interviews, and/or observations and/or documentary sources); (b) the form of the data is clear (tape recording, video material, and/or field notes for instance); (c) changes are explained when methods are altered during the study; and (d) the qualitative data analysis addresses the question.
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected? * E.g., consider whether the study context and how findings relate to the context or characteristics of the context are explained (how findings are influenced by or influence the context). "For example, a researcher wishing to observe care in an acute hospital around the clock may not be able to study more than one hospital. (…) Here, it is essential to take care to describe the context and particulars of the case [the hospital] and to flag up for the reader the similarities and differences between the case and other settings of the same type" (Mays & Pope, 1995). The notion of context may be conceived in different ways depending on the approach (methodology) tradition.
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants? * E.g., consider whether (a) researchers critically explain how findings relate to their perspective, role, and interactions with participants (how the research process is influenced by or influences the researcher); (b) researcher's role is influential at all stages (formulation of a research question, data collection, data analysis and interpretation of findings); and (c) researchers explain their reaction to critical events that occurred during the study. The notion of reflexivity may be conceived in different ways depending on the approach (methodology) tradition. E.g., "at a minimum, researchers employing a generic approach [qualitative description] must explicitly identify their disciplinary affiliation, what brought them to the question, and the assumptions they make about the topic of interest" (Caelli, Ray & Mill, 2003, p. 5).

*See suggestion on the MMAT wiki homepage (under '2011 version'): Independent reviewers can establish a common understanding of these two items prior to beginning the critical appraisal.

Types of mixed methods study components or primary studies	Methodological quality criteria
2. Quantitative randomized controlled (trials) Randomized controlled clinical trial: A clinical study in which individual participants are allocated to intervention or control groups by randomization (intervention assigned by researchers). Key references: Higgins & Green, 2008; Porta, 2008; Oxford Center for Evidence based medicine, 2009.	**2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?** In a randomized controlled trial, the allocation of a participant (or a data collection unit, e.g., a school) into the intervention or control group is based solely on chance, and researchers describe how the randomization schedule is generated. "A simple statement such as 'we randomly allocated' or 'using a randomized design' is insufficient". *Simple randomization:* Allocation of participants to groups by chance by following a predetermined plan/sequence. "Usually it is achieved by referring to a published list of random numbers, or to a list of random assignments generated by a computer". *Sequence generation:* "The rule for allocating interventions to participants must be specified, based on some chance (random) process". Researchers provide sufficient detail to allow a readers' appraisal of whether it produces comparable groups. E.g., blocked randomization (to ensure particular allocation ratios to the intervention groups), or stratified randomization (randomization performed separately within strata), or minimization (to make small groups closely similar with respect to several characteristics).
	2.2. Is there a clear description of the allocation concealment (or blinding when applicable)? *The allocation concealment protects assignment sequence until allocation.* E.g., researchers and participants are unaware of the assignment sequence up to the point of allocation. E.g., group assignment is concealed in opaque envelops until allocation. *The blinding protects assignment sequence after allocation.* E.g., researchers and/or participants are unaware of the group a participant is allocated to during the course of the study.
	2.3. Are there complete outcome data (80% or above)? E.g., almost all the participants contributed to almost all measures.
	2.4. Is there low withdrawal/drop-out (below 20%)? E.g., almost all the participants completed the study.

Types of mixed methods study components or primary studies	Methodological quality criteria
3. Quantitative non-randomized Common types of design include (A) non-randomized controlled trials, and (B-C-D) observational analytic study or component where the intervention/exposure is defined/assessed, but not assigned by researchers. A. Non-randomized controlled trials The intervention is assigned by researchers, but there is no randomization, e.g., a pseudo-randomization. A non-random method of allocation is not reliable in producing alone similar groups. B. Cohort study Subsets of a defined population are assessed as exposed, not exposed, or exposed at different degrees to factors of interest. Participants are followed over time to determine if an outcome occurs (prospective longitudinal). C. Case-control study Cases, e.g., patients, associated with a certain outcome are selected, alongside a corresponding group of controls. Data is collected on whether cases and controls were exposed to the factor under study (retrospective). D. Cross-sectional analytic study At one particular time, the relationship between health-related characteristics (outcome) and other factors (intervention/exposure) is examined. E.g., the frequency of outcomes is compared in different population sub-groups according to the presence/absence (or level) of the intervention/exposure. Key references for observational analytic studies: Higgins & Green, 2008; Wells, Shea, O'Connell, Peterson, et al., 2009.	**3.1. Are participants (organizations) recruited in a way that minimizes selection bias?** At recruitment stage: For cohort studies, e.g., consider whether the exposed (or with intervention) and non-exposed (or without intervention) groups are recruited from the same population. For case-control studies, e.g., consider whether same inclusion and exclusion criteria were applied to cases and controls, and whether recruitment was done independently of the intervention or exposure status. For cross-sectional analytic studies, e.g., consider whether the sample is representative of the population. **3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?** At data collection stage: E.g., consider whether (a) the variables are clearly defined and accurately measured; (b) the measurements are justified and appropriate for answering the research question; and (c) the measurements reflect what they are supposed to measure. For non-randomized controlled trials, the intervention is assigned by researchers, and so consider whether there was absence/presence of a contamination. E.g., the control group may be indirectly exposed to the intervention through family or community relationships. **3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?** At data analysis stage: For cohort, case-control and cross-sectional, e.g., consider whether (a) the most important factors are taken into account in the analysis; (b) a table lists key demographic information comparing both groups, and there are no obvious dissimilarities between groups that may account for any differences in outcomes, or dissimilarities are taken into account in the analysis. **3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?**

Types of mixed methods study components or primary studies	Methodological quality criteria
4. Quantitative descriptive studies Common types of design include single-group studies: A. Incidence or prevalence study without comparison group In a defined population at one particular time, what is happening in a population, e.g., frequencies of factors (importance of problems), is described (portrayed). B. Case series A collection of individuals with similar characteristics are used to describe an outcome. C. Case report An individual or a group with a unique/unusual outcome is described in details. Key references: Critical Appraisal Skills Programme, 2009; Draugalis, Coons & Plaza, 2008.	**4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?** E.g., consider whether (a) the source of sample is relevant to the population under study; (b) when appropriate, there is a standard procedure for sampling, and the sample size is justified (using power calculation for instance).
	4.2. Is the sample representative of the population understudy? E.g., consider whether (a) inclusion and exclusion criteria are explained; and (b) reasons why certain eligible individuals chose not to participate are explained.
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)? E.g., consider whether (a) the variables are clearly defined and accurately measured; (b) measurements are justified and appropriate for answering the research question; and (c) the measurements reflect what they are supposed to measure.
	4.4. Is there an acceptable response rate (60% or above)? The response rate is not pertinent for case series and case report. E.g., there is no expectation that a case series would include all patients in a similar situation.

Types of mixed methods study components or primary studies	Methodological quality criteria
5. Mixed methods Common types of design include: A. Sequential explanatory design The quantitative component is followed by the qualitative. The purpose is to explain quantitative results using qualitative findings. E.g., the quantitative results guide the selection of qualitative data sources and data collection, and the qualitative findings contribute to the interpretation of quantitative results. B. Sequential exploratory design The qualitative component is followed by the quantitative. The purpose is to explore, develop and test an instrument (or taxonomy), or a conceptual framework (or theoretical model). E.g., the qualitative findings inform the quantitative data collection, and the quantitative results allow a generalization of the qualitative findings. C. Triangulation design The qualitative and quantitative components are concomitant. The purpose is to examine the same phenomenon by interpreting qualitative and quantitative results (bringing data analysis together at the interpretation stage), or by integrating qualitative and quantitative datasets (e.g., data on same cases), or by transforming data (e.g., quantization of qualitative data). D. Embedded design The qualitative and quantitative components are concomitant. The purpose is to support a qualitative study with a quantitative sub-study (measures), or to better understand a specific issue of a quantitative study using a qualitative sub-study, e.g., the efficacy or the implementation of an intervention based on the views of participants. Key references: Creswell & Plano Clark, 2007; O'Cathain, 2010.	**5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?** E.g., the rationale for integrating qualitative and quantitative methods to answer the research question is explained. **5.2. Is the integration of qualitative and quantitative data (or results) relevant to address the research question (objective)?** E.g., there is evidence that data gathered by both research methods was brought together to form a complete picture, and answer the research question; authors explain when integration occurred (during the data collection-analysis or/and during the interpretation of qualitative and quantitative results); they explain how integration occurred and who participated in this integration. **5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results)?**

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Appendix C

Quality Appraisal Results for Included Articles

Contents:

Table A

Quality Appraisal Results for Included Articles - Qualitative Studies or Qualitative Component

Methodological Details	Baldwin 2006	Stuart et al. 2008	Pontin et al. 2007	Sargent et al. 2008	Auckland 2012	Reid et al 2008	Grange 2001	Jackson *et al.* 2015	Kane 2008	Kemp *et al.* 2005	Evans 2002	Kirby *et al.* 2014
Clear research question or Objective? *	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y
Does collected data address research question? *	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y
Sources of data relevant to research question?	Y	Y	Y	Y	C	Y	Y	Y	-	Y	Y	Y
Analysis process relevant to address research question?	Y	Y	Y	Y	C	C	Y	C	-	Y	Y	Y
Appropriate consideration given to how findings relate to the context?	Y	Y	Y	Y	N/A	N/A	Y	Y	-	Y	Y	Y
Appropriate considerations given to how findings relate to researchers' influence?	Y	Y	N	N	N	N	Y	N	-	N	N	N
Overall Impression	S**	W	S	W	P	S	W	S**	-	W**	W**	W**
Score	**100%**	**100%**	**75%**	**75%**	**0%**	**25%**	**100%**	**50%**		**75%**	**75%**	**75%**

* Further appraisal may not be feasible or appropriate if the answer is 'No' or 'Can't Tell' to the first two screening questions

** See also table 2 and 3

Response Key: Yes - Y No - N Can't Tell - C Not Applicable - NA Well done study - W Satisfactory Study - S Poor Study - P

Table B

Quality Appraisal Results for Included Articles - Quantitative Descriptive Studies or Quantitative Component

Methodological Details	Baldwin 2006	Stuart et al. 2008	Pontin et al. 2007	Sargent et al. 2008	Auckland 2012	Reid et al 2008	Grange 2001	Jackson *et al.* 2015	Kane 2008	Kemp *et al.* 2005	Evans 2002	Kirby *et al.* 2014
Clear research question or Objective? *	Y	-	-	-	-	-	-	Y	Y	Y	Y	Y
Does collected data address research question? *	Y	-	-	-	-	-	-	Y	Y	Y	Y	Y
Sampling strategy relevant to quantitative aspect of mixed methods question?	C	-	-	-	-	-	-	C	C	C	Y	C
Sample is representative of the population under study	C	-	-	-	-	-	-	C	C	Y	Y	Y
Are measurements appropriate?	C	-	-	-	-	-	-	C	C	C	Y	Y
Is there an acceptable response rate?	C	-	-	-	-	-	-	Y	C	C	Y	Y
Overall Impression	S**	-	-	-	-	-	-	S	S	S	W	W
Score	**0%**							**25%**	**0%**	**25%**	**100%**	**75%**

* Further appraisal may not be feasible or appropriate if the answer is 'No' or 'Can't Tell' to the first two screening questions

** See also table 1 and 3

Response Key: Yes - Y No - N Can't Tell - C Not Applicable - NA Well done study - W Satisfactory Study - S Poor Study - P

Table C
Quality Appraisal Results for Included Articles - Mixed Methods Studies

Methodological Details	Baldwin 2006	Stuart et al. 2008	Pontin et al. 2007	Sargent et al. 2008	Auckland 2012	Reid et al 2008	Grange 2001	Jackson *et al.* 2015	Kane 2008	Kemp *et al.* 2005	Evans 2002	Kirby *et al.* 2014
Clear research question or Objective? *	Y	-	-	-	-	-	-	Y	-	Y	Y	Y
Does collected data address research question? *	Y	-	-	-	-	-	-	Y	-	Y	Y	Y
Design relevant to address qual/quant/mixed method research question/objective	Y	-	-	-	-	-	-	Y	-	Y	Y	Y
Integration of qualitative and quantitative data (or results) relevant to research question?	Y	-	-	-	-	-	-	Y	-	Y	Y	Y
Appropriate consideration given to the limitations associated with this integration?	N	-	-	-	-	-	-	N	-	Y	Y	Y
Overall Impression	S**	-	-	-	-	-	-	S**	-	W**	W**	W**
Score	**66.6%**							**66.6%**		**100%**	**100%**	**100%**

* Further appraisal may not be feasible or appropriate if the answer is 'No' or 'Can't Tell' to the first two screening questions
** See also table 1 and 2

Response Key: Yes - Y No - N Can't Tell - C Not Applicable - NA Well done study - W Satisfactory Study - S Poor Study - P

Table D

Final Scoring Results for Quality Appraisals of Included Articles

	Baldwin 2006	Stuart et al. 2008	Pontin et al. 2007	Sargent et al. 2008	Auckland 2012	Reid et al 2008	Grange 2001	Jackson *et al.* 2015	Kane 2008	Kemp *et al*. 2005	Evans 2002	Kirby *et al.* 2014
Qualitative Score	100%	100%	100%	75%	0%	25%	100%	50%	-	75%	75%	75%
Quantitative Score	0%	-	-	-	-	-	-	25%	0%	25%	100%	75%
Mixed Method Score	50%	-	-	-	-	-	-	50%	-	100%	100%	100%
Overall Score *	**0%**	**100%**	**100%**	**75%**	**0%**	**25%**	**100%**	**25%**	**0%**	**25%**	**75%**	**75%**

*** See page 21 for MMAT scoring metrics***

Appendix D

Summary of Findings

Summary of Findings from Included Articles

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Jackson, Leadbetter, Manley, Martin & Wright (2015) Mixed Methods QA Score - 25%	Complex work Care planning and evaluation Caseload management Staffing levels Skill mix Symptom control Giving advice Promoting self management Reassessments Handovers Administrative tasks Travel time Health education Hospital avoidance Care coordination Risk assessment Chasing referrals and results Rescue work Caregiver support Social assessment Safeguarding the vulnerable	Unplanned work Non-productive work Complex work Reactive Care	"These assumptions have led to nursing work being subjected to reductionist research methods using activity analysis that are quite simplistic….but such methods do not capture complex work well" (p. 126). "Equally, the challenge is to develop visionary methodologies, methods and tools by designing them to allow for a filtering of context and a responsiveness to wider sociocultural, socioeconomic and sociopolitical subjectivities" (p. 128). …"tasks that may be omitted or missed due to lack of time" (p. 128). "The data demonstrated that participating community nurses were involved in significantly more procedural and holistic assessment work over and above anything else" (p. 129) "…the tool required some amendments in order to pick up additional community nursing interventions" (p. 130). "It is hoped that this will enable a representative 'whole system' to be built that injects realism into practice, accurately reflecting the management of complex work instead of trying to measure the component parts in

	Mediation of relationships Social advice Psychological assessments Advocacy Joint assessments with others		isolation" (p. 130). The development of more accurate workload measurement tools "will provide increased insight in the relationship between complex nursing care and patient safety factors" …..as well as "help to identify how much work in planned and how much is unplanned"(p. 132) "This (unplanned work) is an important aspect to explore in detail since it enables the analysis of reactive versus proactive workforce activity to balance the supply-and-demand-driven model currently pervading workforce planning" p. 132).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Kirby & Hurst (2014) Mixed Methods QA Score - 75%	Acuity of clients Complexity of clients Patient dependency Nursing activity Staff mix Direct nursing care Indirect care and patient related activity that is one step removed from the client Associated work (ie. clerical work) Travelling time Unproductive periods Handing over to fellow workers	Episodic care (outside of regular workload)	Indirect care "is only marginally less important than direct care" (p. 221-222). "It may be more efficient, i.e. telephoning a patient rather than visiting" (p. 222). "Handing over to fellow workers was the commonest indirect care activity" (p. 222). Associated work (e.g. clerical and administrative activity) was in question "as to whether clerical work uses RNs efficiently and effectively" (p. 222). The implementation of a program that could provide a "demonstrable improvement in travelling times, reducing the volume of clerical tasks and making better use of clinical staff to deliver clinical services" (p. 223).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Kane (2008) Quantitative Descriptive QA Score - 0%	Client needs assessment/analysis Education (attending courses) Client dependency Clinical decision making about care/visits Inappropriate work Planned reviews Discharge planning Medical practice of the GP Caseload size Working caseload (frequency of visits) Complexity of nursing need New referrals Number of Discharges Number of "one off" referrals Client compliance Caseload efficiency (in terms of administration)	Indicators affecting workload Variables affecting workload Invisible work	"what gets measured gets done" (p. 568). …"the term invisible can also describe what it feels like to manage a group of district nurses" (p. 568).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Kemp, Harris & Comino (2004) Mixed Methods QA Score - 25%	Clients are receiving more intense service and more complex procedures Demanding workloads Early hospital discharges Nurses are expected to "fill the gaps" Complex workloads More tasks Increased acuity Increased complexity More specialized care Paperwork Committee work Increasing administrative loads Competing demands	Holistic care qualitative work	There has been a lack of "proactive planning" (p. 307) which leads to reactive care There is a "lack of empirical evidence of actual changes in community nurses' workloads and the focus of their work" (p. 307). "A criticism of community health databases is that they fail to capture the holistic, qualitative and complex nature of community nurses' work" (p. 312). "…were expected to fill the gaps in management of acute-care clients in the community" (p. 313) "Community nurses need to engage proactively in defining and promoting their role in the health care system……and lobby for the staff increases needed to re-establish the balance of care in the community" (p. 313). "Nurses perceptions of the changes in their workload accurately reflect actual changes in client and service delivery patterns" (p. 314).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Evans (2002) Mixed Methods QA Score - 75%	Heavy, excessive workload Staff shortages Conflict with the establishment Organizational issues Lack of management support with complex clients (little professional freedom) Lack of teamwork with other departments (poor liaison and communication) Home/work balance	Climate of change (no time to adjust to change, plan or be proactive) Intrinsic (or complex) job features	"…because of the lack of control they felt they had and not being involved in the planning of change" (p. 582) "Generally district nurses felt that a lot of time and effort could be better spent if teamwork with other departments could be more effectively coordinated" (p. 582). Lack of coordination leads to unpredictable workload. "It is very difficult to fit everything in one's working day, yet most district nurses appear to keep on trying at great personal cost" (p. 583). "..the main conclusions that can be drawn are that in relation to work overload and understaffing, it is rather worrying to see that despite much research repeatedly highlighting the problem, this remains a pervasive stressor" p. 585). "Either the issue is being ignored (work overload and understaffing), or interventions are ineffective" (p. 585). Would recognition and attention to the unplanned factors help with recognition of work overload and need for increased staffing?

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Baldwin (2006) Mixed Method QA Score - 0%	"Predicted work" - Travel Client contact Documentation Liaising/arranging service and resources Caregiver support and advice	Unplanned visits Unpredictable patient contact units of activity	"… there will always be occasions when staff shortages or unplanned visits place additional stress on the service.."(p. 393) "We need a definition of what should be included in the units" (p. 393) A caseload profiling tool is needed "to improve qualitative data collection in relation to the work that the district nursing service now provides" (p. 395)

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Sargent (2008) Qualitative QA Score - 75%	Excessive workload Job stress (inability to cope) Service barriers Caseload risk stratification Client (hospital) discharge (with inappropriate referral) Social, geographical and individual client barriers Non-clinical tasks Managerial duties Administrative tasks Study commitments Meeting attendance Information sharing events (such as inservices) Education and training Reactive versus proactive care "Complex factors" Health, social and family factors Barriers to access	Reactive rather than proactive care Unplanned care Episodic care	"..a shift towards reactive care" (p. 43). "The whole philosophy of Evercare is a proactive management plan, you go in and you sort out the problems before they're issues and you deal with things and get in there. But when your patient load is heavy you become reactive" (p. 43). "…we need to move away from a reactive, unplanned and episodic approach to care" (p. 44). "One option may be to implement a team-based model for delivering case management to people with long-term conditions" (p. 45). "….delegating routine clinical monitoring tasks to junior nurses and social care coordination tasks to a social worker" (p. 45). Team based/mixed method/qualitative and quantitative.

	health and social care services		

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Auckland (2012) Qualitative QA Score - 0%	High dependency/ complex clients Social care Position and availability of staff bases Type of caseload Team working Staff mix Skill mix Interdisciplinary Teaching Travel Covering other desks Clinical supervision Team meetings Keeping inactive clients on caseloads Rural and remote client locations Managerial duties Administrative tasks Complex Factors	Complex factors Other variables Reactive Care	Studies are needed to "unravel the complex factors when setting and influencing caseload targets within their organization". (p. 497) "A number of authors do not specify caseload numbers due to the complexity of the task" (p. 497). "It is individual organizations responsibility to determine caseload numbers taking into account the factors which impact on caseload manageability and organizational goals for case management" (p. 497). "Community matrons said when caseloads become unmanageable, they are forced into reactive care" (p. 496).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Reid, Kayne & Curran (2008) Qualitative QA Score - 25%	"Mechanistic tasks" Predicted workload Travelling time Administration Management Meetings Covering for staff absences	"hidden" work "hidden" aspect of nursing non-productive work "predicted" work versus unpredictable work	"Caseloads similar in terms of size and health needs do not always generate the same amount of work" (p. 527) "Caseload management performance inconsistencies" (p. 527). "Caseload analysis has been criticized as an attempt to reduce district nursing to a list of mechanistic tasks, mitigating against the valuable 'hidden' aspect of nursing" (p. 528). A "mixed method" approach to workforce planning is recommended (to capture all aspects - caseload size, staff mix, patient dependency and activity-based variables based on health needs (p. 529).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Pontin & Lewis (2008) Qualitative QA Score - 100%	Planned visits Crisis situation (ie. family dynamics, agency relations, health changes) Client not agreeable with original reason for planned visit (ie. refuses dressing change) Events running over allotted time Nursing judgement around time allotment Knowledge around Additional travel time and parking Liaise with agencies	Invisible work	"….as CCN"s control their workload and caseload by articulating the reason for specific visits and the anticipated outcomes" (p. 310). "CCN's have an explicit reason for visiting names clients with a possible outcome in mind, but actual events sometimes supersede the original planned visits due to changes in the circumstances of clients. The change may be a crisis situation (family dynamics, relations with other agencies, or changes in physical health, diagnosis, or prognosis), or simply the client does not want to talk about the topic agreed upon as the visit focus" (p. 31). "…CCN's were able to make extant that invisible work and start to develop a shared language for communicating about their clients' needs" (p. 33).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Stuart, Jarvis & Daniel (2008) Qualitative QA Score - 100%	Clinical needs of clients Geographical location of client Skill mix of nurses/Experience of staff Weather and road conditions Administrative work Computer work	"Ward without walls" - "constantly expanding" "jack of all trades" Reactive Care Providers Work that does not involve hands on care Work unrelated to clinical care	"Community nursing can be likened to 'a ward without walls,' a care environment which is constantly expanding as it is not as contained by walls or limited bed spaces, unlike the acute setting" (p. 3016). "The changing role of the DN's is of concern to many participants who feel that the all encompassing 'jack of all trades' element of the role though formerly one of its most important features, is placing the profession in danger of work overload as they take on patients whose needs are not met by other agencies" (p. 3017). "DN's in this study describe their reactive approach to workload management and some of this they account for a result of their limited capacity to constrain the size of their caseload" (p. 3018). "DN's have been described as the 'invisible workforce' based on the lack of recognition DN's felt they received for their expertise" (p. 3018). "….be victims as a consequence of the 'invisibility' of their work undertaken in peoples' homes which appears to devalue their role in healthcare" (p. 3018). "Recent policy changes for increased patient care in the community, the abundance of administration and the often

			unpredictable nature of the job leave many DN's struggling to manage their workload within their contracted hours" (p. 3019).

Author **Type of Study** **Quality Appraisal Score**	**Factors (Words and Concepts) that Affect Workload**	**Words/Concepts used to Describe Unplanned and Unpredictable Work**	**Themes, Concepts, Codes, Connecting Ideas**
Grange (2011) Qualitative QA Score - 100%	Caseload size Geographical area Non-clinical time Characteristics of the target population Team skill mix Psychological care "Multiple complex factors"	Unrecognized tasks Proactive Care turned to Reactive Care	"Although there may be recognized tasks that determine nurse resource used, it is more difficult to account for unrecognized tasks…." (p. 28). "As demand outweighed resources, participants felt they were forced into a reactive way of working" (p. 27).

Appendix E

Original Study Details

ORIGINAL STUDY DETAILS

Name of Original Study:

Data for Improvement and Clinical Excellence (DICE) Study, Substudy II Case Manager Work and Workload Intensity

Data for Interviews Collected From:

2008 to 2012

Number of Interviews Transcribed:

28 interviews from home care case managers (18 were RN case managers)

Location of Interviews:

Three home care offices within Edmonton Zone of Alberta Health Services

Original Study Question(s):

What factors influence case manager workload and intensity?

What are the implications of workload for case managers, the home care program, and ultimately home care clients?

Original Study Inclusion/Exclusion Criteria:

Any case manager of any discipline not in a casual position in one of the participating home care offices within the Edmonton Zone of Alberta Health Services.

Original Study Interview Questions:

How would you describe your caseload? How would you describe the intensity of your work? What does a good day look like for you? What does a bad day look like for you? Can you plan for any part of your day? What influences your ability to plan for your day? What things interrupt your work? In what way?

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