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The use of grounded theory in studies of nurses and midwives' coping processes: A systematic literature search

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The use of grounded theory in studies of nurses and midwives' coping processes: A systematic literature search

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Background: Researchers are increasingly using grounded theory methodologies to study the professional experience of nurses and midwives.

Aim: To review common grounded theory characteristics and research design quality as described in grounded theory studies of coping strategies used by nurses and midwives

Methods: A systematic database search for 2005-2015 identified and assessed grounded theory characteristics from 16 studies. Study quality was assessed using a modified Critical Appraisal Skills Programme (CASP) tool.

Findings: Grounded theory was considered a methodology or a set of methods, able to be used within different nursing and midwifery contexts. Specific research requirements determined the common grounded theory characteristics used in different studies. Most researchers did not clarify their epistemological and theoretical perspectives.

Conclusion: To improve research design and trustworthiness of grounded theory studies in nursing and midwifery, researchers need to state their theoretical stance and clearly articulate their use of grounded theory methodology and characteristics in research reporting.

Keywords: grounded theory, qualitative research, research design, nurses, midwives, coping strategies

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Introduction

Grounded theory methodology allows for socio-cultural contexts to be captured in the explanation of process and action related to a phenomenon or experience (Bryant & Charmaz, 2010). Nurses and midwives' experiences in their working environments are many and varied and may be related to working conditions, the range of tasks undertaken and the relationships nurses and midwives have with colleagues, doctors, patients and their families (İlhan, 2008). A greater understanding of these complex issues has implications for nursing and midwifery education, practice and management. There are also methodological implications for researchers studying in this area.

Grounded theory is a popular methodology for qualitative research across disciplines (Bryant & Charmaz, 2010). In their seminal 1967 text, Glaser and Strauss introduced a methodology designed to combine the strengths of both qualitative and quantitative approaches in response to the positivistic nature of social research at the time (Glaser & Strauss, 1967; Suddaby, 2006; Walker & Myrick, 2006). Grounded theory methods of analysis aim to assist researchers to better understand social phenomena, particularly in areas with little existing knowledge (Bainbridge, Whiteside, & McCalman, 2013; Strauss, 1987). Grounded theory methodology is increasingly being used in nursing and midwifery research to study professional actions and interactions, facilitating the generation of theory concerning psychosocial processes (Elliott & Lazenblatt, 2005; Wuest, 1995).

Disagreement over the nature of grounded theory resulted in a methodological estrangement between the creators (Greckhamer & Koro-Ljungberg, 2005; Holton, 2008). Afterwards, Glaser extended the "classic" approach (Glaser, 1978, 1998, 2001). Strauss meanwhile, first explicated and then reformulated the approach, resulting in what is now known as the Straussian approach (Heath & Cowley, 2004; Strauss, 1987).

Over the past 40 years grounded theory has evolved and diversified to become a “family of methods” used by qualitative researchers in multiple ways (Bryant & Charmaz, 2010, p. 11). Second-generation theorists have continued to build upon grounded theory’s foundations, taking the original approach in new ontological and epistemological directions (Mills, Bonner, & Francis, 2006). This includes constructivist grounded theory, the most widely known of the alternative versions and most recently, transformational grounded theory that integrates participatory action research and decolonizing methodologies (Charmaz, 2014; Redman-MacLaren & Mills, 2015). Regardless of this evolution, there remains grounded theory family resemblances, or common characteristics apparent across the approaches. These include concurrent data analysis and collection, theoretical sampling, memo writing, theoretical sensitivity, coding processes, theoretical saturation, constant comparative methods and theorizing.

The diversification of approaches has led to criticism of blurred lines of methodologies, with researchers ‘borrowing’ components of grounded theory and the need for readers to critically assess papers published as grounded theory studies (Becker, 1993; Elliott & Lazenblatt, 2005). Systematic reviews of the characteristics and study design quality of grounded research papers across disciplines and topic areas including nursing (Benoiel, 1996), exercise psychology (Hutchison, Johnston, & Breckon, 2011; Weed, 2009), music therapy (O’Callaghan, 2012), speech and language therapy (Skeat & Perry, 2008), accounting (Gurd, 2008), online and mobile customer behaviour (Valvi, Frangos, & Frangos, 2013) and information systems (Matavire & Brown, 2011), evidence the methodological discourse. To our knowledge a systematic review of grounded theory studies focusing on nurses and midwives’ strategies of coping has not been published, despite the increased use of grounded theory in this area. This review aims to add to the

body of nursing and midwifery research literature by identifying the characteristics and design quality of studies of nurses and midwives' coping strategies and improve our methodological understanding of the approach.

The research question was: How have the authors utilised grounded theory methods to study how nurses or midwives cope with work-related experiences? This comprised two parts:

- a) How have grounded theory characteristics been applied in the studies?
- b) What is the qualitative design quality of the studies?

Methods

A research protocol was developed and checked by two experienced qualitative researchers specialising in the grounded theory approach. The protocol outlined the methods of the search, selection criteria, analysis and assessment of the literature.

Search strategy

Figure 1 summarises the search strategy utilised for this review. The databases CINAHL, MEDLINE PsycINFO and PubMed were searched using a combination of the keywords nurse*, nursing, midwife*, midwife*, coping, cope* and grounded theory, together with database specific subject headings. Initial evaluation of the retrieved studies was undertaken by a review of the title and abstract. Citation searching of selected articles supplemented database searching.

Applying inclusion/exclusion criteria

Inclusion/exclusion criteria established at the outset of the search were applied to the retrieved studies. Publications were included where:

- grounded theory approach was utilised
- study participants were nurses or midwives
- papers examined nurses or midwives' strategies of coping
- papers were published between January 2005 and March 2015 in peer reviewed journals
- papers were available in English

Studies focusing on health care workers other than nurses, midwives or nursing or midwifery students/education were excluded. The search was not limited geographically. Accessibility of papers was reliant on availability via institutional subscriptions.

Figure 1. PRISMA Flowchart representing the selection process for included studies here

Data extraction

The data were extracted from the studies using a customized matrix. Study characteristics were categorized by: i) first author and year; ii) location; iii) setting; iv) participants; v) sample size; vi) participant gender; vii) study topic; viii) data collection methods; and ix) study type. Table 1 provides a summary of the included studies and their characteristics.

Methodological information informed by the common grounded theory characteristics was extracted from the studies and summarized in a matrix for analysis. The characteristics were: i) grounded theory approach cited; ii) data collection methods; iii) use of theoretical sampling; iv) theoretical sensitivity; v) use of memo writing; vi) constant comparison; vii) theoretical saturation; viii) coding and categorisation; and ix) theory generation. Studies were compared and contrasted to examine how grounded theory characteristics were utilised

by the authors to generate substantive theory in the context of nursing or midwifery. Table 2 provides a summary of the application of grounded theory characteristics within the studies.

The quality of the selected studies was determined using a modified version of the Critical Appraisal Skills Program (CASP) Qualitative Research Checklist (2013). This generic tool enables systematic assessment of qualitative research. The CASP checklist was selected as it has been tested in various settings and offered prompts for answering each question to assist clarity for reviewers. Specific criteria assesses for clarity of research aims, the quality of the methodology, research design, recruitment strategies and relationships between the participants and the researcher, data collection and analysis, consideration of ethical issues, provision of a clear statement of the research findings and the value of the research. Modification of the checklist to indicate full, partial or nil inclusion of quality indicators allowed for ranking of the included papers. Criteria were rated as moderate (16-17 points), strong (18-19 points) or very strong (20 points). Table 3 provides a summary of the CASP quality assessment of the studies.

Findings

Study characteristics

Sixteen articles from 15 studies were identified for inclusion. The studies were published between 2005 and 2015, with nine (56%) studies published after 2010. The studies typically aimed to explore nurses or midwives' views and experiences of work-related issues and the coping processes they utilised to overcome challenges. Researchers affiliated with academic institutions or clinical settings conducted the studies. Twelve (75%) of the studies were from western, industrialised countries while four (25%) of the studies were from Asian countries (Table 1, Column 1). Seven (44%) of the studies were undertaken in urban areas; two (12%) of the studies were undertaken in regional areas; one (6%) of the studies was undertaken in a

rural area; one (6%) of the studies was undertaken across metropolitan, rural and regional areas; and five (31%) of the studies did not specify the setting (Table 1, Column 2). Sample sizes ranged from 10-104 (Mdn=22). Ten (62%) studies reported a sample size of less than 20 participants. Only one (6%) study had a sample size over 100 (Table 1, Column 4). One (6%) of the studies recruited only male participants; four (25%) of the studies recruited only female participants; seven (44%) of the studies recruited both male and female participants, while four (25%) of the studies did not state participant gender (Table 1, Column 5). Fourteen (88%) of the studies employed qualitative data collection methods, while two (12%) of the studies utilised both qualitative and quantitative methods (Table 1, Column 7).

Table 1. Summary of included studies and characteristics here.

Approaches and modifications

Studies used three terms when referring to grounded theory. Three (19%) of the studies referred to it as a methodology; seven (44%) of the studies referred to it as a method; four (25%) of the studies referred it as both methodology and method; and two (12%) of the studies used neither term. Only two (12%) of the studies did not indicate a rationale for using grounded theory (Table 2, Column 1). Three (19%) of the studies referenced the 1967 Glaser and Strauss text; five (31%) of the studies referenced a Glaser text (1978, 1992, 1998); eight (50%) of the studies referenced a Strauss and Corbin text (1990, 1998, 2007); and two (12%) of the studies referenced the constructivist text of Charmaz (2006). Two (12%) of the studies cited the texts of Strauss and Corbin (1998) and Charmaz (2006). One (6%) of the studies cited the modified grounded theory approach (M-GTA) developed by Japanese sociologist Yasuhito Kinoshita. One (6%) of the studies cited Glaser and Strauss (1967), applying Pargament's coping theory for interpretive purposes. One (6%) of the studies cited Strauss

and Corbin (1990) methods for data categorisation, applying the stress model of Carson and Kuipers as a framework for investigation (Table 2, Column 1).

Data collection

All studies described data collection methods. Nine (56%) of the studies utilised semi-structured or open-ended participant interviews. Three (19%) of the studies utilised interviews and participant observation. Two (12%) of the studies utilised interviews and focus groups. One (6%) of the studies utilised focus groups only. One (6%) of the studies utilised multiple data collection sources including demographic data, interviews, memos and journaling, diagrams and conceptual models, literature and documents (Table 2, Column 2). Memo writing was reported in ten (63%) of the selected studies (Table 2, Column 5). Two (12%) of the studies utilised memos, field notes and literature as data sources. Two (12%) of the studies supplemented data from interviews with data gathered from quantitative measurement scales. Both these studies noted these measurements were used for descriptive purposes, while one (6%) of the studies stated use of quantitative analysis also allowed for objective measurement of the degree to which participants coped (Table 2, Column 2). Concurrent data collection and analysis was specifically noted in nine (56%) of the studies or implied in three (19%) studies (Table 2, Column 3).

Sampling, saturation and constant comparison

Twelve (75%) of the studies indicated theoretical sampling, the iterative process of concurrent data collection and analysis achieving theoretical saturation. Of the remaining, two (12%) of the studies indicated the use of snowball sampling to recruit participants, while three (19%) of the studies (Table 2, Column 3) indicated the use of purposive sampling. Constant comparison was explicitly noted in twelve (75%) of the studies and implicit in a further three (19%) of the studies, with comparison occurring during concurrent data

collection and analysis, the coding process or throughout the research process. One (6%) of the studies provided insufficient detail to indicate use of the technique (Table 2, Column 6).

Table 2. Summary of application of grounded theory characteristics here.

Coding

Fourteen (88%) of the studies employed coding levels including open, axial and/or selective coding. Of these studies, nine (56%) reported identification of a core category, variable or central phenomenon. One (6%) of the studies using M-GTA conceptualised variations related to the focused theme and person. These derivations were further refined and categorised. One (6%) of the studies analysed data using Kvale's model of analysis, where "the first stage is carried out inductively, with categories and themes being sought. The second stage is an abductive process, moving between empirical and theoretical perspectives." Only three studies indicated the use of qualitative analytical software (Table 2, Column 8).

Theoretical Sensitivity

All studies used existing literature to situate their research within the larger context of the phenomenon under investigation. Six (38%) of studies indicated the characteristic of theoretical sensitivity. One (6%) of the studies specified theoretical sensitivity during the research process. Four (25%) of the studies specified reflexivity during the research process. One (6%) of the studies used the literature to develop sensitising concepts at the outset of the research. Only one (6%) of the studies employed the M-GTA that recognises the importance of researcher positioning in the epistemology of the project, however this was not explicit in the report. Two (12%) of the studies undertook a literature review after formation of a substantive theory. One (6%) of the studies specified bracketing (the setting aside) of experiential and personal knowledge to reduce bias (Table 2, Column 4).

Presentation of research findings

Eight (50%) of the studies claimed theory generation. Two (12%) of the studies presented findings as a conceptual model. One (6%) of the studies situated findings within the stress model devised by Carson and Kuipers to gain an understanding of the phenomenon under focus. One (6%) of the studies utilised storylines to help construct and present the description of categories. Four (25%) of the studies presented findings as dimensions of a core theme(s) (Table 2, Column 9).

Quality assessment

The studies were assessed for quality using a modified version of the CASP checklist. All studies were published in peer-reviewed journals. Three (19%) of the studies met all criteria and rated very strong; three (19%) of the studies rated strong; and ten (63%) of the studies rated moderate. Studies were rated moderate to strong where limited or absent description of researcher positioning, or data collection/analysis did not fully meet the modified criteria (Table 3).

Table 3. Summary of CASP quality assessment of studies here.

Discussion

Articles on nurses or midwives' coping processes in this review utilized varied grounded theory approaches and characteristics from the classic to contemporary versions. Research findings were presented as substantive theories, placed within conceptual models or as thematic descriptions. Grounded theory was described as a methodology, a method, or as both a methodology and a method. The literature documents a common confusion of a definition amongst grounded theorists, with even the co-founders sending mixed messages (Elharidy, Nicholson, & Scapens, 2008; Tan, 2010). Glaser and Houlton (2004, p.10) defined

grounded theory as “a conceptual theory generating methodology” using constant comparative methods, while Strauss and his co-author Corbin, described grounded theory as both a qualitative methodology and a research method utilizing systematic procedures (Corbin & Strauss, 2015; Strauss & Corbin, 1990). Feminist, religious or cultural methodologies informed some of the reviewed studies. Researchers conducting studies informed by other methodologies often use grounded theory methods because they are analytically valuable (Birks & Mills, 2015).

Although identifying as grounded theory research few of the reviewed studies discussed use of the suite of grounded theory characteristics, despite the systematic processes of grounded theory making it unique amongst research methods (Elharidy et al., 2008; Skeat & Perry, 2008). Nursing and midwifery researchers in this review primarily used grounded theory data analysis techniques in only the analysis phase of their studies. The majority of the reviewed studies utilized analytical methods informed by the Strauss and Corbin approach. The popularity of this method for data collection and analysis may be due to its clear, highly structured nature (Babchuk, 2011; Matavire & Brown, 2011; McCann & Clark, 2003b). Selective use of grounded theory characteristics has been criticised (Becker, 1993; Cutcliffe, 2005) with Glaser (2010, p.1) proclaiming “[research] is grounded theory only when it follows the [classic] grounded theory methodological package”. Conversely, the positivist foundations of classic grounded theory have been challenged by contemporary social constructionist and post-positivist reconstructions (Charmaz, 2008). While it has been advised that researchers select and consistently apply one approach, others maintain grounded theory is flexible, and versions may be adopted or combined as required (Babchuk, 2011; Charmaz, 2014; Tan, 2010).

Most authors did not discuss the use of qualitative analytical software (QAS) even though QAS is increasingly being utilized by researchers (Ahmad & Newman, 2010; O'Reilly,

2009). Studies reporting usage of QAS applied QSR's NVivo software, one of the most popular software programs (SAGE, 2014). QAS is a useful tool for data storage and management, manual coding, auditing, and enables transparency of the research process yet limitations include the time and skills needed by the researcher to learn a program and the inability of QAS to analyse data and develop theory (Cope, 2014; O'Reilly, 2009). Findings from this review support the view that researchers use QAS for coding, and adopt manual methods for conceptual analysis and theory development (Ahmad & Newman, 2010). The results indicated there is potential for greater use of QAS by grounded theory researchers, if only for storage and coding of data.

Of particular note was that the majority of authors in the reviewed studies demonstrated a lack of detail in epistemological and theoretical positioning. Grounded theory researchers should justify their choice or combination of a particular version(s) and fully articulate how each characteristic was utilized (Babchuk, 2011; Tan, 2010). Furthermore, researchers need an awareness of the nature of their selected approach and to acknowledge their own assumptions, because the theoretical perspective of the researcher, which is in turn informed by an epistemology, informs the selection of a grounded theory methodology and methods use (Birks & Mills, 2015; Crotty, 1998; Elharidy et al., 2008). Clear justification of the methodology and methods, together with explication of the underlying theoretical perspective and epistemology ensures a strong research design and valid and convincing outcomes of research (Crotty, 1998; Mills, Bonner, & Francis, 2008).

The majority of studies did not meet the CASP criteria of adequate consideration of the researcher/participant relationship. Examination of their role in the research process and how they respond to events throughout the study are elements for the researcher to consider and address (Critical Appraisal Skills Programme (CASP), 2013). Researchers and participants bring individual worldviews, experience and knowledge to the research project (Charmaz,

2014). A reciprocal relationship where views and beliefs are shared between researcher and participant is crucial, because it is via this interaction that an understanding of meaning and behaviours, and therefore knowledge, is constructed (Mallory, 2001). In studies designed to emphasize social, cultural or other differences, researchers must be cognisant that divergent characteristics of the participants and themselves may impact on interaction, thereby affecting the data collection and analysis process (Mallory, 2001). Acknowledging relationship differences enables the researcher to: i) position themselves in the research process and findings; ii) gain insight into the basic social and psychosocial processes experienced by participants and iii) explicate differences to increase credibility of research findings (Charmaz, 2014; Mallory, 2001).

Qualitative data gathering methods were preferred by authors of the reviewed papers, with the use of quantitative data collection methods reported in only two of the studies. Despite the “all is data” approach, (Glaser, 1998, p. 8) few of the reviewed studies combined qualitative and quantitative data. Surprisingly, most studies utilized only one or two methods for data collection. Interviews were the most popular data collection method. This finding is supported by the extant literature, which shows that although a range of qualitative and quantitative data collection methods can be used in grounded theory studies, most researchers selected interviews as the principle method for data collection (Birks & Mills, 2015; Glaser & Houlton, 2004). Nurse researchers using only interview data may produce studies that focus on participants’ lived experiences rather than the social processes or changes over time (McCann, 2003a). All types of data can be collected and analysed in grounded theory, thereby expanding the constant comparison method (Glaser, 1998). More case studies are needed to demonstrate how qualitative and quantitative data can be combined in grounded theory research. Using a range of data gathering methods can strongly substantiate findings, thereby adding value to the grounded theory (Birks & Mills, 2015).

Sample sizes for interviews were varied throughout the studies. The question of how many interviews should be conducted in qualitative research is contested (Baker & Edwards, 2012; Mason, 2010). Sample size in grounded theory studies is usually guided by the principle of theoretical saturation (Creswell, 2013). However, there is debate among researchers about what characterises saturation and how it may be recognized (Charmaz, 2014). The research question and objectives, analytical development during theoretical sampling, and the quality of data are all important factors in determination of sample size (Charmaz, 2014). Consideration of these factors can guide researchers so that sample size is sufficient to achieve “excellence, rather than adequacy” in level of analysis and subsequent theory construction (Charmaz, 2014, p. 108).

Studies varied in the reporting of research design and the utilization of grounded theory characteristics as outlined in the CASP inclusion criteria for qualitative studies. It is unclear in this review whether authors failed to report explicit details of theoretical perspectives, methodology or research procedures because of limitations in journal manuscript submission criteria or because they did not adhere to grounded theory processes (Hutchison et al., 2011). This was particularly apparent in the study by Lipp and Fothergill (2009), which provided a synopsis of the earlier study by Lipp (2008), and referred readers to that study for details of research design and process. As there is no formula for reporting grounded theory studies, it may be difficult for both authors and editors to include all relevant information in published research that enables true quality assessment (Hutchison et al., 2011).

Conclusion

Grounded theory is a contested and evolving research methodology. The findings from this review provide evidence that researchers of nurses and midwives’ coping processes utilized a range of grounded theory approaches. Few studies indicated the use of all common grounded

theory characteristics. Authors selectively used grounded theory characteristics according to the requirements of their research or their use of other methodological frameworks.

Researchers predominantly used qualitative data collection techniques and structured methods in the data analysis phase. A minority of researchers chose to use qualitative analysis software. Most researchers did not clarify the epistemological and theoretical perspectives underpinning their use of grounded theory methodology, nor did they explicate the relationship between themselves as researcher and the study participants. This has implications not only for research design but also for trustworthiness of the research. To improve grounded theory research in nursing and midwifery, researchers need to identify their theoretical stance and clearly articulate their use of grounded theory methodology and characteristics in research reporting.

Authors' contributions

KC, KT and DM conceived of the study and participated in the study design. KC took the lead role in database searching, reviewing the literature, data extraction and analysis, quality assessment of publications and drafted the paper. All authors edited and revised the draft paper and approved the final manuscript.

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Table 1: Study Characteristics

First author, year	1. Location	2. Setting	3. Participants	4. Sample size	5. Gender	6. Topic	7. Data collection methods
Asakura, 2011	Japan	Rural	Assistant and registered nurses	(n=12)	Male (n=12)	Survival strategies of male nurses in a female-dominated profession	Qualitative
Boroujeni, 2008	Iran	Urban	Acute care and cancer care nurses	(n=18)	Not stated	Nurses' preparation for loss	Qualitative
Dolan, 2012	Australia	Urban	Haemodialysis nurses	(n=16)	Female (n=12) Male (n=4)	Stressors and coping strategies of nurses providing renal care	Qualitative/Quantitative
Ekedahl, 2006	Sweden	Urban	Palliative care nurses	(n=15)	Female (n=13) Male (n=2)	Coping processes of nurses working with terminally ill and dying cancer patients	Qualitative
Furber, 2007	UK	Urban	Midwives	(n=30)	Not stated	Midwives providing newborn feeding support	Qualitative
Jamieson, 2008	Australia	Regional	Part time nurses	(n=86)	Female (n=80) Male (n=6)	Problems and responses for part-time nurses	Qualitative
Jannati, 2011	Iran	Regional	Clinical nurses	(n=28)	Not stated	Coping strategies for job stress	Qualitative
Lagerstrom, 2010	Iran	Urban	Registered nurses	(n=22)	Female (n=22)	Nurses' management of work and family roles	Qualitative
Lipp, 2009	UK	Not specified	Abortion care nurses	(n=12)	Female (n=12)	Nurse role and coping strategies in caring for women undergoing medical abortion	Qualitative

Lipp, 2008	UK	Not specified	Abortion care nurses	(n=12)	Female (n=12)	Nurse role and coping strategies in caring for women undergoing medical abortion	Qualitative
Musto, 2012	Canada	Not specified	Mental health nurses	(n=12)	Female (n=8) Male (n=4)	Coping processes used by nurses working with mentally ill adolescents	Qualitative
Peterson, 2010	USA	Not specified	Nurses in various roles ranging from school nurse to registered nurse	(n=15)	Female (n=12) Male (n=3)	Coping with provision of end-of-life care	Qualitative/Quantitative
Sandgren, 2006	Sweden	Urban	Palliative care nurses	(n=16)	Female (n=16)	Nurses' coping with emotional difficulties in palliative care	Qualitative
Slyater, 2015	Australia	Urban	Acute care nurses (with patient participants during observation stage)	(n=33)	Female (n=30) Male (n=3)	Nurses' responses to patients suffering severe pain	Qualitative
Smith, 2015	Australia	Metropolitan, rural, regional	Perioperative nurses	(n=35)	Female (n=33) Male (n=2)	Impact of multi-organ procurement surgical procedures impacts on perioperative nurses	Qualitative
Wilson, 2012	New Zealand	Not specified	Mental health nurses	(n=10)	Not stated	Process used by Maori mental health nurses to manage working in two culturally different worlds	Qualitative

Table 2. Application of Grounded Theory Characteristics

First author, year	1. Grounded theory approach	2. Data collection methods	3. Theoretical sampling	4. Theoretical sensitivity	5. Memo writing	6. Constant comparison	7. Theoretical Saturation	8. Coding and categorisation	9. Theory generation
Asakura, 2011	M-GTA: an altered version of Glaser and Strauss (1967). GT as a method.	Semi-structured interviews (p.195).	No. Purposive sampling (p.195)	No.	No.	No.	No	Concepts derived from interpretation of variations related to theme and person, and other variations from data. Concepts refined according to variations. Categories deduced from concepts, relationships between categories examined and mapped (p.195).	Use of storylines (p.196). Describes four aspects to the survival strategy of rural male nurses in Japan (p.202).
Boroujeni, 2008	Strauss and Corbin (1998). GT as a	Semi-structured interviews (p.2331)	Yes (p.2330). Concurrent data collection	No.	No.	Yes (p.2331).	No.	Open, axial and selective coding to	Four dimensions of core theme of "Finding a

	method.		on and analysis. (p.2331).					identify core variable (p.2331).	balance" discussed (p.2332).
Dolan, 2012	Strauss and Corbin (1998). GT as a methodology.	Interviews. Quantitative analysis used for descriptive purposes and to provide more object measurements in regard to the degree of coping (p.224).	Yes. Concurrent analysis and data collection (p.224).	Constant reflectivity (p.225).	Yes (p.224).	Implied in data analysis (p.224).	Yes (p.224).	Open, axial and selective coding to identify core category (p.224).	Conceptual model of perceived stressors and coping methods (pp.229-230).
Ekedahl, 2006	Glaser & Strauss (1967) starting point for analysis with later abductive analysis. GT as a method. Theoretical framework of coping theory from the psychology of religion and nursing theory.	Semi-structured interviews with guide that was not altered during data collection (p.131).	No. Snowballing sampling (p.131).	No.	No.	No.	No.	Analysis based on Kvale's model (1996, 1997). First stage is inductive, with categories and themes identified. Second stage is abductive, "moving between empirical and theoretical perspectives" (p.131).	Generation of hypotheses for coping theory (pp.137-138). Alternating coping strategies, can be functional or dysfunctional, depending on support and boundary settings.

(p.130)

Furber, 2007	Glaser (1998). GT as both method and methodology	Interviews (p.143).	Yes. Concurrent data collection and analyses (p.143)	No.	Yes (p.143).	Yes (p.142).	Yes (p.143)	Coding via line-by-line analysis. Constant, comparative techniques used to further analyse codes to develop concepts. NUDIST software used to store and analyse data (p.143).	Identification of two emerging themes: "Demands on time" and "Coping with newborn feeding in the hospital" (p.143).
Jamieson, 2008	Strauss and Corbin (1998). GT as a methodology	Focus groups and semi-structure interviews (p.885).	Yes (pp.884-885). Concurrent collection and analyses (p.885)	No.	Yes (p.885).	Yes (p.885).	Yes (p.886)	Open, axial and selective coding to identify core category (pp.885-886). Nvivo software	Theory of part-time nursing with corrective juggling (pp.889-890).
Jannati, 2011	Strauss and Corbin (1998). GT as both	Pilot study. Semi-structure interview	Yes. Concurrent data collection and	No.	Yes (p.125)	Yes (p.124).	Yes (p.124)	Open, axial and selective coding,	Conceptual model consisting of four

	method and methodology	works and participant observation (p.124).	analyses (p.124)					identification of a core variable (p.125). Coping strategies reported through content analysis (p.124).	phases (p.127).
Lagerstrom, 2010	Charmaz (2006) using Strauss & Corbin (1998) analytical methods. GT as a method.	Semi-structured interviews and focus groups. Concurrent data collection and analysis (pp.167-168).	Yes. Concurrent data collection and analysis. (p.167)	No.	Yes (p.168).	Yes (p.168).	Yes (p.168).	Open, axial and selective coding to identify core category (p.168).	Identification of core theme "Striving for balance between family and work demands" and supporting categories (p.168). Applies findings to the stress model of Carson and Kuipers (1998), with stressors, moderators and stress outcomes (p.111).
Lipp, 2009	Strauss and Corbin (1990). Supporting framework of feminist methodology. Neither method nor methodology	Open-ended interviews (p.110).	No, homogeneous then purposive sampling (p.110)	No.	No.	Yes (p.110).	No.	Strauss and Corbin's framework used to categorise the data and construct a central phenomenon (p.110).	Theory of fostering a woman-centred
Lipp, 2008	Charmaz (2006) and Strauss and Corbin	Open-ended interviews (p.12).	No, homogeneous then purposive sampling	Reflexivity. Notes that author "read around	No.	Yes (p.12)	Yes (p.12)	Open coding, complex coding and selectio	

	(1998). Supporting framework of feminist methodology .		ng (p.11). Concurrent data collection and analysis (pp.11-12).	" the literature at the beginning of research, explored her own frame of reference, philosophical and ethical stance (p.11).				n of core category. NVivo7 used to assist in interpretation of data and exploring themes and discovering and testing patterns (p.12).	service (p.18).
Musto , 2012	Glaser (1978). GT as a methodology .	Semi-structure d interviews in person or via phone, with a guide amende d during data collection (pp.138-139).	Yes. Concurrent data collection and analysis (p.139)	No.	Yes (p.139).	Yes (p.139)	Yes (p.139)	In-vivo coding, categorisation. Conceptual categories compared, relationships established, hypothesized and tested against new data (p.139).	Develop ed a substantive theory (p.137). Identification of basic social process of "Doing the best I can do", used to ameliorate the experience of moral distress (p.139). Presents results indicating two themes: internal/ external coping mechanisms (pp.437-438).
Peters on, 2010	Corbin and Strauss (2007), GT as a method.	Online open-ended survey. Quantitative measurements for participant characterisation. In-depth interviews	No. Snowball sampling technique both face-to-face at a university and online via contact s/email	No.	No.	Implied in analysis section (p.435).	No.	Coding and categorisation of identified themes (p.435).	

		conducted after examining the literature (pp.434-435).	(p.434)						
Sandgren, 2006	Glaser (1978, 1998). GT as both method and methodology	Field notes and memos from formal interviews, participant observation at conferences and grounded theory seminars (pp.80-81).	Yes. Concurrent data collection and analysis (p.81)	Yes. Literature review after substantive theory formulated, literature also used as secondary data (p.81).	Yes (pp. 80, 81)	Yes (p.81)	Yes (p.80)	Codes, concepts, constant comparison. Selective coding delimited the coding to variables related only to the core concept (p.81).	Theory of "Striving for emotional survival", consisting of three main strategies: emotional shielding, emotional processing and emotional postponing (p.93). Substantive theory proposing a link between the stress of nurses' disempowerment and a coping response that provides direction to support nurses' practice (pp.229, 237).
Slayter, 2015	Glaser & Strauss (1967). GT as a method.	Semi-structured interviews and participant observation (pp.231-233). Observation blocks amended during collection (p.233).	Yes. Concurrent data collection and analysis (p.231)	Literature review after substantive theory formulated, compared emergent theory to literature (p.232).	Yes (p.231).	Yes (p.231)	Yes (p.231)	Intense coding and analysis to identify conditions, properties, dimensions and consequences related to each category (p.231)	

Smith, 2015	Glaser & Strauss (1967); Glaser (1978). GT as both method and methodology .	Demographic data; semi-structured, open ended interviews; memos; reflective journaling; diagrams and conceptual models; literature and documents (p.707).	Yes. Concurrent data collection and analysis implied (p.707) .	Researcher positioning, reflexive review and bracketing to reduce personal bias (p.707) . Literature as data source.	Yes (pp.707-708)	Yes (pp.707-708).	Yes (p.707) .	Open and selective coding. Theoretical sampling and analysis continued until saturation of categories. Identification of core category (p.707).	Substantive theory of finding meaning to overcome hiding behind a mask. (p.708).
Wilson, 2012	Glaser (1992, 1998) informed by Maori-centred methodology . Neither method nor methodology .	Focus groups (p.1075) .	Yes. Concurrent data collection and analysis implied (p.1075) .	Reflection (p.1075). "Worldview and cultural processes remained central to the research process" (p.1074).	Yes (p.1075)	Yes (p.1075).	Yes (p.1075).	Codes, concepts and categories, achieved the criteria of "grab and fit" (p.1075) .	Middle-range, substantive theory of "Bridging two worlds" by "going beyond" and "practicing differently" (p.1075).

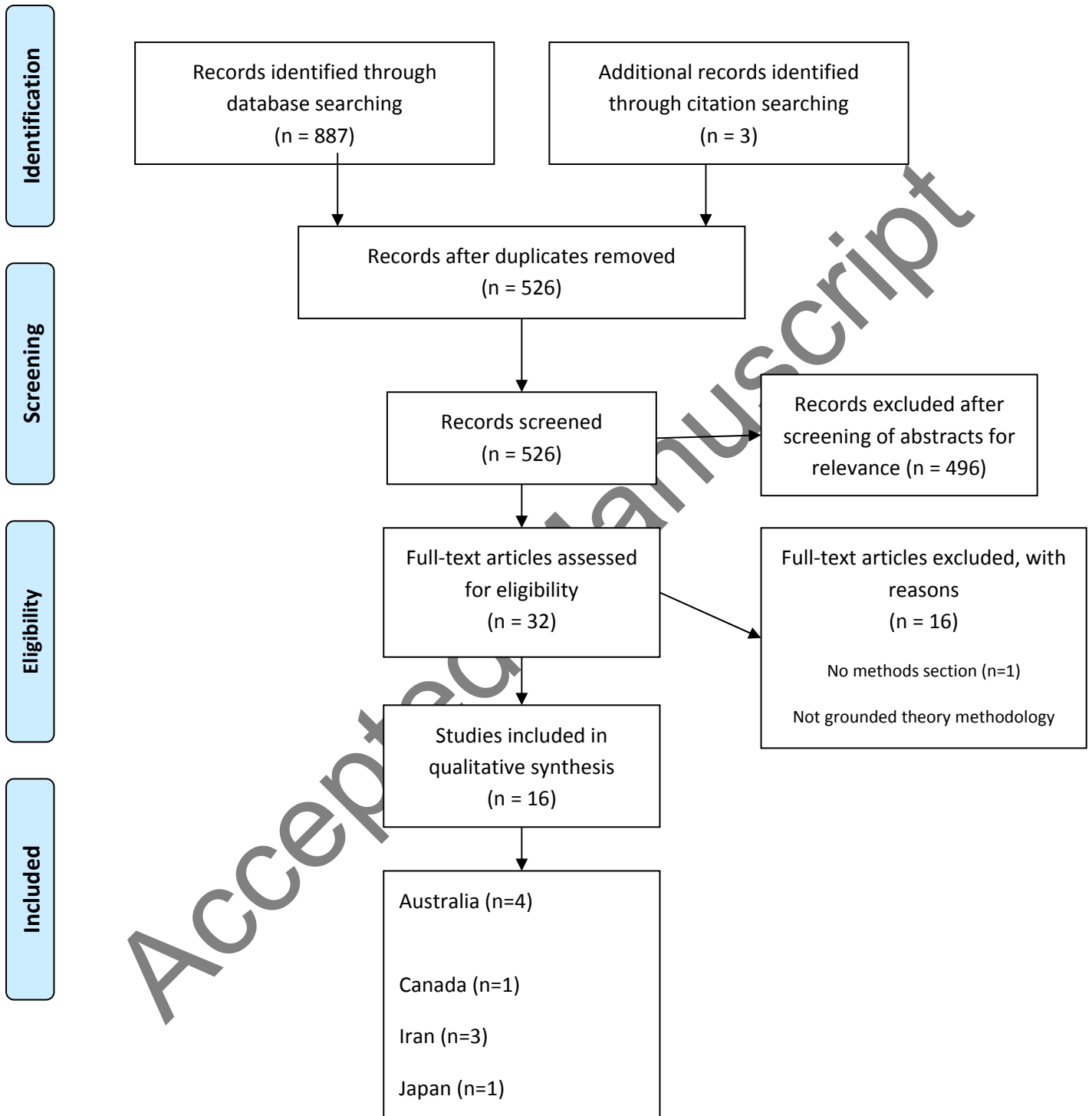
First author, year	Clear statement of research aims	Qualitative methodology appropriate?	Research design appropriate to address aims?	Recruitment strategy appropriate for aims?	Data collection addresses the research issue?	Relationship between researcher and participant considered?	Ethical issues considered?	Rigorous data analysis?	Clear statement of findings?	Research valuable?	Total score/20	Rating
Asakura, 2011	2	2	2	2	1	1	2	2	2	2	18	strong
Boroujeni, 2008	2	2	2	2	1	0	2	1	2	2	16	moderate
Dolan, 2012	2	2	2	2	2	0	2	2	2	2	18	strong
Ekedahl, 2006	2	2	2	2	1	0	2	1	2	2	16	moderate
Furber, 2007	2	2	2	2	2	0	2	2	2	2	18	strong
Jamieson, 2008	2	2	2	2	2	0	2	1	2	2	17	moderate
Jannati, 2011	2	2	2	2	2	0	2	1	2	2	17	moderate
Lagerstrom, 2010	2	2	2	2	2	0	2	1	2	2	17	moderate
Lipp, 2009	2	2	2	2	1	0	2	1	2	2	16	moderate
Lipp, 2008	2	2	2	2	2	2	2	2	2	2	20	very strong
Musto, 2012	2	2	2	2	2	0	2	1	2	2	17	moderate
Petersen, 2010	2	2	2	2	1	0	2	1	2	2	16	moderate
Sandgren, 2006	2	2	2	2	2	0	2	1	2	2	17	moderate
Slayter, 2015	2	2	2	2	2	0	2	1	2	2	17	moderate
Smith, 2015	2	2	2	2	2	2	2	2	2	2	20	very strong

Wilson, 2012	2	2	2	2	2	2	2	2	2	2	2	20	very strong
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PRISMA 2009 Flow Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097