Understanding nurse manager leader behaviours and their impact on nurse retention

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ABSTRACT:

Nurse shortages is a global phenomenon with an acute shortfall of nurses and midwives. The literature identifies several reasons for the nurse shortage, but one challenge is nurse retention. The aim of this systematic literature review is to understand the impact of nurse manager leaders on retention. From 25 studies in the review, there is evidence of links between nurse managers and retention, with a multi-faceted relationship and diverse connectivity between variables. Four main themes emerged linking the two: leader(ship) issues, relational issues, skills and the organisation. To understand these multiple dimensions, the concept of the rhizome is applied to provide a non-linear but holistic approach. Emerging challenges include comparability hindrances, research integrity, consensus on retention, and research gaps.

Keywords:

health leadership, health workforce issues, hospital management

Nurse shortages is a global phenomenon with a shortfall of approximately 9 million nurses and midwives in 2013 (WHO, 2016a). This unprecedented deficit deemed a "human resources crisis in health" (WHO, 2004), remains alarming, making solving nurse shortfalls a universal priority (Buchan & Aiken, 2008). The literature identifies several reasons for the nurse shortage, but one area that emerges is the challenge of nurse retention in this dynamic work environment. Poor nurse retention substantially impacts the healthcare services and developing strategies to address the high levels of attrition of nurses would contribute significantly to reduce this deficit (Buchan, Duffield, & Jordan, 2015). Today, the World Health Organisation (WHO) Global Strategy on Human Resources for Health: Workforce 2030 strives for redress of this global challenge to attain "health and well-being for all" (WHO, 2016b) with the launch of the Global Strategic Directions for Strengthening Nursing and Midwifery 2016-2020 (WHO, 2016c). The latter has conceptualised a framework for a new direction and developed themes, including motivating the nursing and midwifery workforce and optimizing effective leadership (Nkowane & Ferguson, 2016). Therefore, understanding the impact of leaders on nurse retention, particularly nurse managers (NM) as key stakeholder leaders, is crucial.

OVERVIEW OF THE LITERATURE

A systematic literature review (SLR) was undertaken to understand the relationship between nurse managers and retention - to respond to the question: "Does leader behaviour of NMs influence retention of the nursing workforce and how?" The review, which focused on academic literature rather than the grey literature, found the connection between retention and nurse managers to be multi-faceted. What emerges is: firstly, there were numerous variables researched to determine the relationship between NMs and retention; secondly, although retention was the focus, nearly half the studies researched proxies of retention rather than retention, namely, turnover, intent to leave (ITL), and intent to stay (ITS); thirdly, the majority of studies did not measure retention; fourthly, NMs were found to influence retention through multiple factors categorised by individual, organisational and work-related characteristics; and finally, the findings of this SLR evidence a plethora of variables that link NMs with retention, as well as a diverse connectivity between variables. Therefore, understanding the impact of NMs on nurse retention in an effort to find redress for nurse

shortages is extremely challenging and needs to be viewed through a theoretical lens that has the ability and capacity to embrace the diversity and superfluity of variables within this research area.

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

A SLR was selected as it is considered a "standard approach in assessing and summarizing applied health research" (Shea et al., 2009, p. 1013). In addition, its objective approach in collecting, critically appraising and analysing existing literature to address a pre-set question makes it a reliable method of assessing literature (Lau, Ioannidis & Schmid, 1998). Furthermore, the extraction and synthesis of data within predetermined inclusion and exclusion criteria promotes the focus into the field of study (http://www.nlm.nih.gov/nichsr/hta101/ta101014.html).

The SLR involved searching for relevant articles, collecting, collating and analysing data using various items under different groupings/headings based on existing approaches (http://www.griffith.edu.au/environment-planning-architecture/griffith-school-environment/research/systematic-quantitative-literature-review). It utilises the Joanna Briggs Institute Guidelines for Systematic Review Report Writing (http://joannabriggs.org/assets/docs/jbc/operations/prot-sr-bpis-tech-templates/JBC_Templ_SRreport.pdf). Initially, details on the types of studies, participants, organisations, interventions and outcomes are extracted and analysed. Subsequently, the AMSTAR tool (see **Table I**) is utilised to assess the SLR's methodological quality to ensure it is robust (Shea et al., 2007) and to attain a "valid interpretation and application of review findings" (Shea et al., 2009, p. 1013). Thereafter, this SLR will describe the search strategy and methods of review, provide a review of results and discussion, and, finally, conclude the review.

Table I: AMSTAR tool

Table 2: AMSTAR is a measurement tool created to assess the methodological quality of systematic reviews.

1. Was an 'a priori' design provided? The research question and inclusion criteria should be established before the conduct of the review.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
2. Was there duplicate study selection and data extraction? There should be at least two independent data extractors and a consensus procedure for disagreements should be in place.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
3. Was a comprehensive literature search performed? At least two electronic sources should be searched. The report must include years and databases used (e.g. Central, EMBASE, and MEDLINE). Key words and/or MESH terms must be stated and where feasible the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialized registers, or experts in the particular field of study, and by reviewing the references in the studies found.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
4. Was the status of publication (i.e. grey literature) used as an inclusion criterion? The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language etc.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
5. Was a list of studies (included and excluded) provided? A list of included and excluded studies should be provided.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
6. Were the characteristics of the included studies provided? In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions and outcomes. The ranges of characteristics in all the studies analyzed e.g. age, race, sex, relevant socioeconomic data, disease status, duration, severity, or other diseases should be reported.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
7. Was the scientific quality of the included studies assessed and documented? 'A priori' methods of assessment should be provided (e.g., for effectiveness studies if the author(s) chose to include only randomized, double-blind, placebo controlled studies, or allocation concealment as inclusion criteria); for other types of studies alternative items will be relevant.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
8. Was the scientific quality of the included studies used appropriately in formulating conclusions? The results of the methodological rigor and scientific quality should be considered in the analysis and the conclusions of the review, and explicitly stated in formulating recommendations.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
9. Were the methods used to combine the findings of studies appropriate? For the pooled results, a test should be done to ensure the studies were combinable, to assess their homogeneity (i.e. Chi-squared test for homogeneity, I^2). If heterogeneity exists a random effects model should be used and/or the clinical appropriateness of combining should be taken into consideration (i.e. is it sensible to combine?).	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
10. Was the likelihood of publication bias assessed? An assessment of publication bias should include a combination of graphical aids (e.g., funnel plot, other available tests) and/or statistical tests (e.g., Egger regression test).	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
11. Was the conflict of interest stated? Potential sources of support should be clearly acknowledged in both the systematic review and the included studies.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable

Shea, Grimshaw, Wells, Boers, Andersson, Hamel, Porter, Tugwell, Moher, Bouter, 2007, p. 5

METHODS

Search Strategy, Data Sources and Screening

The SLR involved searching in eight electronic databases at Murdoch University Library website during the month of December 2016. Databases included ABI Inform, Academic Research Library, Cochrane Library, EBSCOHost CINAHL (Business Source Complete and CINAHL with full text), ERIC, Medline and PUB Medline, and PsychINFO. The selection of databases was based on those most commonly used in SLRs in this field of study. Scopus was excluded due to differing search outcomes and accessibility. **Table II** provides a Summary of Search Strategy by Database.

Table II: Summary of Search Strategy by Database

DATABASES	Articles found in database using Boolean phrases	Articles relevant for review	Articles relevant for final review
EBSCOHost	95	70	10
ABI INFORM	52	27	3
Academic Research Library	125	2	0
PsycINFO	105	105	10
ERIC	1	1	0
Cochrane Library	4	4	0
Medline	10	10	1
PubMed	5	5	1
TOTAL	**397**	**224**	**25**

Limitations set included key words (Boolean/Phrase) used for the search: “nurse manager” and “staff retention” with no set timeframe, resulting in a total of 397 articles published between 1997 and 2016. The review was open to full-text peer-reviewed academic research resulting in 224 articles. A further review found 22 articles repeated in different databases, one dissertation and one duplicate, with an additional nine inaccessible articles. Inclusion and exclusion criteria were applied using a screening tool (see **Table III** overleaf) designed as an adaptation from Estabrooks, Goel, Thiel, Pinfold, Sawka & Williams (2001, p. 174) and Lee and Cummings (2008, p. 772).

Table III: Screening Tool for Inclusion and Exclusion Criteria

Does leader behaviour of nurse managers influence retention of the nursing workforce and how? **A systematic literature review (2017) - Screening tool for inclusion/exclusion**			
First Author:		Year:	
Instructions for completion: • Circle Y or N for each criterion • Record inclusion decision: article must satisfy all criteria indicated * • Record if additional references are to be retrieved			
Inclusion/exclusion criteria:			
1. Does the title have key words relevant to the question? Including Boolean phrases or terms included in (5) below?		YES	NO
2. Is the abstract relevant to the question?		YES	NO
3. Is the article an academic paper? *		YES	NO
4. Is the study empirical research? *		YES	NO
5. Does the study measure: □ Determinants □ Antecedents □ Retention	□ Turnover □ Intent to stay/leave/remain □ Resignation	YES	NO
6. Does the study include nurses, nursing staff or nurse managers? *		YES	NO
7. Is there some reference to working relationships or behaviours in the work place? Or between these groups of workers?		YES	NO
8. Is this article relevant to the question?		YES	NO
Notes:			

Screening tool adapted from Estabrooks, Goel, Thiel, Pinfold, Sawka & Williams (2001, p. 174) and Lee and Cummings (2008, p. 772).

Table IV: Table to show application of inclusion/exclusion criteria in the screening process

Detail of screening criteria	**Filter**	**No of articles remaining**
Boolean / Phrase "nurse manager" and "staff retention"	1	397
Exclusion criteria: non peer-reviewed and non-academic		224
Duplicate articles		202
Dissertation (removed)		201
Duplicate (removed)		200
Articles not accessible		193
By title		97
By abstract		92
By academic paper		81
By primary/secondary design method (empirical research?)		54
Does article include or make reference to nurse manager leader behaviour and workplace relationships		39
Does article broadly answer the research question?		25
FINAL TOTAL ARTICLES FOR SLR		**25**

On completion of applying these criteria, 25 articles remained for the SLR. A breakdown of the screening is provided at **Table IV** with a flowchart of the search strategy at **Figure 1**.

Figure 1: Flowchart for Search Strategy

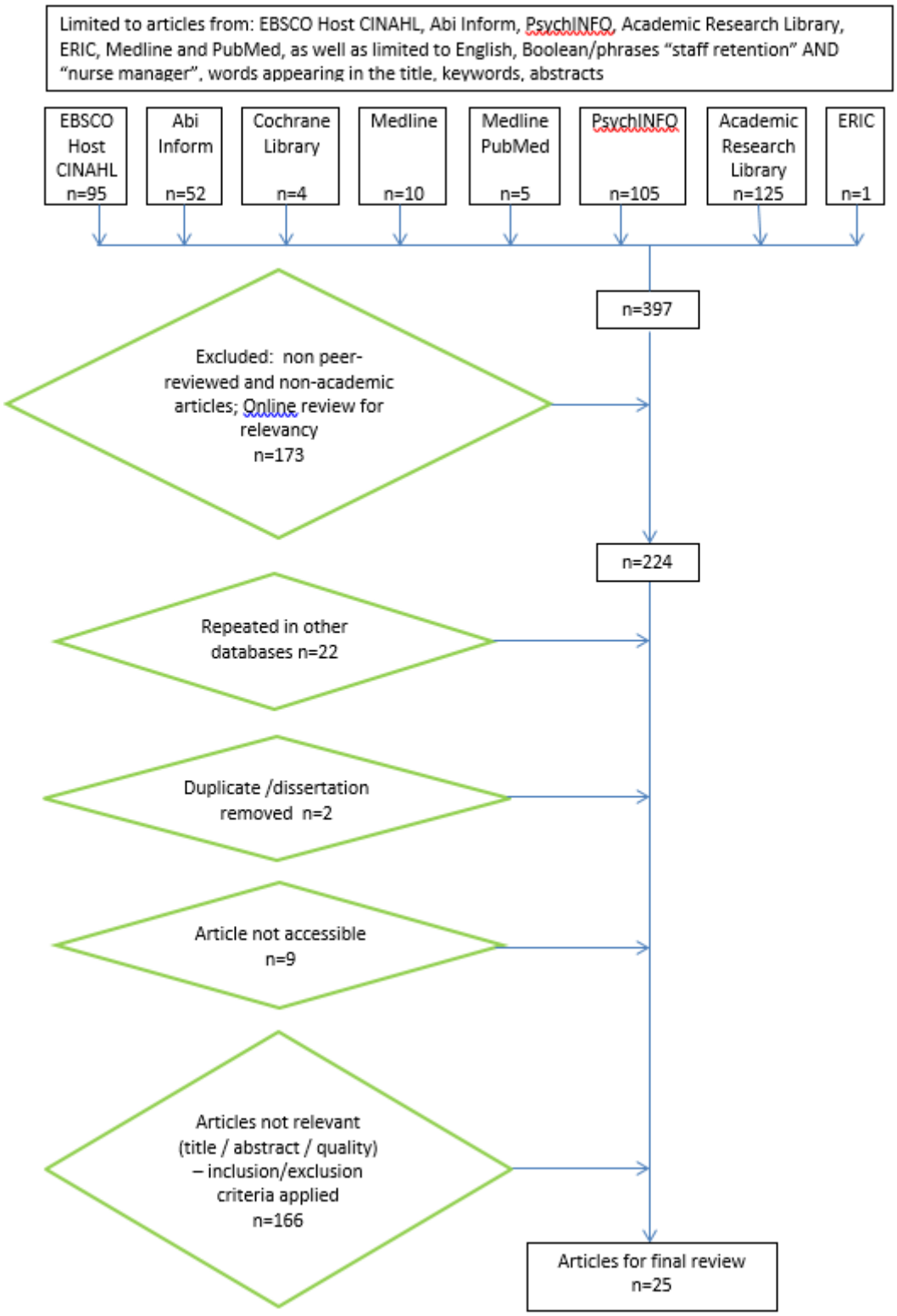

Table V: Summary Table of Data Extracted from 25 Journal Articles in Systematic Literature Review

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
Abualrub, R. F., et al. (2012). 20(5), 668-678.	Journal Of Nursing Management	Increasing nurses' satisfaction is one of the key elements in meeting challenges of quality outcomes, patient satisfaction and retention of staff nurses in hospitals (p. 668).	To examine impact of leadership styles of NMs on Saudi nurses job satisfaction and their ITS at work (p. 668).	Descriptive correlational design (n=308 Saudi nurses) (p. 671)	Multifactor Leadership Questionnaire (MLQ-5X), Job Satisfaction Survey (JSS), the McCain's Intent to Stay Scale; demographic form (p. 671)	None	Nurses moderately satisfied. Nurses more satisfied with leaders with transformational leadership styles. Satisfied nurses intend to stay at work. Variations in job satisfaction of 32% were explained for transformation and transactional leadership styles (p. 668).
Abualrub, R. F., et al. (2009). 56(3), 326-332.	International Nursing Review	Social support and job satisfaction are two organisational variables that affect the retention of nurses. Job satisfaction is the strongest predictor of retention whilst social support is positively correlated to retention (p. 326)	To investigate the relationships between social support, job satisfaction and intent to stay among Jordanian hospital nurses. To compare the findings between private and public hospitals (p. 326).	Correlational descriptive survey. Public hospitals (n = 288); private hospitals (n = 195) (p. 326).	McCloskey/Mueller Satisfaction Scale MMSS, Social Support Scale, McCain's Intent to Stay Scale, demographic form (p. 326).	None	Positive correlation between intent to stay and both job satisfaction and social support. Nurses in private hospitals had higher levels of satisfaction and intent to stay than public hospitals (p. 329).
Blake, N., et al. (2013). 37(4), 356-370.	Nursing Administration Quarterly	A healthy work environment can improve patient outcomes and registered nurse turnover. Creating a culture of retention and fostering healthy work environments are major challenges facing nurse leaders today (p. 356).	To examine the effects of the healthy work environment (communication, collaboration, and leadership) on RN turnover (p. 356).	Descriptive, cross- sectional, correlational design [n=415 paediatric critical care RNs from 10 paediatric intensive care units] (p. 356).	Practice Environment Scale of the Nursing Work Index Revised and a subscale of the Intensive Care Unit Nurse-Physician Communication Questionnaire (p. 356).	Donabedian structure, process, and outcome model (p. 357).	Statistically significant relationship between leadership and intent to leave; inverse relationship between years of experience and intent to leave. Communication and collaboration variables not significantly associated to intent to leave (p. 362).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
Brunetto, Y., et al. (2013). 69(12), 2786-2799.	Journal of Advanced Nursing	In a global context of nurse shortages, knowledge about factors impacting nurse retention is urgently sought. Social Exchange Theory was used to postulate that nurses' turnover intentions would be affected by several factors and especially their relationships at work (p. 2876).	A comparative study between nurses in hospitals in Australia and USA to examine the impact of workplace relationships (perceived organizational support, supervisor–nurse relationships and teamwork) on the engagement, well-being, organizational commitment and turnover intentions of nurses (p. 2876)	A self-report survey (2010–2012). [n=510 nurses (Australian hospitals) and n=718 nurses (US hospitals)] (p. 2876)	Self-report survey and literature review (p. 2789)	Social Exchange Theory (p. 2787)	The model predicted correlations of variables for Australia more than USA. All paths (hypotheses) except impact of teamwork on organisational commitment and turnover, and engagement on turnover, were predicted for Australia. No paths related to supervisor-subordinate relationships were significant for USA (neither for teamwork to organisational commitment or turnover) (p. 2789).
Cummings, G. G., et al. (2008). 16(5), 508-518.	Journal of Nursing Management	Current Canadian oncology work environments are challenged by the same workforce statistics as other nursing specialties: nurses are among the most overworked, stressed and sick workers, and more than 8% of the nursing workforce is absent each week due to illness (p. 508).	To develop and estimate a theoretical model of work environment factors affecting oncology nurses job satisfaction (p. 508).	Descriptive research design. [n=515 Oncology RNs Canada.] The theoretical model was tested as a structural equation model (p. 510).	Nursing Work Index-Revised (p. 510)	A theory of emotionally intelligent leadership (Cummings et al. 2005); a theoretical model of oncology nursing work environment (p. 509)	Relational leadership and physician-nurse relationships significantly influenced opportunities for staff development, RN staffing adequacy, nurse autonomy, participation in policy decisions, support for innovative ideas and supervisor support in managing conflict. These in turn increased nurses job satisfaction (p. 515).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
Duffield, C., et al. (2011). 20(1/2), 23-33.	Journal Of Clinical Nursing	NMs play a critical role in creating a positive work environment, which will increase levels of job satisfaction and staff retention. Important leadership characteristics of the front-line NMs include visibility, accessibility, consultation, recognition and support (p. 23).	Examined impact of NMs leadership characteristics as perceived by staff nurses, on staff satisfaction and retention (p. 23).	Secondary analysis of data (94 randomly selected wards in 21 public hospitals; two Australian states 2004–2006, n=2488) (p. 23).	Nursing Work Index - (data collected from a larger survey)	Concepts of nurse staffing, workload, the working environment, nurse and patient outcomes without predictions of specific links (p. 26).	Good NM leaders considered those who are visible, consulted with staff, provided praise and recognition and provided flexible work schedules (p. 23).
Duffield, C., et al. (2009). 16(1), 11-17.	Collegian	Despite recent increases in nursing recruitment in Australia, participation in the workforce is still below the numbers predicted to meet future needs (p. 11).	This paper discusses factors influencing nurses' job satisfaction, satisfaction with nursing and intention to leave in public sector hospitals in New South Wales (NSW), Australia (p. 11).	Staffing and patient data from 80 medical and surgical units (2004/5) (p. 13).	Nurse Survey (national survey): Nursing Work Index-Revised; Environmental Complexity Scale	In data analysis, multilevel models by Snijders and Boskers (1999) were applied (p. 14)	Work environment factors (autonomy, control over practice and leadership) statistically significant predictors of job satisfaction. Intent to remain mainly due to higher satisfaction, better leadership, provision of allied health support, nurses older and have dependents (p. 11).
Dyess, S., et al. (2012). 20(5), 615-623.	Journal of Nursing Management	New RN transition is recognized globally as a challenge. Nurse managers desire successful programmes that support transition into professional practice. One community developed and implemented an on-going programme that supported the new RNs	To describe and evaluate a collaborative programme that supports newly licensed registered nurses (RNs) (p. 615).	Mixed methods approach (evaluation of programme). [n=109 newly licensed nurses; 10-month programme] (p. 618).	Questionnaire - Nursing Evaluation Competency Assessment instrument; Student Leadership practices Inventory (Kouzes and Posner, 2002) (p. 619).	None	Skill acquisition occurred, retention improved, and transition was supported. Leadership development and psychosocial and technical skills sets improved for participants involved with the programme (p. 615).

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		transition and leadership development (p. 615).					
Fairbrother, G., et al. (2010). 35(2), 202-220.	Contemporary Nurse : A Journal for the Australian Nursing Profession	Agreement was reached with 12 acute medical and surgical wards/units at Sydney's Prince of Wales Hospital to participate in a trial of team nursing (TN) (p. 202).	To implement localised team-based care models using social action research principles. To introduce supportive and communicative processes aimed at fostering responsibility sharing (instead of task-based teaming) (p. 202).	Action research: 6 units employed action research principles to change to a team nursing model (TN); 6 units remained with pre-existing individual patient allocation (IPA) model (p. 204).	Nursing Workplace Satisfaction Questionnaire	A team nursing model: a nursing theory base (Orlando's nursing process) (Orlando, 1972) (p. 203).	Statistically significant benefits of job satisfaction and staff retention associated with a team-based model of care delivery (p. 202).
Forsyth, S., et al. (2006). 56(2), 209-216.	Journal of Advanced Nursing	A revisit to Turner's notion of a vocabulary of complaint in the context of a study of nurse retention in the contemporary Australian healthcare workplace (p. 209).	To evaluate and increase understanding of contemporary RNs' discontents, and to compare these discontents and their effects with those of nurses 20 years ago (p. 209).	Qualitative data collection [n=146 Australian RNs] (p. 211)	Elaboration on thematic analyses of comments (p. 211)	None	Focus and responses of complaints have changed since Turner's study. Important issues that emerged were 'conflicting expectations of nurses and managers' and 'lack of opportunity to provide comprehensive care'. Underlying reason influencing ITL: discontents and intense personal frustration (p. 214).

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Gifford. B. D., et al. (2002). 47(1), 13-25.	Journal of Healthcare Management	Turnover rates for hospital nurses have been increasing in recent years, which is practical a result of increasing pressure on nurses from higher productivity expectations in a managed care environment. Improving nurse retention is a difficult challenge to managers since the bureaucratic cultural norm of hospitals may not be the culture most conducive to enhancing nurses' job satisfaction and commitment (p. 13).	Study of relationships between unit organisational culture and job-related variables for nurse retention	Competing values framework (CVF) in relation to quality of work life (QWL)	Questionnaire	Competing Value Framework (p. 15)	Human relations model has the strongest statistical relationship with quality-work-life measures; positively related to commitment, job involvement, empowerment, and job satisfaction; statistically negative relationship with intent to turnover (p. 20).
Kleinman. C. (2004). 82(4), 2-9.	Hospital Topics	To clarify which nurse manager leadership behaviours contribute most to staff nurse retention (p. 2).	To describe perceptions of managerial leadership behaviours associated with staff nurse turnover. To compare nurse manager leadership behaviours as perceived by managers and their staff nurses. To evaluate the influence of a wide range of managerial leadership behaviours on staff nurse retention (p. 2).	Descriptive, correlational study [n=79 staff nurses and 10 nurse managers] (p. 2)	Multifactor Leadership Questionnaire	Model of leadership (Bass and Avolio, 2000); Causal model for staff nurse retention (Taunton, et al., 1997) (pp. 2-3)	Active management by exception only managerial leadership style associated with turnover. NMs had perceived higher mean frequency of transformational leadership behaviours compared to perception of nurses (p. 7).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
Kooker, B. M., et al. (2011). 20(1-2), 34-39.	Journal of Clinical Nursing	Nursing leadership critically analysed their registered nurse retention data. The retention rate among new nurses in their first year of employment was only 55.97% (p. 34).	To describe an assessment of a major retention initiative in response to the nursing workforce shortage (p. 34).	New nurses went through a training programme to improve retention and patient care outcomes. NM leadership skills were expanded to strengthen their role in retention of new nurses. [n=???] (p. 34).	Evaluation tools	None	Year 1 RN retention improve 56-68%; Vacancy rate decreased 11-2%; nurse satisfaction-autonomy improved 44-49%; nurse satisfaction-decision-making 41-48%; ulcer rate decreased 15-7% (p. 34).
Manion, J. (2004). 35(4), 29-39.	Nursing Management	Frontline managers share perceptions regarding what makes - or breaks - a flourishing nursing environment (p. 29.	The researcher sought to determine what successful nurse managers actually do to create a culture of retention in their areas of responsibility (p. 30).	Interviews; focus groups [n=26 NMs; included critical care, medical/surgical, emergency, perioperative service and one clinic setting] (p. 30).	Interviews; focus groups	None	Over 20 factors of how NMs create a culture of retention: [5 themes]: 1) put the staff first 2) forge authentic connections 3) coach for and expect 4) focus on results 5) partner with staff (p. 30).
Mrayyan, M. T. (2008). 27(2), 223-236.	Contemporary Nurse	There is an increasing drive towards improving quality care with fewer resources resulting in organisational changes, which impact the organisational climate of healthcare organisations. To effectively manage these changes, social variables that influence work-related attitudes and providing a conducive work climate to retain nurses must be understood (p. 224).	To assess variables of hospitals organisational climates and nurses intent to stay in intensive care units and wards. This study aims at studying the relationship between hospital organisational climate and nurse intention to stay (p. 223).	Descriptive comparative design [n=349 nurses working in 7 hospitals in Jordan] (p. 223).	Farley's Nursing Practice Environment Scale; McCain's Behavioural Commitment Scale (p. 26).	None	Most important variables that influence hospitals organisational climates are quality of care and professionalism. No significant difference between intensive care units and wards. Hospitals organisational climates and intent to stay significantly correlated for whole sample and intensive care units but not for wards (p. 223).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
O'Brien-Pallas, L., et al. (2010). 18(8), 1073-1086.	Journal of Nursing Management	Nursing turnover is an issue of ever-increasing priority as work-related stress and job dissatisfaction are influencing nurses' intention to leave their positions (p. 1073).	As part of a large study of nursing turnover in Canadian hospitals, the present study focuses on the impact and key determinants of nurse turnover and implications for management strategies in nursing units (p. 1073).	Data sources included the nurse survey, unit managers, medical records and human resources databases. A broad sample of hospitals was represented with nine different types of nursing units included (p. 1073).	Patient Care System and Nurse Turnover Model; Reasons for Leaving Survey; Turnover Vacancy and Unit Cost instrument (p. 1075).	Patient Care System and Nurse Turnover Model (O'Brien-Pallas et al. 2008)	Higher levels of role ambiguity and role conflict associated with higher turnover rates. Increased role conflict and higher turnover rates associated with deteriorated mental health. Higher turnover rates associated with lower job satisfaction. Higher turnover rate and higher level of role ambiguity associated with increased likelihood of medical error (p. 1073).
O'donnell, D. M., et al. (2012). 41(2), 198-205.	Contemporary Nurse: A Journal For The Australian Nursing Profession	NUMs are in the unique position within the healthcare industry to impact upon and effect large numbers of people, including nurses, doctors, patients and their families, and processes on a daily basis. More effective HRM practices could improve performance in terms of staff satisfaction, positive patient outcomes and the cost effectiveness of staff retention (p. 198).	To identify the practical HRM issues that may impact on job satisfaction, nurse retention and quality of patient care of the NM role (p. 198).	Descriptive phenomenological approach (semi-structured interview format); [2 focus groups: n=9 NMs and n=5 nurses; Australia public hospital] (p. 198)	Focus groups	AMO framework ; Boxall & Purcell, 2008; AMO = abilities, motivation, opportunities (P. 199)	NMs inadequate skills to manage conflict requiring disciplinary intervention with consequences of reduced staff morale, decreased staff satisfaction, increased stress to NM and retention issues for both NMs and staff (pp. 198, 203).

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Raup, G. H. (2008). 34(5), 403-409.	Journal of Emergency Nursing	NMs with effective leadership skills are an essential component to the solution for ending the nursing shortage. Empirical studies of existing ED NM leadership styles and their impact on key nurse management outcomes such as staff nurse turnover and patient satisfaction have not been performed (p. 403).	The specific aims of this study were to determine what types of leadership styles ED NMs in academic health centre hospitals used. To examine their influence on staff nurse turnover and patient satisfaction (p. 405).	Surveys [n=15 managers and 30 staff nurses representing 15 out of 98 possible U.S. academic health centres] (p. 403).	Multifactor Leadership Questionnaire; demographics survey	Bass's Full Range Leadership Model; Multifactor Leadership Questionnaire to measure Transformational and non-Transformational leadership behaviours (p. 403).	Trend of lower staff turnover with transformational leadership style compared to non-transformational leadership styles. Type of leadership style did not have an effect on patient satisfaction (p. 403).
Ribelin, P. J. (2003). 34(8), 18-19	Nursing Management	This article purports nurses leave managers not hospitals and looks at evaluating the effect of leadership style on nurses' intent to stay (p. 18).	To assess managerial leadership style in the areas of thrust and aloofness (p. 19).	Questionnaires [convenience sample n=2029 direct patient care nursing providers, large Midwestern health care system consisting of 3 hospitals, large tertiary care community hospital, major university affiliated medical centre, children's hospital] (p. 19).	Questionnaires	None	Positive statistically significant relationship between manager's leadership style and nurse's intent to stay. The better the manager's leadership style was perceived, the greater the nurse's intent to stay (p. 19).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
Robinson, S., et al. (2005). 14(4), 230-242.	International Journal of Mental Health Nursing	In the UK, strategies to improve retention of the mental health workforce feature prominently in health policy (p. 230).	This paper reports on a longitudinal national study into the careers of mental health nurses in the UK (p. 230).	Longitudinal design; semi-structured interviews [n=30 diplomates for pilot re terminology; n=100 diplomates for pilot re response rates and test for internal consistency; n=554 diplomates for study] (p. 232)	Questionnaire; interviews	National Service Framework (NSF) for mental health (DoH 1999a)	Main sources of job satisfaction are caregiving opportunities and supportive working relationships. Main sources of dissatisfaction are pay in relation to responsibility, paperwork, continuing education opportunities, and career guidance. Intent to remain in nursing in 5 years affected by gender and ethnicity; in 10 years by age, children, educational background, ethnic background, and time in first job (pp. 230, 235).
Taunton, R. L., et al. (1997). 19(2), 205-226.	Western Journal of Nursing Research	Recruitment and retention of hospital nurses continue to be critical issues in the health care industry, with the proportion of vacant positions for registered nurses (RNs) projected at 17.4% for the year 2000 (McKibbin, 1990; U.S. Department of Health and Human Services, 1989). The Bureau of Labor Statistics is projecting 25% expansion for RN jobs by 2005 ("How Jobs," 1996; Silvestri, 1995). If the agency's assumptions hold true, a shortage of 90,000 nurses will accrue by that time (Carpenter, 1996) (p. 205).	To trace the effects of manager leadership characteristics on staff registered nurse retention in 4 urban hospitals (p. 205).	Causal modelling [n=95 NMs, n=1171 staff nurses in 4 urban hospitals] (p. 208).	Causal modelling; Leavitt's model of behaviour	Investigator-developed Organizational Dynamics Paradigm of Nurse Retention; Leavitt's (1958) model of behavior	Effects of manager characteristics traced to retention through work characteristics, job stress, job satisfaction, commitment, and intent to stay. Intent to remain and manager consideration of staff directly affected retention (pp. 205, 223).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
Tourangeau, A. E., et al. (2010). 66(1), 22-32.	Journal of Advanced Nursing	A worsening shortage of nurses globally suggests that efforts must be made to promote retention of nurses. However, effective retention promotion strategies depend on understanding the factors influencing nurse retention (p. 22).	This paper is a report of a study to identify nurse reported determinants of intention to remain employed. To develop a model explaining determinants of hospital nurse intention to remain employed (p. 22).	Descriptive study using focus group methodology [n=13 focus groups, 78 nurses, 2 Canadian provinces] (p. 22).	Focus groups	Theory of Reasoned Action (Fishbein & Ajzen 1975, Ajzen & Fishbein 1980) (p. 23).	Eight thematic categories reflecting factors nurses described as influencing their intentions to remain employed: (1) relationships with co-workers, (2) condition of the work environment, (3) relationship with and support from one's manager, (4) work rewards, (5) organizational support and practices, (6) physical and psychological responses to work, (7) patient relationships and other job content, and (8) external factors (p. 22).
Wagner, S. E. (2006). 37(3), 24-29.	Nursing Management	There's growing interest in moving beyond trying to "satisfy" nurses to "engaging" them in the workplace. Employees' engagement with work is an important predictor of job satisfaction and intention to remain in an organization since engaged nurses use discretionary energy resulting in outstanding performance. Since employee engagement significantly impacts retention, absenteeism, patient satisfaction, patient outcomes, and ultimately, patient safety, efforts to improve quality of nursing work environments are	Goals of grant initiative were to: ♦ ensure NMs understand key factors that drive nurse engagement & impact on performance & retention ♦ provide hospitals with actionable, benchmarked data on their nurses' level of engagement ♦ demonstrate link between level of nurse engagement & retention, recruitment, patient satisfaction, patient safety, & reputation of the organization ♦ report the	Survey: Evidence-based validated Workforce Engage and Nurse Engage system [n=14 hospitals across New York State with 54% of nurses in participating hospitals completing survey] (p. 26).	Evidence-based validated Workforce Engage and Nurse Engage system	None	Factors that keep nurses engaged: close relationships with co-workers mutual support, meaning and satisfaction from interacting with patients, flexible work schedules, and good working relationship with managers. Committed leadership key factor to nurse engagement. 85% of highly engaged nurses no intent to leave; 42% of disengaged nurses no intent to leave within next 12 months (p. 27).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
		critically important to sustaining a strong nursing workforce (p. 25).	strategies, practices, behaviours, & actions that have improved employee trust & engagement ♦ report on progress & outcomes from the participating hospital action plans (p. 26).				
Wieck, K., (2010). 45(1).	Nursing Forum	The purpose of this project was a generational assessment of job satisfaction, work environment, and desired characteristics of managers in an effort to improve nurse retention (p. 7).	Aim: to provide a generational analysis of nurse satisfaction and management priorities. Goal: to increase the likelihood of retention for each of the generations in today's workplace. The study assesses what nurses value in their managers and what they want from their employer. Overall objective: to increase retention in a nurse-friendly environment that meets the safety needs of the patients, the personal needs of the nurse, and the staffing needs of the hospital (p. 7).	Nurse Manager Desired Traits survey; Nursing Work Index-Revised [n=22 southern hospitals] (p. 7).	Nurse Manager Desired Traits survey; Nursing Work Index-Revised	None	High satisfaction with work environment; highest satisfaction with nurse-physician relationships; lowest satisfaction nurse control of practice. Younger nurses less satisfied than those over 40 years. 61% intent to leave current job within 10 years. Skills needed by nurse managers to improve retention by addressing generational differences in the work setting are identified (p. 7).

First Author/Year	Journal	Abstract/Background/ Introduction	Aim / Purpose	Methodology / Design Method	Instrument	Conceptual Framework	Findings / Results
Wojciechowski, E. (2011). 27(4), E10-17.	Journal for Nurses in Staff Development	Charge nurses are part of the nurse manager leadership team, yet they are often appointed to their roles with minimal, if any, leadership training, education, or mentoring. Literature shows that nursing leadership affects staff retention, satisfaction, and patient outcomes (p. E10).	In this study, charge nurses were surveyed about their learning needs, the barriers in functioning as a charge nurse, and their view of helpful resources in performing the role of a charge nurse (p. E10).	Non-Experimental qualitative survey design; demographic information (p. E12)	Survey	None	A need for staff educators to use a transformational leadership style, which will ensure a strong framework for nurse leadership competency, and to facilitate charge nurse competency through mentoring and online training. Main competency areas: developing leadership skills, managing behaviours, and creating a health work environment (p. E10).

Source: An adaptation of Fineout-Overholt, Melnyk, Stillwell & Williamson's (2010) Evaluation Table (p. 50).

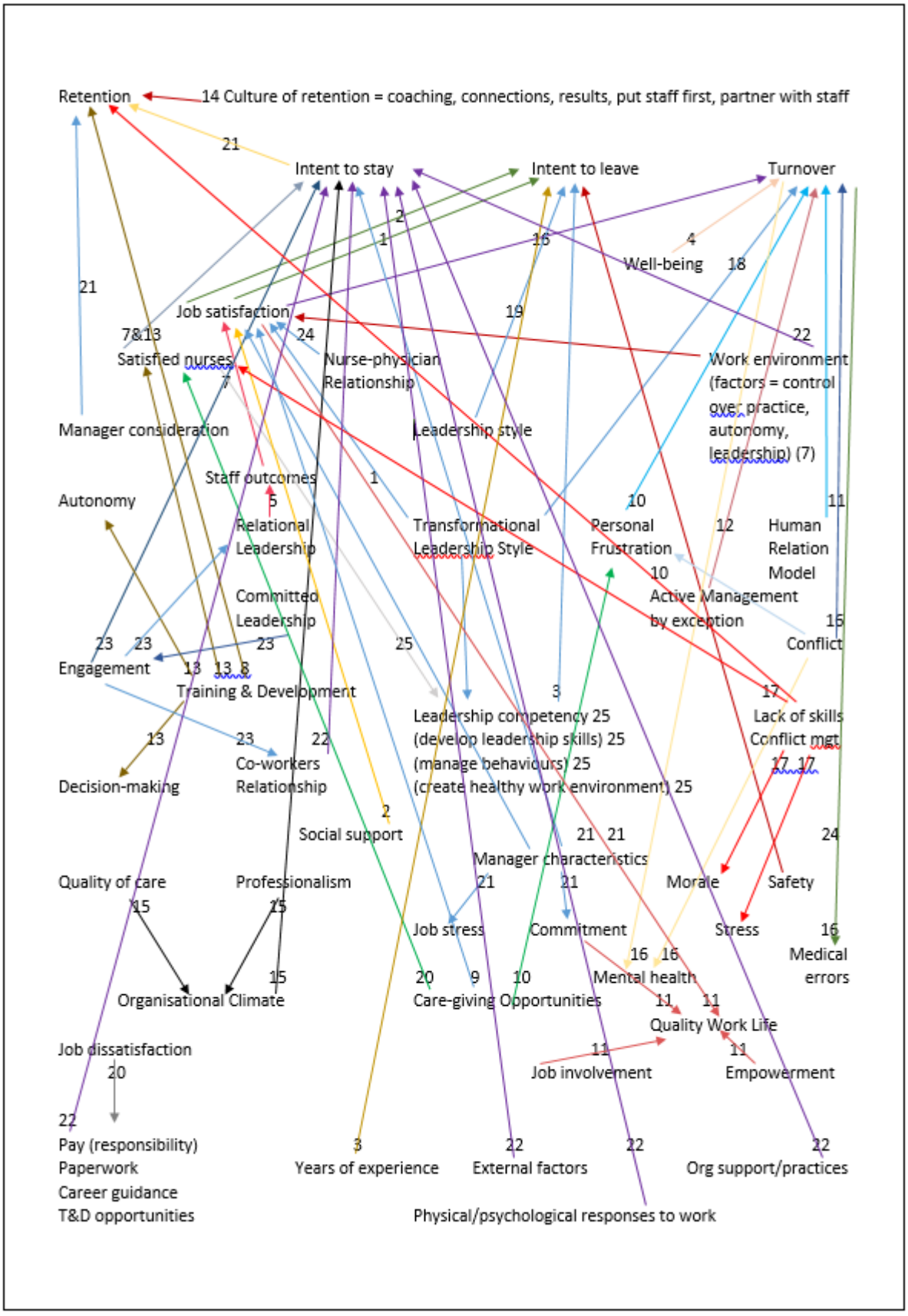
Data Extraction, Data Analysis and Data Synthesis

Data from the articles was extracted under separate headings using an adaptation of Fineout-Overholt, Melnyk, Stillwell and Williamson's (2010) Evaluation Table (p. 50). Headings included: database, citation, author(s), year of publication, journal, country, sector, organisation type, keywords, abstract, aim, methodology/design method, instruments/tools, conceptual/theoretical framework, participants, validity/reliability tools, findings/results, my personal notes. An extract of the data summary table, which later informed the data analysis, is provided at **Table V**.

For each data set in **Table V**, further data extraction within each data set provided an overview of results of the studies under different subjects, namely: variables, geographical location, journal, year of publication, research design (methodology, methods, instruments/tools, frameworks, reliability and validity), target group (participants), organisation (type and sector), leadership style, outcomes (proxies of retention and retention), and findings/results of the studies undertaken.

Variables from the research findings were extracted and diagrammed for comparison, given the data evidences a diversity of interactants. The diagram in **Figure 2** links the variables from the research findings of each study to identify patterns in the data. What transpires is no clear pattern emerging although the diagram highlights the diversity of variables measured linking retention and nurse managers as well as certain variables within the data set forming a nucleus with several connections (e.g. job satisfaction, intent to stay, turnover).

Figure 2: Diagram showing links between measured variables of retention with number referring to journal article from which study was undertaken (key with citations in table below diagram)



Key for Figure 2: References for numbers in diagram

1	Abualrub, R. F., & Alghamdi, M. G. (2012)
2	Abualrub, R. F., Omari, F. H., & Al-Zaru, I. M. (2009)
3	Blake, N., Leach, L. S., Robbins, W., Pike, N., & Needleman, J. (2013)
4	Brunetto Y., Xerri M., Shriberg A., Farr-Wharton R., Shacklock K., Newman S. & Dienger J. (2013)
5	Cummings, G. G., Olson, K., Hayduk, L., Bakker, D., Fitch, M., Green, E., . . . Conlon, M. (2008)
6	Duffield, C., Roche, M., Blay, N., & Stasa, H. (2011)
7	Duffield, C., Roche, M., O'Brien-Pallas, L., Catling-Paull, C., & King, M. (2009)
8	Dyess, S., & Parker, C. G. (2012)
9	Fairbrother, G., Jones, A., & Rivas, K. (2010)
10	Forsyth, S., & McKenzie, H. (2006)
11	Gifford, B. D., Zammuto, R. F., Goodman, E. A., & Hill, K. S. (2002)
12	Kleinman, C. (2004)
13	Kooker, B. M., & Kamikawa, C. (2011)
14	Manion, J. (2004)
15	Mrayyan, M. T. (2008)
16	O'Brien-Pallas, L., Murphy, G. T., Shamian, J., LI, X., & Hayes, L. J. (2010)
17	O'donnell, D. M., Livingston, P. M., & Bartram, T. (2012)
18	Raup, G. H. (2008)
19	Ribelin, P. J. (2003)
20	Robinson, S., Murrells, T., & Smith, E. M. (2005)
21	Taunton, R. L., Boyle, D. K., Woods, C. Q., Hansen, H. E., & Bott, M. J. (1997)
22	Tourangeau, A. E., Cummings, G., Cranley, L. A., Ferron, E. M., & Harvey, S. (2010)
23	Wagner, S. E. (2006)
24	Wieck, K., Dols, J., & Landrum, P. (2010)
25	Wojciechowski, E., Ritze-Cullen, N., & Tyrrell, S. (2011)

Thematic analysis was applied to this data in two stages (shown in **Table VI**): firstly data was grouped by retention and proxies of retention (see column B**)** and variables researched (column C); and, secondly, themes were identified from analysing of research findings (see column D&E). Narrative synthesis was applied to this data to identify emerging word summaries (column F) and word themes (column G). The word themes were then transformed to ascertain "common [thematic areas] between the studies" (Ryan, 2013, p. 3). Thereafter, this synthesised data was grouped under main themes and vote counting applied (columns H-K) (Ryan, 2013) to determine links between NMs and retention in quantitative terms as a percentage of the whole.

Table VI: Data synthesis from research findings – themes, vote counting and grouping of data

A	B	C	D	E	F	G	H	I	J	K
Reference	**Proxies of retention**	**Variable(s) researched**	**Data from research findings**	**Theme from Findings/Results of study**	**Word Summary from theme**	**Word Summary details**	**Studies**	**Main theme**	**Total studies**	**Percentage**
Taunton, R. L., Boyle, D. K., Woods, C. Q., Hansen, H. E., & Bott, M. J. (1997)	Retention	Leadership, causal model	Manager characteristics influence = work characteristics, job stress, job satisfaction, commitment and intent to stay; manager consideration of staff = directly affects = retention; nurse intent to remain = directly affects = retention; different predictors were important to retention, unit separation and turnover	Manager characteristics influence work characteristics, job stress, job satisfaction, commitment and intent to stay; Intent to stay predicts retention.	Leader	characteristics	1	**Leadership**	**10**	**40 %**
Ribelin, P. J. (2003)	Intent to stay	Leadership style, satisfaction	Leadership style = positive significant relationship = intent to stay	Leadership style affects intent to stay	Leadership	Style				
Abualrub, R. F., & Alghamdi, M. G. (2012)	Intent to stay	Leadership style	Higher job satisfaction with transformational leadership style; higher job satisfaction, higher intent to stay	Leadership style impacts job satisfaction and intent to stay	Leadership	Style				
Duffield, C., Roche, M., Blay, N., & Stasa, H. (2011)	Retention	Leadership characteristics on satisfaction	A good leader was visible, consulted staff, provided praise and recognition, enabled flexible work schedules	Leadership style and behaviour influences satisfaction	Leadership	Style				
Kleinman, C. (2004)	Retention	Leadership style, job satisfaction	Active management by exception (leadership style) associated with turnover	Leadership style (Active management by exception) affects turnover	Leadership	Style				

A	B	C	D	E	F	G	H	I	J	K
Reference	**Proxies of retention**	**Variable(s) researched**	**Data from research findings**	**Theme from Findings/Results of study**	**Word Summary from theme**	**Word Summary details**	**Studies**	**Main theme**	**Total studies**	**Percentage**
Cummings, G. G., Olson, K., Hayduk, L., Bakker, D., Fitch, M., Green, E., . . . Conlon, M. (2008)	Retention	Job satisfaction	Relationship leadership significantly influenced staff outcomes (i.e. development opportunities, staffing adequacy, autonomy, policy decision participation, innovation, supervisor support in managing conflict); relationship leadership influenced staff outcomes which in turn increased job satisfaction	Relationship leadership influences staff outcomes which increase job satisfaction	Leadership	Style (Relational leadership)				
Raup, G. H. (2008)	Turnover	Leadership style, work environment	Transformational leadership style = lower staff turnover	Transformational leadership style results in low staff turnover	Leadership	Style (Transformational leadership)				
Wojciechowski, E., Ritze-Cullen, N., & Tyrrell, S. (2011)	Retention	Learning needs; barriers in functioning	Transformational leadership style = framework for ensuring nurse leadership competency; themes: 1) develop leadership skills 2) manage behaviours 3) create healthy work environment	Transformational leadership style creates framework for ensuring nurse leadership competency (leadership skills, managing behaviours, creating health work environment)	Leadership	Style (Transformational leadership)	7			
Blake, N., Leach, L. S., Robbins, W., Pike, N., & Needleman, J. (2013)	Turnover	Work environment	Significant relationship between leadership and intent to leave; inverse relationship between years of experience and intent to leave	Leadership influences intent to leave	Leadership					

A	B	C	D	E	F	G	H	I	J	K
Reference	**Proxies of retention**	**Variable(s) researched**	**Data from research findings**	**Theme from Findings/Results of study**	**Word Summary from theme**	**Word Summary details**	**Studies**	**Main theme**	**Total studies**	**Percentage**
Duffield, C., Roche, M., O'Brien-Pallas, L., Catling-Paull, C., & King, M. (2009)	Intent to leave	Job satisfaction	Satisfied staff intend to remain; satisfied staff experienced good leadership. Work environment factors were predictors of job satisfaction: autonomy, control over practice, nursing leadership	Leadership influences job satisfaction and intent to remain; Work environment predicts job satisfaction; Nursing leadership, autonomy and control over practice predict job satisfaction	Leadership		2			
Mrayyan, M. T. (2008)	Intent to stay	Organisational climates, turnover, retention	Quality of care and professionalism = most important variables that influences organisational climates; Hospital organisational climate = significant correlation with = intent to stay	Hospital organisational climate affects intent to stay	Organisation	Climate	1	**Organisation**	**1**	**4%**
Forsyth, S., & McKenzie, H. (2006)	Intent to leave	Complaints	Conflicting expectations of nurses and managers increases personal frustration; lack of opportunity to provide comprehensive care increases personal frustration; personal frustration influences intent to leave	Conflict increases intent to leave	Relations	Conflict		**Relational issues**	**10**	**40 %**
O'Brien-Pallas, L., Murphy, G. T., Shamian, J., LI, X., & Hayes, L. J. (2010)	Turnover	Job satisfaction	Role ambiguity and role conflict = associated with = high turnover rates; increased role conflict and higher turnover rates = associated with = deteriorated mental health; higher turnover rates = associated with = lower job satisfaction; high turnover rates and higher level of role ambiguity = associated with = increased medical error	High turnover results from role ambiguity, role conflict; high turnover results in deteriorated mental health, lower job satisfaction, increased medical error	Relations	Conflicts	2			

A	B	C	D	E	F	G	H	I	J	K
Reference	**Proxies of retention**	**Variable(s) researched**	**Data from research findings**	**Theme from Findings/Results of study**	**Word Summary from theme**	**Word Summary details**	**Studies**	**Main theme**	**Total studies**	**Percentage**
Tourangeau, A. E., Cummings, G., Cranley, L. A., Ferron, E. M., & Harvey, S. (2010)	Intent to stay	Determinants of ITS	Intent to remain influenced by = 1) relationships with co-workers 2) work environment 3) relationship with manager 4) work rewards 5) organisational support and practices 6) physical and psychological responses to work 7) patient relationships 8) external factors	Relationships with co-workers, work environment, relationship with manager, rewards, organisational support and practices and patient relationships influence intent to remain	Relations	Co-workers, manager, work environment	1			
Gifford, B. D., Zammuto, R. F., Goodman, E. A., & Hill, K. S. (2002)	Retention	Organisational culture, job-related variables	Commitment, job involvement, empowerment and job satisfaction have strongest statistical relationship with Quality Work Life. Organisations with human relation model culture have low intent to turnover	Relational culture decreases intent to turnover	Relations	Culture				
Manion, J. (2004)	Retention	Culture	Culture of retention: 1) put staff first 2) connections 3) coaching 4) focus on results 5) partner with staff	Culture of retention = staff recognition, good relations, coaching and partnerships	Relations	Culture	2			
Abualrub, R. F., Omari, F. H., & Al-Zaru, I. M. (2009)	Intent to stay	Job satisfaction, social support	Increased social support = increased job satisfaction = increased intent to stay	Increased social support increases job satisfaction and intent to stay	Relations	Social support	1			
Brunetto Y., Xerri M., Shriberg A., Farr-Wharton R., Shacklock K., Newman S. & Dienger J. (2013)	Turnover	Well-being	Australia: nurse managers have strong influence and supporting role which enhances nurse well-being and reduces turnover intentions; USA: no significance between supervisor and subordinate relationship and turnover; Well-being is a predictor of turnover intentions	Well-being predicts turnover; Perceived Organisational Support and teamwork predict engagement, well-being, organisational commitment and turnover intentions.	Relations	Teamwork, organisational support, engagement, well-being	1			

A	B	C	D	E	F	G	H	I	J	K
Reference	**Proxies of retention**	**Variable(s) researched**	**Data from research findings**	**Theme from Findings/Results of study**	**Word Summary from theme**	**Word Summary details**	**Studies**	**Main theme**	**Total studies**	**Percentage**
Wagner, S. E. (2006)	Intent to stay	Engagement	Staff engagement = intent to remain; Engagement = close relationships with co-workers, mutual support, patient interaction, flexible work schedules, good relationship with manager; committed leadership = key factor = nurse engagement	Staff engagement (close relationships with co-workers, mutual support, patient interaction, flexible work schedules, good relationship with manager) impacts intent to remain; committed leadership is a key factor of nurse engagement	Relationships	Engagement	1			
Wieck, K., Dols, J., & Landrum, P. (2010)	Retention	Inter-generational differences in nurses	Good nurse-physician relationship = increased satisfaction; Nurse safety = intent to leave	Good relationships between nurse-physician increases satisfaction; nurse safety affects intent to leave	Relationships	Nurse-physician	1			
Fairbrother, G., Jones, A., & Rivas, K. (2010)	Retention	Nursing models	Team-based model of care delivery resulted in increased job satisfaction and increased retention	Good teamwork (relationships) increases job satisfaction and increases retention	Relationships	Team work	1			
O'donnell, D. M., Livingston, P. M., & Bartram, T. (2012)	Retention	HRM issues, job satisfaction, quality of care	Lack of skills to manage conflict = low staff morale, decreased satisfaction, increased stress and decreased retention	Lack of skills results in low staff morale, decreased satisfaction, increased stress and decreased retention	Skills	Lack of		**Training and development**	**4**	**16 %**
Robinson, S., Murrells, T., & Smith, E. M. (2005)	Retention	Job satisfaction	Caregiving opportunities = increase satisfaction; Pay in relation to responsibility, paperwork, T& D opportunities, career guidance = source of job dissatisfaction	Care giving opportunities increases satisfaction; pay, paperwork, lack of T&D creates dissatisfaction	Skills	Lack of; quality care	2			

A	B	C	D	E	F	G	H	I	J	K
Reference	**Proxies of retention**	**Variable(s) researched**	**Data from research findings**	**Theme from Findings/Results of study**	**Word Summary from theme**	**Word Summary details**	**Studies**	**Main theme**	**Total studies**	**Percentage**
Kooker, B. M., & Kamikawa, C. (2011)	Retention	Training and development	Training and development (including coaching and mentoring) increases retention of new nurses; Satisfied nurses increase intent to stay; T&D increased satisfaction and autonomy; satisfaction with decision-making increased	Training and development increased retention	Skills	Training and Development				
Dyess, S., & Parker, C. G. (2012)	Retention	Programme development and implementation	Training and development opportunities resulted in skills acquisition and increased retention	Training and development increased retention	Skills	Training and Development	2			

REVIEW RESULTS AND DISCUSSION

This section provides a description of results from the data extraction, data analysis and data synthesis. It then discusses the results with application of the principles of the concept of the rhizome.

Descriptive Results

The overall findings of the studies indicate comparability hindrances and research gaps at different levels. From the results from the data analysis and data synthesis emerged the following:

(1) Diversity within studies: there is a broad range of diversity in terms of: (a) variables studied (over 60 different variables researched); (b) research method instruments and tools used (over 20 instruments/tools); (c) organisation types (5 categories, namely: medical centre, public health service, university, healthcare organisations, hospitals); and (d) sector of organisations (various sectors including: private, public, private and public, urban, rural, community, non-profit, mixed).
(2) Quality of research: the quality of research is impacted and influenced by: (a) use of theoretical or conceptual frameworks - approximately half of the studies applied frameworks whilst 44% of the studies did not; (b) use of validity and reliability tools - less than a quarter of the studies used them whilst 76% of the studies did not apply these tools;
(3) Research gaps: there are research gaps identified in: (a) geographical location: even though nurse retention is a global phenomenon, studies were done in only 7 countries – USA, Australia, Canada, Jordan, Hawaii, Saudi Arabia, UK; (b) organisation sector: there is a spread of studies in various sectors with a dominance in public sector (including public and private sector together); whilst approximately a quarter of the studies do not specify the sector; (c) research participants: three quarters of studies sought the views of nurses only rather than nurse managers yet the issue of leader behaviour is about the leader (NM); (d) methodology: there is a dominance of quantitative methodology in a subject area about human behaviour – only 20% was qualitative research; (e)

missing data: an example where there is insufficient data is in leadership style. From these studies, the dominant leadership style deemed favourable towards retention is transformational leadership style and those of a relational nature. However, 40% did not specify the leadership style making evidence inconclusive with missing data.

(4) Comparability of studies on retention: a quarter of the studies actually measure retention, the others measure proxies of retention, indicating a need for consensus on retention and more research measuring retention itself for purposes of comparability.

From this review, it is evident the healthcare sector has a diversity of interactants and the relationship between NMs and retention is multi-faceted. Whilst **Figure 2** demonstrates the diversity of variables from research findings, the multiplicity and inter-connectivity of variables highlights the complexity and challenge in understanding the link between retention and NMs to resolve nurse shortages. However, further thematic analysis and data synthesis of research findings to substantiate connections resulted in determining four main emerging themes. These main broad themes are presented in **Table VI** (column I) and mapped quantitatively: leader/leadership issues and relational issues (40% each) are dominant factors whilst skills (16%) and the organisation (4%) impact retention to a lesser extent. Therefore, the two dominant themes linking nurse managers to retention are elements of leadership or the leader (leadership style, leader characteristics, etc.) and work place relations (teamwork, support, relationships, etc.). The other two are human resource development (lack of skills, skills acquisition, training and development,) and organisational elements (organisational climate). Consequently, it is considered necessary to explain the literature using a theoretical lens that will embrace multiplicity and non-linearity.

Discussion

The overarching dominant outcome from this SLR is the element of diversity and the challenge of comparability of data. Whilst diagramming provides a framework to link variables, it has its shortcomings in that relationships between variables are not linear but complex interactions. **Figure 2** attempts "to convey the essential components and relationships involved" between NMs and

retention (de Freitas, 2012, p. 558). Yet, the same diagram "functions as a crude tool for reducing the complexity" (de Freitas, 2012, p. 558) of relationships making it impossible to adequately appreciate and recognise the links and relationships between variables. Deleuze (1994) states, "The essential thing about a diagram is it is made … for something to emerge from it …." (p. 102). The broad spectrum of connections raises the question whether the literature be viewed in the light of a non-logical non-traditional lens to explain the whole. What emerges from **Figure 2** shows a multiplicity of interactants. Diversity is evident in the links between NMs and retention demonstrated by a network of variables, a large variation in connections, no one issue provides a solution for attrition, and inter-linked variables with no particular variable standing out as an exception. These outcomes seem to fit with the rhizome concept. Similarly, the main themes emerging from the data synthesis in **Table VI** highlight multiple factors within each theme (e.g. within the main theme 'relational issues' include: conflict, culture, social support, teamwork, organisational support, engagement, well-being, nurse-physician relationships, relations with co-workers, manager and work environment). The concept of the rhizome, therefore, is considered a lens through which these complex interactions can be viewed as it supports the element of non-linearity and provides the opportunity to capture the complexities and dynamics of the healthcare sector.

Concept of the Rhizome

The philosophical concept of the rhizome was advanced by Gilles Deleuze (1925-1995) and Felix Guattari (1930–1992) in "A Thousand Plateaus: Capitalism and Schizophrenia" (Stone, 2011, p. 655) and has six principles (Coyne, 2008). Deleuze and Guattari used the rhizome to analyse a specific field as a complex system of interrelated parts. A rhizome, a form of plant-life, which spreads without a central root or logical pattern (e.g. mushroom or ginger), is a symbol of rootlessness because it opposes the traditional, rational and logical approach to knowledge (Coyne, 2008). The idea that rhizomes are connected with no logical pattern and "no strict hierarchical structure that confines contact" (de Freitas, 2012, p. 561), may contribute to explain the complexity of interrelatedness and rootlessness of variables in the healthcare sector and is applied to explain the literature.

Six Principles of Concept of the Rhizome

The Concept of the Rhizome has six principles, namely, "connection, heterogeneity, multiplicity, asignifying rupture, cartography and decalcomania" (Noy & Luski, 2012, p. 25). These principles are applied to the findings from the review using examples of variables from the analysis of findings in **Table VI**.

The first and second principles, "connection and heterogeneity" (Noy & Luski, 2012, p. 25) indicate that any point of the rhizome "can be connected to something else" (Goodley, 2007, p. 324). All its parts are connected, described as "and, and, and" (Noy & Luski, 2012, p. 25) although not hierarchical in structure. From the data analysis discussed earlier, variables are connected diversely. For example, intent to stay, a proxy of retention, is linked to different variables. The studies show ITS is positively impacted by a variety of outcomes, namely: staff engagement (Wagner, 2006), job satisfaction (Abualrub & Alghamdi, 2012), staff satisfaction (Duffield, Roche, O'Brien-Pallas, Catling-Paull & King, 2009; Kooker & Kamikawa, 2011), hospital climate (Mrayyan, 2008), leadership style (Ribelin, 2003) and the characteristics of the manager (Taunton, Boyle, Woods, Hansen & Bott, 1997). ITS is also influenced by stakeholder relationships: co-workers, managers, patients, and the work environment; as well as job-related factors, such as work rewards, organisational support and external factors (Tourangeau, Cummings, Cranley, Ferron & Harvey, 2010). In addition by being affected by variables, ITS itself directly affects retention (Taunton et al., 1997) illustrating the chain between components within the workplace to ITS and link between ITS and retention. Similarly, another example is leadership style, which has a positive significant relationship with ITS (Ribelin, 2003), turnover (Kleinman, 2004; Raup, 2008), and satisfaction (Abualrub & Alghamdi, 2012). Yet leadership style can impact leader behaviour, create a conducive work environment and develop leadership competencies through a leadership competency framework (Wojciechowski, Ritze-Cullen & Tyrrell, 2011). Both these examples demonstrate connections between variables and an absence of hierarchy in structure given there is no differentiation in

weighting or importance of each. Heterogeneity is evidenced by the non-linear structure in **Figure 2**, with no clear pattern of connections between the different variables in healthcare but which is reflective of the need for flexibility, collaboration and interaction in the system (Mills, 2011).

The third principle is that the rhizome is infinite in its possible connections, known as "multiplicity" (Noy & Luski, 2012, p. 25). The broad range of variables linking NMs to nurse retention is characteristic of multiplicity, which will be elaborated further using the variable job satisfaction. Job satisfaction (JS) is connected to multiple variables in different ways: work environment is a predictor of JS (Duffield et al., 2009); turnover is inversely associated with JS (O'Brien-Pallas, Murphy, Shamian, Li & Hayes, 2010); JS has the strongest statistical relationship with Quality Work Life (Gifford, Zammuto, Goodman & Hill, 2002); manager characteristics influence JS (Taunton et al., 1997); relational leadership influences staff outcomes which in turn increase JS (Cummings, Olson, Hayduk, Bakker, Fitch, Green, Butler & Conlon, 2008); JS and social support are directly correlated (Abualrub & Alghamdi, 2012), etc. Similarly, ITL has multiple links with different variables including work-related, individual and organisational components: nurse safety is linked to ITL (Wieck, Dols & Landrum, 2010); ITL and years of experience are inversely related (Blake, Leach, Robbins, Pike & Needleman, 2013); personal frustration influences ITL (Forsyth & McKenzie, 2006); and a significant relationship exists between leadership and ITL (Blake et al., 2013). The healthcare sector can, therefore, be compared to an infinity of connections. One variable can have a multiplicity of associations to other variables (de Freitas, 2012, p. 560-1) – e.g. connected to one or more variables, it can be an antecedent, a determinant, a predictor or an outcome of retention.

The fourth principle is known as asignifying rupture, the fact that a rhizome can be broken or interrupted at any connection, but will immediately start up elsewhere again to form a new rhizome (Noy & Luski, 2012, p. 25). It is said to be "stratified and territorialized" (de Freitas, 2012, p. 561). This is illustrated using the variable 'care delivery'. One study showed where nurses face a lack of opportunity to provide comprehensive care, it increases personal frustration (Forsyth & McKenzie,

2006). In another study, a hospital introduced team-based model of care (TN) in contrast to the patient allocation model. A comparison of the two models of care delivery determined the former produced positive outcomes despite initial resistance from NMs to implement it (Fairbrother, Jones & Rivas, 2010). This is an example of disrupting traditional work practices and implementing a new model (TN was a trial care model). Nurses using TN felt they could provide quality of care and professionalism, both found to be important variables influencing organisational climates (Mrayyan, 2008), consequently promoting increased job satisfaction and retention.

Table VII: Cartography (map of multiple research entries)

	Entries	**Details**	**References**

1	Retention and proxies of retention	• Retention
		• proxies of retention:
		  ○ Intent to stay
		  ○ Intent to leave
			• Manion, 2004; Dyess & Parker, 2012
			• Taunton, Boyle, Woods, Hansen & Bott, 1997
			• Tourangeau, Cummings, Cranley, Ferron & Harvey, 2010
			• Wieck, Dols & Landrum, 2010; Blake, Leach, Robbins, Pike & Needleman, 2013; Forsyth & McKenzie, 2006

2	Leaders and elements of leadership	• leaders • leadership engagement • manager characteristics • leadership behaviours • leadership styles • leadership roles	• Duffield, Roche, Blay & Stasa, 2011 • Wagner, 2006 • Taunton, Boyle, Woods, Hansen & Bott, 1997 • Wojciechowski, Ritze-Cullen & Tyrrell, 2011 • Abualrub & Alghamdi, 2012 • O'Brien-Pallas, Murphy, Shamian, LI & Hayes, 2010
3	Antecedents and determinants of retention	Antecedents: • job dissatisfaction • satisfaction Determinants: • Training and development • Frustration	• Robinson, Murrells & Smith, 2005 • Wieck, Dols & Landrum, 2010 • Kooker & Kamikawa, 2011 • O'donnell, Livingston & Bartram, 2012
4	Individual, work, organisation perspective to retention	• Individual (personal frustration and conflict) • Work (pay, paperwork) • organisation (Human relation model)	• Forsyth & McKenzie, 2006 • Robinson, Murrells & Smith, 2005; • Gifford, Zammuto, Goodman & Hill, 2002
5	Internal and external factors influencing retention	• internal factors (staffing adequacy, autonomy, policy decision participation) • external factors	• Cummings, Olson, Hayduk, Bakker, Fitch, Green, Butler & Conlon, 2008; • Tourangeau, Cummings, Cranley, Ferron & Harvey, 2010

The fifth and sixth principles are cartography and decalcomania, which signify a rhizome is like a map with "multiple entry points" (de Freitas, 2012, p. 563) and it is susceptible "to constant

modification" and growth (Noy & Luski, 2012, p. 25). The approach to addressing attrition can be viewed in so many different ways and the phenomena of nurse shortages can be looked at from very different perspectives. From the data analysis, retention can be viewed using multiple entries into the subject. This can be compared to how variables are reviewed: individually, work-related, or organisational; or grouped together by subject area (HR issues, leadership issues, work environment factors, external factors, etc.) or grouped for comparisons (e.g. internal/external factors, individual/organisational factors, relational/non-relational factors, etc.) This map of potential multiple entries is listed in **Table VII**.

As discussed earlier, diagramming in two-dimensions is in itself a limitation to view the whole; a three-dimensional representation of these variables and links would facilitate an appreciation of the complexities of relations between variables linking NMs and retention more effectively. Therefore, using the main themes that emerged in **Table VI**, the variables are diagrammed in **Figure 3** using a picture of a rhizome to provide a non-linear view of the relationships between variables linking retention and NMs. The main themes are depicted in **Figure 3** by the different colours, which correspond to the four main themes that emerged from the research findings. Considering a 3-dimension view of this diagram provides a view of the interconnectivity of these themes giving each variable more depth and interrelatedness. Although the themes group similar variables, all variables are linked in some way to the whole (i.e. the healthcare system depicted here by the rhizome plant).

Figure 3: Main themes emerging from systematic literature review

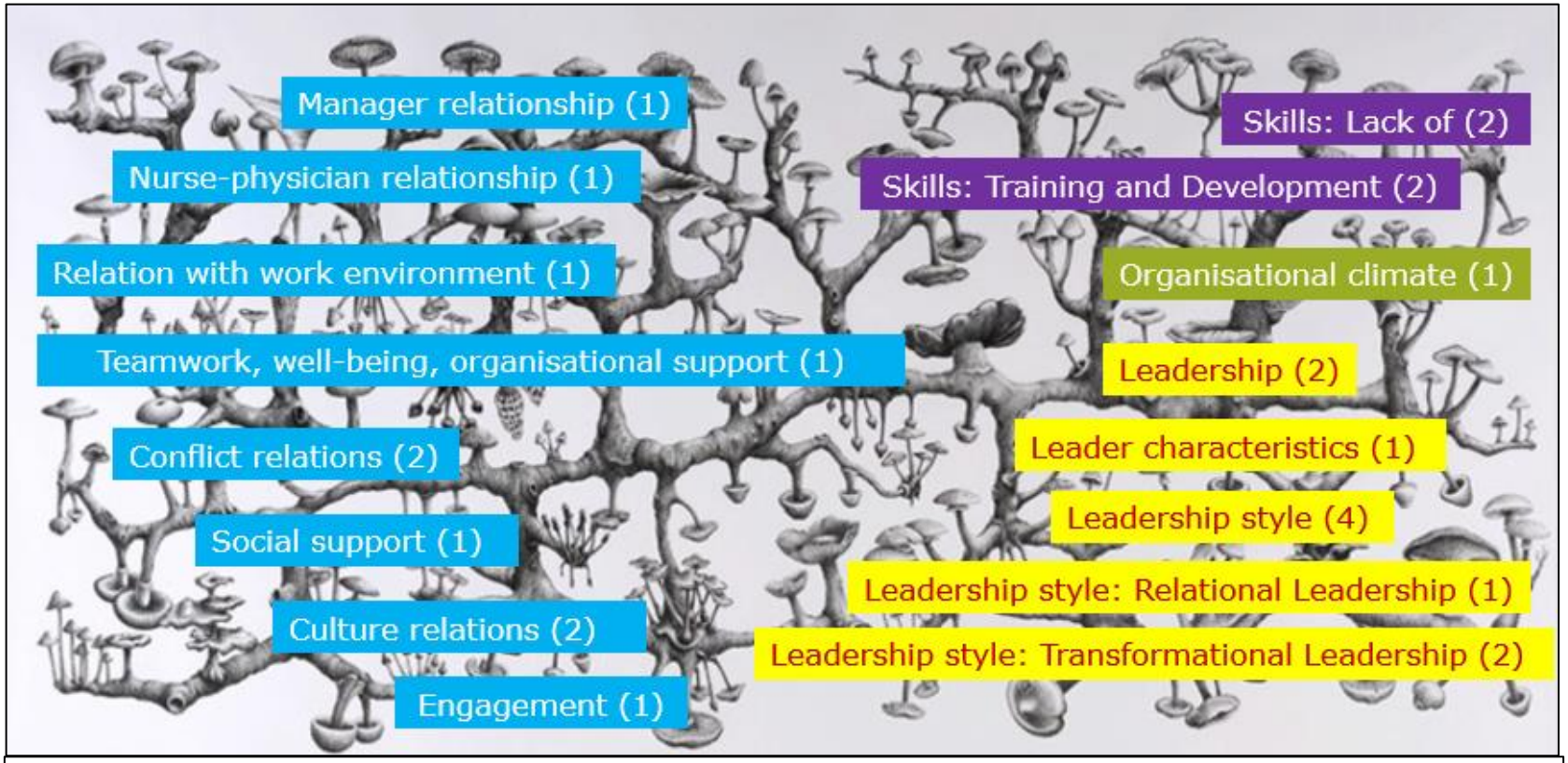


Diagram source:
Giblett, R. (2006-2009). *Where social and ecological systems meet design*. Galerie Dusseldorf. Retrieved from http://thackara.com/learning-design/change-labs-what-works/attachment/richard-giblett-mycelium-rhizome/ July 5, 2017

Key	
	Relational issues
	Leadership issues
	Skills
	Organisational factor
(1)	Number of studies in SLR with theme from findings

CONCLUSION

In conclusion, the literature demonstrates links between nurse managers and staff retention through multiple variables making it challenging to address nurse shortages from this SLR for several reasons. The dominant emerging challenges are fourfold: comparability hindrances, integrity of research, challenge of consensus on retention, and research gaps. Firstly, the diversity of variants hinders comparability (multiple variables, multiple research instruments, multiple organisation types and sector). Secondly, the limited use of theoretical and conceptual frameworks and reliability/validity tools weakens the integrity and validity of the outcomes of the studies. Thirdly, the majority of articles researching retention actually study proxies of retention, indicative that having a consensus of findings on retention is in itself not straightforward. Finally, given nurse retention is a global phenomenon, there are numerous gaps for further research based on: limited research in recent years in this field; geographical limitations; nurse managers are under-investigated; and limited qualitative methodology and methods in a field that is about human behaviour (relational aspects).

At this juncture, it is acknowledged this review focused on academic literature in a sector with a large practitioner component and future research should comprise a broader literature base inclusive of the grey literature. Yet, what is appreciated from this review is that studies in the healthcare sector are subject to numerous complexities and diversities, and taking a channelled linear viewpoint limits the research outcomes. However, the review identified four main broad themes that emerged from the data linking NMs to retention, namely, leader(ship) issues, relational issues, skills and the organisation. Therefore, using the concept of the rhizome may provide the multiple dimensions that may contribute to better understand the links between nurse managers and staff retention to explore the healthcare sector variables to provide a more non-linear but holistic approach.

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