

Nurse Job Satisfaction Research: A Literature Review, 2006-2011

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Abstract

Objective: This literature review aims to evaluate the state of nurse job satisfaction research by identifying the instruments and scientific rigor used to measure the latent construct of nurse job satisfaction around the globe, during the years 2006–2011.

Design: A systematic review of research articles in measurement of nurse job satisfaction.

Data Sources: Medline, Cumulative Index to Nursing and Allied Health Literature, Social Sciences Citation Index, Ingenta Connect, and Web of Science.

Review Methods: The years 2006–2011 were selected as a time frame that would provide a large number of studies from around the world and consider past measurement in nurse job satisfaction. Articles were included that identified a measure for nurse job satisfaction and sampled nurses who provided direct patient care. Language was limited to English. Fink criteria were used to create an extraction tool to score 21 scientific criteria in the measurement of nurse job satisfaction.

Results: The literature review generated 1,681 articles, from which 995 articles were selected for further review; of these, 104 unique articles addressed measurement of nurse job satisfaction using 56 unique instruments. A total of 149,905 nurses from 35 countries responded to inquiries about job satisfaction. The extraction tool revealed scores from 8.00 to 18.00 (out of 21 total possible points) with a mean score of 12.06 (s.d. 2.12). Criteria that fell below 50% across studies included inclusion criteria (6% of studies), non-responders explained (7%), missing data explained (11%), power analysis (16%), random sampling (29%), inclusion criteria (32%), analysis of instrument factor structure (34%) definition of nurse job satisfaction (48%) and use of theory or conceptual framework (49%).

Conclusions: This literature review revealed both successes and critical gaps in the research of measuring nurse job satisfaction. Identification of gaps in the scientific process of measurement of nurse job satisfaction may assist with refinement of instruments used to measure nurse job satisfaction that in turn will facilitate model specification around the globe.

Key words: factor analysis, statistical; instrument; literature review; nurse job satisfaction; nurses; nursing research; questionnaires; research; research personnel

What this paper adds

- Global cross-sectional examination of measures and science related to nurse job satisfaction.
- Identification of 56 unique instruments used across the globe to measure nurse job satisfaction over a five year period
- Use of an extraction tool to quantify the quality of research related to nurse job satisfaction

1. Introduction

Much of the current literature bemoans the state of the science related to nurse¹ job satisfaction. Subsequently, a systematic literature review regarding measurement of nurse job satisfaction around the globe was conducted to understand the state of the science of the latent construct, nurse job satisfaction. Measurement of nurse job satisfaction is important because it has been attributed to outcomes such as intent to stay in an organization (Mrayyan, 2007), decreased absenteeism from work (Davey, Cummings, Newburn-Cook, & Lo, 2009; Josephson, Lindberg, Voss, Alfredsson, & Vingard, 2008), retention (Josephson et al., 2008; Ritter, 2011), reduced turnover (AbuAlRub, Omari, & Al-Zaru, 2009), decreased burnout (Abushaikha & Saca-Hazboun, 2009), and decreased costs associated with orienting new nurses secondary to high turnover (Anderson, Linden, Allen, & Gibbs, 2009). Nurse job satisfaction also has been found to positively impact nurses' assessments of quality of care (Kramer, Maguire, & Brewer, 2011; Purdy, Spence Laschinger, Finegan, Kerr, & Olivera, 2010). Nurse job satisfaction has become a focus of study in nursing processes and quality of care secondary to the many important outcomes attributed to it.

Because of the aforementioned far-reaching outcomes, job satisfaction among nurses is of paramount importance. Research in nurse job satisfaction remains underdeveloped when compared to similar research in other disciplines (Mountzoglou, 2010; Murrells, Robinson, &

¹*Nurse* in this literature review refers to the professional nurse who provides clinical care to patients. This literature review does not use specific professional titles because of the varied terminology that refers to professional nurses globally, such as Registered Nurse (RN) in the United States, Registered General Nurse (RGN) or Registered Mental Nurse (RMN) in England, or Qualified Nurse in countries based on the British system, such as in the Caribbean. In addition, some studies simply used the term *nurse* and no specific title for addressing measurement of job satisfaction of the professional staff nurse.

Griffiths, 2009). The concept of nurse job satisfaction is poorly defined (Hayes, Bonner, & Pryor, 2010), and a lack of adequate instrumentation makes measuring nurse job satisfaction ineffectual (Flint, Farrugia, Courtney, & Webster, 2010; Rochefort & Clarke, 2010). Commonly used instruments are old and/or unstable (Choi, Bakken, Larson, Du, & Stone, 2004; Cummings, Hayduk, & Estabrooks, 2006; Fillion, Duval, Dumont, Gagnon, Trembley, Bairati, et al., 2009; Kramer & Schmalenberg, 2004; Lynn, Morgan, & Moore, 2009; McCusker, Dendukuri, Cardinal, Laplante, & Bambonye, 2004; Parker, Tuckett, Eley, & Hegney, 2010; Rochefort & Clarke, 2010; Slater, McCormack, & Bunting, 2007; Stone, Larson, Mooney, Smolowitz, Lin, & Dick, 2006), insufficient in scope (Djukic, Kovner, Budin, & Norman, 2010; Kalisch, Tschannen, & Lee, 2011; Malloy & Penprase, 2010; Rafferty, Clarke, Coles, Ball, James, McKee, et al., 2007; Seago, Spetz, Ash, Herrera, & Keane, 2011; Sveinsdóttir, 2006), or too long for respondents to complete (Fairbrother, Jones, & Rivas, 2009). These measurement issues have resulted in many investigators creating their own instruments to measure nurse job satisfaction, with minimal attention paid to adequate construct validity (Fairbrother et al., 2009; Lynn et al., 2009; Stone et al., 2006).

By identifying the instruments and scientific rigor used to measure the latent construct of nurse job satisfaction, this literature review aims to evaluate the state of nurse job satisfaction research.

2. Methods

Literature published between January 2006 and August 2011 was selected for possible inclusion in the literature review. August served as the termination month because the review began in September 2011. This span of time was deemed adequate to yield a large number of studies from around the world that would have considered past research in nursing.

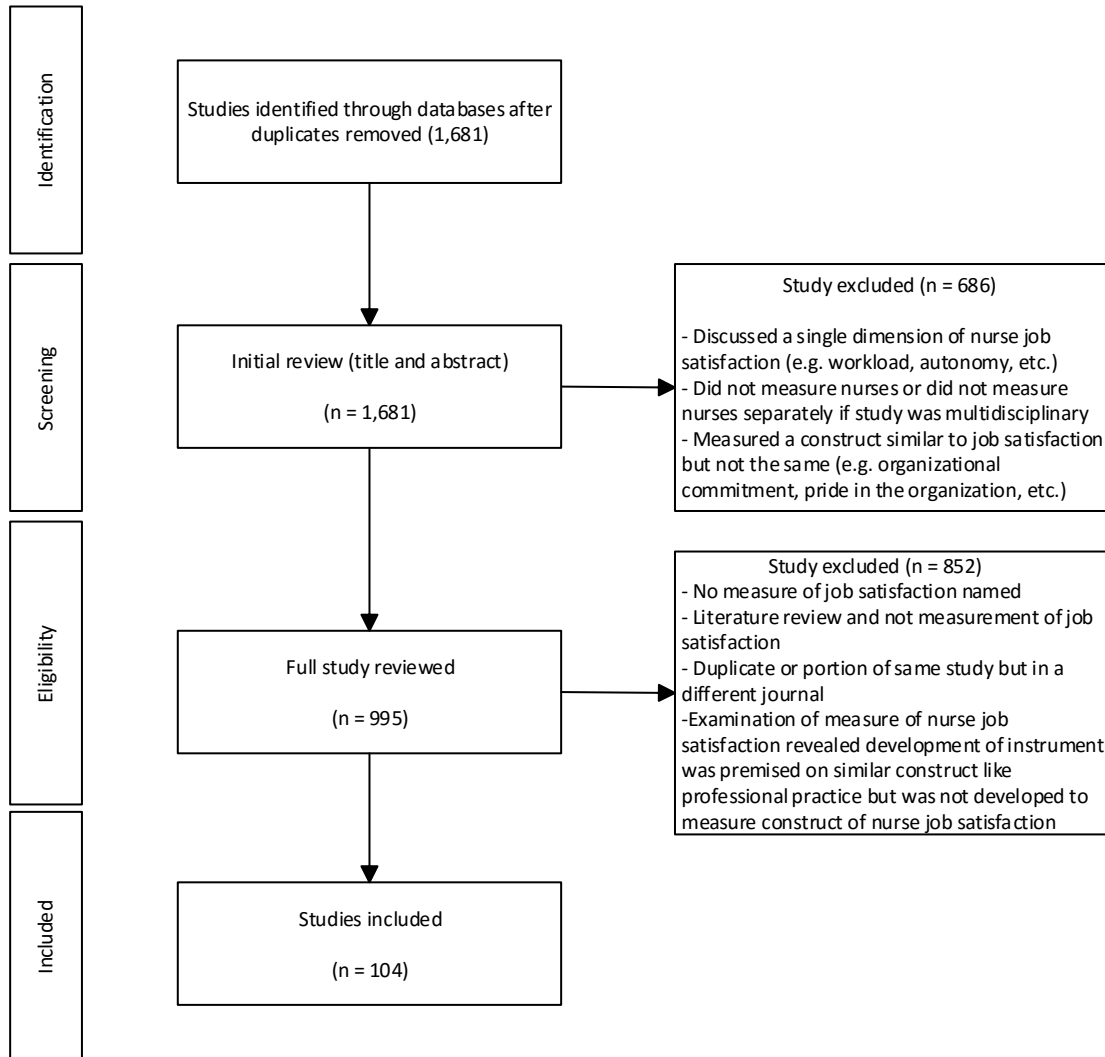
The electronic databases yielding literature for this review included Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Social Sciences Citation Index, Ingenta Connect, and Web of Science. These databases together provided a comprehensive representation of relevant literature. Both Medline and CINAHL cover several professions and disciplines within the biomedical sciences, including nursing. Ingenta Connect provides access to academic and professional literature from 30,000 publications. Social Sciences Citation Index and Web of Science include research articles from the social sciences that may have relevance to job satisfaction specific to nurses. The review included published studies from peer-reviewed journals. Search terms were “job satisfaction,” “nursing,” and “nurses.”

Inclusion criteria were: the article must address job satisfaction of nurses who provided direct patient care; the article must specify an instrument used to measure nurse job satisfaction, and the article must be written in the English language. Nurses who provided direct patient care could include staff nurses, charge nurses, and first-line managers. If a study included staff other than nurses but nurse job satisfaction was analyzed and reported separately for nurses, the study was included. Language was limited to English, as the first author selecting the studies was unable to read languages other than English.

Exclusion criteria were: the article addressed only a single dimension of job satisfaction (e.g. autonomy, relationship with physicians); the article had the same research reported in more than one journal; the article did not identify a specific instrument to measure nurse job satisfaction; the article used an instrument that was developed to measure a similar but uniquely different construct other than nurse job satisfaction, and finally, the article measured nurses along with other disciplines like pharmacy or other nursing care roles like nursing assistants but did not separately address a job satisfaction analysis of nurses.

A search of the databases yielded 995 articles that met the initial inclusion criteria. If an article was not available electronically, it was obtained in hard copy by contacting the journal or corresponding author. Three studies were identified as duplicate studies, and four were actually literature reviews and not articles of job satisfaction. It should be noted there were six instruments reported in the literature to measure nurse job satisfaction and often used to pursue an American Nurses Credentialing Center Magnet designation: the Nursing Work Index, the Nursing Work Index–Revised, the Professional Environment Scale, the Dimensions of Magnetism, the Essentials of Magnetism, and the National Database of Nursing Quality Indicators. However, deep examination of the development of these instruments, including historical literature referenced in the development of the tools revealed that these multidimensional instruments were actually designed to measure the construct of professional practice and not the construct of nurse job satisfaction (Aiken & Patrician, 2000; Lake, 2002; Taunton, Bott, Koehn, Miller, Rindner, Pace, et al., 2004; Schmalenberg & Kramer, 2007, 2008). It was deemed by the authors of this review that the construct of professional practice is similar to but not the same as nurse job satisfaction. Thus, these six instruments were not included within this literature review specific for the construct of nurse job satisfaction. Using the inclusion and exclusion criteria, 104 articles were selected by the authors for the full review. A flow diagram adapted from Donald, Kilpatrick, Reid, Carter, Martin-Misener, Bryant-Lukosius, et al. (2014) reveals the selection process (Figure 1).

Figure 1, Identification and Screening of Relevant Studies



The Consolidated Standards of Clinical Trials (CONSORT) research criteria were the preferred criteria for scoring the selected studies for this review as it has been set as the standard for all meta-analysis and reviews (Stroup, Berlin, Morton, Ingram, Williamson, Rennie, et al., 2000; Altman, Schultz, & et al., 2001; Moher, Schultz, & Altman, 2001). In the absence of randomized trials, criteria that were closely aligned to CONSORT were selected. Fink's (2005) criteria for literature review were used to set up an extraction tool. Fink asserts that in pioneer work or in the absence of randomized clinical trials, researchers may need to create tools that assist with synthesizing articles that do not use randomized sampling.

3. Results

A total of 56 instruments within the 104 selected articles were found that were reported to measure nurse job satisfaction using either a unidimensional or multidimensional approach. The unidimensional approach is represented by a single item of job satisfaction or the summation of multiple items that measure a single construct of job satisfaction. In contrast, the multidimensional approach proposes several factors that comprise the latent construct of nurse job satisfaction. There were 26 instruments that used a unidimensional approach and 30 that used a multidimensional approach. The most commonly used instrument was the Index of Work Satisfaction, found in 18 studies. A summary of the instruments found, number of items and frequency the instrument was used is noted in Table 1.

Thirty multidimensional instruments for nurse job satisfaction included 48 different dimensions measured by one or more items, or subscales. The number of dimensions (factors) per instrument ranged from 1 to 20, with an average of 3.9. Items per instrument ranged from 1 to 100, with a mean of 29. The most commonly measured dimension of nurse job satisfaction

was satisfaction with coworkers, which was included in 23 of the 30 multidimensional instruments. The names of subscales measuring satisfaction with coworkers varied, but the content across these measures concerned how coworkers interrelated. For example, the Work Quality Index (Larrabee, Wu, Persily, Simoni, Johnston, Marcischak, et al., 2010) titled the coworker subscale as Relationships, whereas the Job Satisfaction Questionnaire (Seed, Torkelson, & Alnatour, 2010) named this subscale Working Relationships.

Table 1, Instruments to Measure Nurse Job Satisfaction

Title of unique survey to measure job satisfaction of nurses	Unidimensional or multidimensional	Number of items	Number of studies that used survey	Number of dimensions (factors)	Reference(s)	Author(s) used existing survey or developed new survey
AACN National Survey	Unidimensional	1	1	1	Ulrich, Lavandero, Har, Woods, Leggett & Taylor, 2006	Developed
Brisbane Practice Environment Measure (BPEM)	Multidimensional	33	1	4	Flint, et al., 2010	Used existing
Cantor and Chichin's (2009) Job Satisfaction Tool	Unidimensional	5	1	1	Montoro-Rodriguez & Small, 2006	Used existing
General job satisfaction scale (GJSS; Porter, 1962)	Multidimensional	13	1	3	Kekana, du Rand, and van Wyk, 2007	Used existing
Generic Job Satisfaction Scale	Unidimensional	9	1	3	Robison & Pillemer, 2007	Used existing
Global job satisfaction survey by Hackman and Oldham	Unidimensional	4	2	1	Ridley, Wilson, Harwood, & Laschinger, 2009; Laschinger, Finegan, & Wilk, 2011	Used existing
Greek Nurses' Job Satisfaction Scale (GNJSS)	Multidimensional	18	1	4	Moumtzoglou, 2010	Developed
Halfer-Graf (HG) Job/Work Environment Nursing Satisfaction Survey	Multidimensional	21	2	7	Anderson, et al., 2006	Used existing (Anderson), Developed (Halfer & Graf)
Healthcare Environment	Multidimensional	86	1	13	Drenkard, 2008	Used existing

Survey (HES)						
Home Healthcare Nurse Job Satisfaction Scale (HHNJS)	Multidimensional	30	2	8	Ellenbecker, Byleckie, & Samia, 2008; Ellenbecker, Samia, Cushman, & Porell, 2007	Used existing
Index of Work Satisfaction (IWS)	Multidimensional	59	18	6	Ahmad & Oranye, 2010; Best & Thurston, 2006; Bjørk, Samdal, Hansen, Torstad, & Hamilton, 2007; Cortese, Colombo, & Ghislieri, 2010; Cowin, Johnson, Craven, & Marsh, 2008; Curtis, 2007; Ea, Griffin, L'Eplattenier, & Fitzpatrick, 2008; Flanagan, 2006; Giallonardo, Wong, & Iwasiw, 2010; Hwang, Lou, Han, Cao, Kim, & Li, 2009; Karanikola, Papathanassoglou, Giannakopoulou, & Koutroubas, 2007; Lange, Wallace, Gerard, Lovanio, Fausy, & Rychlewicz, 2009; Manojlovich & Laschinger, 2007; Matos, Neushotz, Griffin, & Fitzpatrick, 2010; Penz, Stewart, D'Arcy, & Morgan, 2008; Pittman, 2007; Simpson, 2008; Yamashita, M., Takase, M., Wakabayshi, C., Kuroda, K., & Owatari, N. (2009)	Used existing
Job Analysis and Retention Survey	Multidimensional	21	1	8	Russell & Gelder, 2008	Used existing
Job content questionnaire	Multidimensional	49	1	6	Choobineh, Ghaem, & Ahmedinejad, 2011	Used existing
Job Descriptive Index (JDI)	Multidimensional	86	3	5	Tran, Johnson, Fernandez, & Jones, 2010; Sveinsdóttir, Biering, & Ramel, 2006; Hall &	Used existing

Doran, 2007						
Job Diagnostics Survey (JDS)	Multidimensional	14	7	5	Cai & Zhou, 2009; De Gieter De Cooman, Pepermans, & Jegers, 2010; Fillion, et al., 2009; Güleriyüz, Güney, Aydin, & Asan, 2008; Lautizi, Laschinger, & Ravazzolo, 2009; Spence Laschinger, 2008; Tabak & Koprak, 2007	Used existing
Job Satisfaction of Nurses (JSN)	Multidimensional	22	1	6	Chang, Li, Wu, & Wang, 2010	Used existing
Job Satisfaction Questionnaire from Quinn and Staines, 1979	Unidimensional	5	1	1	Djukic, et al., 2010	Used existing
Job Satisfaction Questionnaire (JSQ-Wong; developed in China for nurses in Japan)	Multidimensional	37	1	5	Chan, Leong, Luk, Yeung, & Van, 2009	Used existing
Job Satisfaction Questionnaire (JSQ-US; developed in UK for psych nurses)	Multidimensional	32	1	5	Seed, et al., 2010	Used existing
Job Satisfaction Scale (developed by Adams and Bond)	Unidimensional	13	1	1	Ouzouni & Konstantinos, 2009	Used existing
JS is 1 item in the 144-item scale called The Copenhagen Psychosocial Work Environment	Unidimensional	1	1	1	Malloy & Penprase, 2010	Used existing

Managerial Job Satisfaction Questionnaire	Multidimensional	20	1	6	Goldman & Tabak, 2010	Used existing
Measure of Job Satisfaction (MJS)	Multidimensional	43	1	7	Rheingans, 2008	Used existing
Minnesota Satisfaction Questionnaire (MSQ, Long)	Multidimensional	100	1	20	Abushaikha & Saca-Hazboun, 2009	Used existing
Minnesota Satisfaction Questionnaire (MSQ, short)	Unidimensional	20	8	1	Golbasi, Kelleci, & Dogan 2008; Karagozoglu & Bingöl, 2008; Ning, Zhong, Libo, & Qiujie, 2009; Selebi & Minnaar, 2007; Sharp, 2008; Weng, Huang, Tsai, Chang, Lin, & Lee, 2010; Yang & Chang, 2008; Zurmehly, 2008	Used existing
Mueller/McCloskey Satisfaction Scale (MMSS)	Multidimensional	31	11	8	AbuAlRub et al., 2009; Al-Enezi, Chowdhury, Shah, & Al-Otobi, 2009; Burtson, 2010; Hall, Doran, Pink, & Bloomberg, 2008; Longo & Lynn, 2009; Leung, Spurgeon, & Cheung, 2007; Mrayyan, 2006, 2007; Sorensen, Seebeck, Scherb, Specht, & Loes, 2009; Tourangeau, & Cranley, 2006; Wilson, Squires, Widger, Cranley, & Tourangeau, 2008	Used existing
National Survey of RNs	Unidimensional	1	1	1	Buerhaus, DesRoches, Donelan, & Hess, 2009	Used existing
No survey title provided	Multidimensional	27	1	5	Chen, Lin, Wang, Hou, 2009	Developed
No survey title provided (Lu)	Multidimensional	18	1	3	Lu, While, & Barriball, 2007	Developed
No survey title provided	Multidimensional	20	1	3, 6, 7	Murrells et al., 2009	Developed
No survey title provided	Multidimensional	16	1	3	Tsai & Wu, 2010	Developed

No survey title provided	Unidimensional	22	1	1	Pitkäaho, Ryyänen, Partanen, & Vehviläinen-Julkunen, 2011	Developed
No survey title provided	Unidimensional	1	1	1	Spetz & Herrera, 2010	Developed
No survey title provided	Unidimensional	22	1	1	Wyatt & Harrison, 2010	Developed
No survey title provided	Unidimensional	10	1	1	DelliFraine, Dansky, & Rumberger, 2006	Developed
Nursing Job Satisfaction Scale (NJSS) by Atwood and Hinshaw	Multidimensional	23	1	3	Davis, Ward, Woodall, Shultz, & Davis, 2007	Used existing
Nursing Workplace Relational Environment Scale (NWRES).	Unidimensional	3	1	1	Duddle & Boughton, 2008	Developed
Nursing Workplace Satisfaction Questionnaire (NWSQ)	Multidimensional	15	1	3	Fairbrother et al., 2010	Developed
Overall Job Satisfaction Scale (Warr, 1979).	Unidimensional	15	4	1	Iliopoulou & While, 2010; Lu et al., 2007; Patel, Beekhan, Paruk, & Ramgoon, 2008; Castaneda-Hidalgo, Acevedo, Garza, Melendez, Rangel, & Aguilera, 2009	Used existing
Press Ganey Employee Satisfaction (PGES) Database	Multidimensional	67	1	12	Coshow, Davis, & Wolosin, 2009	Used existing
Price and Mueller job satisfaction survey	Unidimensional	6	1	1	Zangaro, & Johantgen, 2009	Used existing
Quality Work Competence Questionnaire (QWCQ)	Multidimensional	46	1	10	Gardulf, Orton, Eriksson, Unden, Arnetz, Kajermo, et al., 2008	Used existing
Quinn and Staine's Facet-Free Job Satisfaction Scale	Unidimensional	5	1	1	Kovner, Brewer, Wu, Cheng, & Suzuki, 2006	Used existing

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Safety Attitudes Questionnaire	Unidimensional	5	1	1	EtcheGARay, Sexton, Helmreich, & Thomas, 2010	Used existing
Satisfaction in Nursing Scale (SINS)	Multidimensional	55	1	4	Lynn et al., 2009	Developed
Satisfaction Working as a Nurse in a Caring Environment Scale (SWNCES)	Multidimensional	33	1	2	Hill, 2011	Developed
single item JS question	Unidimensional	1	1	1	Kalisch, Lee, & Rochman, 2010	Used existing
single item JS question	Unidimensional	1	1	1	Kalisch et al., 2011	Used existing
single item JS question	Unidimensional	1	1	1	Li, Fu, Hu, Shang, Wu, Kristensen, et al., 2010	Used existing
single item JS question	Unidimensional	1	1	1	Rafferty et al., 2007	Used existing
single item JS question	Unidimensional	1	1	1	RocheFort & Clarke, 2010	Used existing
single item JS question	Unidimensional	1	1	1	Seago et al., 2011	Used existing
single item JS question	Unidimensional	1	1	1	Sveinsdóttir, 2006	Used existing
Spector's Job Satisfaction Survey (SJSS)	Multidimensional	36	1	9	Li & Lambert, 2008	Used existing
Survey on Job Satisfaction	Unidimensional	1	1	1	Jenaro, Flores, Orgaz & Cruz, 2011	Used existing
Work Quality Index (WQI)	Multidimensional	38	1	6	Larrabee et al., 2010	Used existing

There were 16 commonly measured dimensions of nurse job satisfaction. A dimension was considered common if it was measured by at least 4 of the 30 multidimensional instruments. Common dimensions included satisfaction with coworkers (n=18), compensation (n=16), supervision/management (n=15), workload (n=10), professional opportunities (n=10), autonomy (n=10), policy/procedures (n=9), nature of work (n=9), control over practice (n=9), staffing/resources (n=8), work environment (n=7), promotion (n=7), scheduling (n=6), recognition (n=5), task variety (n=5), and opportunities to interact with colleagues regarding patient care (n=4). Other dimensions were included across three or fewer instruments (e.g., access to information, predictability of job, and contingent benefits).

Most of the studies were conducted in the United States (n=38). The second most commonly studied region of the world was Europe (n=17) which included Greece (n=4), Belgium (n=2), England (n=2), Iceland (n=2), Italy (n=2), Spain (n=1), Finland (n=1), Norway (n=1) and Sweden (n=1). Asia had the third highest number of studies (n=15) which included studies from Taiwan (n=6), China (n=6), Macao (a special administrative region of China) (n=1), Japan (n=1) and a two-country study from China and South Korea (n=1). Canada had 12 studies, and the Middle East had 11. Middle East countries included Jordan (n=3), Turkey (n=3), Israel (n=2), Iran (n=1), Kuwait (n=1), and Palestine (n=1). Australia had five studies; South Africa had three studies; Mexico had one study; data was combined from Malaysia and England for one study, and data was combined for one study that included the USA and Canada.

3.1 Fink Criteria

Random sampling was used by 30 of the 104 studies, thus Fink's criteria for literature review were used to set up an extraction tool. Evaluation criteria for the 104 articles included in this literature review were in 21 methodological areas, including: data was prospective; sample

was clear, setting was clearly defined; country of study was clear; purpose of study was articulated; non-responders were examined, missing data were explained; inclusion criteria was identified; exclusion criteria were identified; country of interest was clearly stated; the theoretical or conceptual framework was reported; design of study was clear; randomized selection was used; the funding source was cited; reliability of measure was tested and reported in study; validity of measure for nursing was reported, construct validity was conducted; demographics were identified and explained; power analysis was conducted; job satisfaction was defined; and the summary and implications were detailed. One point was given for each of these criteria for a total of 21 points possible for each study. Using Fink's methods for criteria of empirical rigor is in contrast to the revised CONSORT statement that has 22 criteria (Moher et al., 2001). A summary of the Fink (2005) criteria and scoring for each of the 104 articles can be found in Table 2.

The mean score of the 104 articles, using Fink (2005) criteria, was 12.03 with minimum score of 8.00 and maximum score of 18.00. The region of the world with the highest mean score was Canada (13.00, sd 1.91) followed by the Middle East (12.27, sd 1.10), Asia (12.20, sd 1.74), Europe (12.06, sd 1.95), Australia (12.00, sd 1.58). and USA (11.66, sd 2.53); The six studies from South Africa, Mexico and combined country studies had a mean score of 11.67 (sd .82). Overall, the 104 studies fell short of meeting the selected criteria and a desired systematic scientific inquiry. These studies do, however, provide description of what may be occurring around the globe as it relates to nurse job satisfaction.

Table 2, *Criteria for Nurse Job Satisfaction Around the World*

Criterion	Scoring and rationale	Total score	Number of studies that points for each criterion (studies listed in parenthesis)
Country	Clearly stated	1.0	104 of 104 (all studies)
Prospective design	Study is prospective	1.0	93 of 104 (All studies except the following 11 studies: Coshow et al., 2009; Etchegaray et al., 2010; Flint et al., 2010; Penz et al., 2008; Pittmen, 2007; Robison & Pillemer, 2007; Seago et. al, 2011; Sorensen et al., 2009; Spetz & Herrera, 2010; Sveinsdóttir, 2006; Wilson et al., 2008)
Purpose of study	Purpose of study clear	1.0	104 of 104 (all studies)
Random sample	Randomized sampling used, including stratified random sample, randomized by individual respondent, unit and/or facility/hospital	1.0	30 of 104 (Abushaikha & Saca-Hazboun, 2009; Ahmad & Oranye, 2010; Al-Enezi et al., 2009; Best & Thurston, 2006; Buerhaus et al., 2009; Castaneda-Hidalgo et al., 2009; Choobineh et al., 2011; Cowin et al., 2008; Curtis, 2007; Duddle & Boughton, 2008; Ellenbecker et al., 2007; Giallonardo et al., 2010; Hall et al., 2008; Hall & Doran, 2007; Karanikola et al., 2007; Kovner et al., 2006; Lynn et al., 2009; Manojlovich & Laschinger, 2007; Moutzoglou, 2010; Murrells et al., 2009; Penz et al., 2008; Pittman, 2007; Rheingans, 2008; Ridley et al., 2009; Robison & Pillemer, 2007; Spence Laschinger, 2008; Spetz & Herrera, 2010; Sveinsdóttir et al., 2006; Sveinsdottir, 2006)
Design	Study design in clear		104 of 104 (all studies)
Sample	Sample clearly described	1.0	104 of 104 (all studies)
Setting	Setting clearly described	1.0	104 of 104 (all studies)
Power analysis	Power analysis or consideration of sample size in relationship to power	1.0	18 of 104 (Burtson, 2010; Chan et al., 2009; Djukic et al., 2010; Ellenbecker et al., 2008; Fillion et al., 2009; Giallonardo et al.,

	discussed		2010; Hall & Doran, 2007; Hall et al., 2008; Hill, 2011; Hwang et al., 2009; Laschinger et al., 2011; Lynn et al., 2009; Matos, et al., 2010; Moutzoglou, 2010; Ouzouni & Konstantinos, 2009; Penz et al., 2008; Simpson, 2008; Zangaro, & Johantgen, 2009)
Summary and implications	Summary and implications	1.0	104 of 104 (all studies)
Demographics	Demographics identified and evaluated in relationship to job satisfaction	1.0	54 of 104 (Abushaikha & Saca-Hazboun, 2009; Ahmad & Oranye, 2010; Al-Enezi et al., 2009; Bjørk et al., 2007; Burtson, 2010; Cai & Zhou, 2009; Chan at al., 2009; Chen et al., 2009; De Gieter et al., 2010; DelliFraine et al., 2006; Djukic et al., 2010; Ea et al., 2008; Fillion et al., 2009; Flanagan , 2006; Gardulf et al., 2008; Giallonardo et al., 2010; Golbasi et al., 2008; Goldman & Tabak, 2010; Hall & Doran, 2007; Hall et al., 2008; Hwang et al., 2009; Kalisch et al., 2010; Kalisch et al., 2011; Karagozoglou & Bingöl, 2008; Karanikola et al., 2007; Kovner et al., 2006; Larrabee et al., 2010; Laschinger et al., 2011; Leung et al., 2007; Li et al., 2010; Li & Lambert, 2008; Lu et al., 2007; Matos et al., 2010; Montoro-Rodriguez & Small, 2006; ; Mrayyan, 2006, 2007; Ning et al., 2009; Penz et al., 2008; Rheingans, 2008; Robison & Pillemer, 2007; Russell & Gelder, 2008; Seago et al., 2011; Seed et al., 2010; Selebi & Minnaar, 2007; Simpson, 2008; Spetz & Herrera, 2010; Sveinsdóttir et al., 2006; Tabak & Koprak, 2007; Tourangeau, & Cranley, 2006; Tsai & Wu, 2010; Weng et al., 2010; Wilson et al., 2008; Zangaro, & Johantgen, 2009; Zurmehly, 2008)
Inclusion criteria	Identified	1.0	33 of 104 (AbuAlRub et al., 2009; Best & Thurston, 2006; Bjørk et al., 2007; Curtis, 2007; Davis et al., 2007; Djukic et al., 2010; Ea et al., 2008; Fillion et al., 2009; Gardulf et al., 2008; Giallonardo et al., 2010; Hill, 2011; Jenaro et al., 2011; Karanikola et al., 2007; Kekana et al., 2007; Lange et al., 2009; Larrabee et al., 2010; Leung et al., 2007; Murrells et al., 2009; Ning et al. 2009; Ouzouni & Konstantinos, 2009; Penz et al., 2008; Pitkäaho et al.,

			2011; Pittman, 2007; Rafferty et al., 2007; Seago et al., 2011; Sharp, 2008; Simpson, 2008; Sorensen et al., 2009; Tourangeau, & Cranley, 2006; Weng et al., 2010; Zangaro, & Johantgen, 2009; Zurmehly, 2008)
Exclusion criteria	Identified	1.0	5 of 104 (Ea et al., 2008; Fillion et al., 2009; Gardulf et al., 2008; Ouzouni & Konstantinos, 2009; Rafferty et al., 2007)
Response rate	Sample and response rate reported to adequately calculate response rate	1.0	84 of 104 (All studies except the following 20 studies: AbuAIRub et al., 2009; Ahmad & Oranye, 2010; Anderson et al., 2009; Castaneda-Hidalgo et al., 2009; Choobineh et al., 2011; Coshow et al., 2009; De Gieter et al., 2010; DelliFraine et al., 2006; Fairbrother et al., 2010; Goldman & Tabak, 2010; Halfer & Graf, 2006; Hall et al., 2008; Jenaro et al., 2011; Kalisch et al., 2010; Longo & Lynn, 2009; Montoro-Rodriguez & Small, 2006; Moutzoglou, 2010; Seed et al., 2010; Ulrich et al., 2006; Zangaro, & Johantgen, 2009)
Validity of survey for nursing	Designed or selected for context of nursing	1.0	57 of 104 (AbuAIRub et al., 2009; Enezi et al., 2009; Anderson et al., 2009; Best & Thurston, 2006; Bjørk et al., 2007; Buerhaus et al., 2009; Burtson, 2010; Cai & Zhou, 2009; Castaneda-Hidalgo et al., 2009; Chan et al., 2009; Cowin et al., 2008; Curtis, 2007; Davis et al., 2007; DelliFraine et al., 2006; Djukic et al., 2010; Duddle & Boughton, 2008; Ea et al., 2008; Flanagan, 2006; Ellenbecker et al., 2008; Ellenbecker et al., 2007; Etchegaray et al., 2010; Fairbrother et al., 2010; Flanagan, 2006; Flint et al., 2010; Güleriyüz et al., 2008; Halfer & Graf, 2006; Hall & Doran, 2007; Hill, 2011; Hwang et al., 2009; Karagozoglou & Bingöl, 2008; Karanikola et al., 2007; Kekana et al., 2007; Larrabee et al., 2010; Laschinger et al., 2011; Lautizi et al., 2009; Leung et al., 2007; Li & Lambert, 2008; Lynn et al., 2009; Manojlovich & Laschinger, 2007; Matos et al., 2010; Moutzoglou, 2010; Murrells et al., 2009; Patel et al., 2008; Rheingans, 2008; Ridley et al., 2009; Russell & Gelder, 2008; Seago et al., 2011; Seed et

			al., 2010; Selebi & Minnaar, 2007; Simpson, 2008; Spence Laschinger , 2008; Sveinsdóttir et al., 2006; Tabak & Koprak, 2007; Tran et al., 2010; Tran et al., 2006; Yamashita et al., 2009; Zangaro, & Johantgen, 2009)
Factor analysis	Factor structure of sample reviewed and tested using factor analysis or structural equation modeling	1	35 of 104 (Al-Enezi et al., 2009; Bjørk et al., 2007; Castaneda-Hidalgo et al., 2009; Chan et al., 2009; Chen et al., 2009; Choobineh et al., 2011; Cortese et al., 2010; Coshow et al., 2009; Cowin et al., 2008; DelliFraine et al., 2006; Djukic et al., 2010; Duddle & Boughton, 2008; Ellenbecker et al., 2008; Etchegaray et al., 2010; Fairbrother et al., 2010; Flanagan , 2006; Flint et al., 2010; Güleriyüz et al., 2008; Halfer & Graf, 2006; Hwang et al., 2009; Karanikola et al., 2007; Kovner et al., 2006; Larrabee et al., 2010; Laschinger, 2007; Leung et al., 2007; Lu et al., 2007; Lynn et al., 2009; Manojlovich & Laschinger, 2007; Moutmzoglou, 2010; Murrells et al., 2009; Spence Laschinger , 2008; Tsai & Wu, 2010; Weng et al., 2010; Yamashita, et al., 2009; Yang & Chang, 2008)
Reliability testing	Reliability testing described (e.g. Cronbach's alpha, test-retest). The testing was done in the sample under study, and not only reported from previous literature.	1.0	69 of 104 (All studies except the following 35 studies: Abushaikha & Saca-Hazboun, 2009; Anderson et al., 2009; Best & Thurston, 2006; Buerhaus et al., 2009; Chang et al., 2010; Davis et al., 2007; De Gieter, et al., 2010; DelliFraine et al., 2006; Drenkard, 2008; Ellenbecker et al., 2007; Jenaro et al., 2011; Kalisch et al., 2011; Kekana et al., 2007; Lange et al., 2009; Larrabee et al., 2010; Leung et al., 2007; Li et al., 2010; Lu et al., 2007; Malloy & Penprase, 2010; Ouzouni & Konstantinos, 2009; Patel et al., 2008; Pittman, 2007; Rafferty et al., 2007; Rheingans, 2008; Ridley et al., 2009; Robison & Pillemer, 2007; Rochefort & Clarke, 2010; Russell & Gelder, 2008; Seago et al., 2011; Sharp, 2008; Spetz & Herrera, 2010; Sveinsdóttir, 2006; Tabak & Koprak, 2007; Ulrich et al., 2006; Wyatt & Harrison, 2010)
Theoretical framework	Theory or conceptual framework	1.0	51 of 104 (AbuAlRub et al., 2009; Abushaikha & Saca-Hazboun, 2009;

		<p>Ahmad & Oranye, 2010; Al-Enezi et al., 2009; Best & Thurston, 2006; Burtson, 2010; Cai & Zhou, 2009; Choobineh et al., 2011; Cortese et al., 2010; Cowin et al., 2008; Curtis, 2007; De Gieter et al., 2010; DelliFraine et al., 2006; Drenkard, 2008; Ea et al., 2008; Ellenbecker et al., 2008; Fairbrother et al., 2010; Fillion et al., 2009; Flanagan, 2006; Giallonardo et al., 2010; Golbasi et al., 2008; Goldman & Tabak, 2010; Güleriyüz et al., 2008; Hall & Doran, 2007; Hill, 2011; Kalisch et al., 2011; Kalisch et al., 2010; Karagozoglu & Bingöl, 2008; Karanikola et al., 2007; Kekana et al., 2007; Kovner et al., 2006; Laschinger et al., 2011; Lautizi et al., 2009; Leung et al., 2007; Manojlovich & Laschinger, 2007; Montoro-Rodriguez & Small, 2006; Murrells et al., 2009; Ning et al., 2009; Patel et al., 2008; Pitkäaho et al., 2011; Ridley et al., 2009; Russell & Gelder, 2008; Selebi & Minnaar, 2007; Sharp, 2008; Simpson, 2008; Spence Laschinger, 2008; Tabak & Koprak, 2007; Tsai & Wu, 2010; Wilson et al., 2008; Yang & Chang, 2008; Zangaro, & Johantgen, 2009)</p>
Definitions	Job satisfaction defined	<p>1.0</p> <p>42 of 104</p> <p>(AbuAlRub et al., 2009; Abushaikh & Saca-Hazboun, 2009; Castaneda-Hidalgo et al., 2009; Chan et al., 2009; Chang et al., 2010; Cortese et al., 2010; Cowin et al., 2008; Curtis, 2007; Djukic et al., 2010; Duddle & Boughton, 2008; Ellenbecker et al., 2007; Fairbrother et al., 2010; Flanagan, 2006; Giallonardo et al., 2010; Golbasi et al., 2008; Güleriyüz et al., 2008; Hwang et al., 2009; Jenaro et al., 2011; Karagozoglu & Bingöl, 2008; Karanikola et al., 2007; Kekana et al., 2007; Kovner et al., 2006; Larrabee et al., 2010; Longo & Lynn, 2009; Lu, While et al., 2007; Moutzoglou, 2010; Mrayyan, 2006, 2007; Patel et al., 2008; Pitkäaho et al., 2011; Rheingans, 2008; Seed et al., 2010; Selebi & Minnaar, 2007; Sharp, 2008; Simpson, 2008; Sorensen et al., 2009; Tourangeau, & Cranley, 2006; Tsai & Wu, 2010; Weng et al., 2010; Wilson et al., 2008; Yang & Chang, 2008; Zangaro, & Johantgen, 2009)</p>

Non-responders	Non-responders explained	1.0	7 of 104 (Djukic et al., 2010; Ellenbecker et al., 2007; Flanagan , 2006; Karagozoglu & Bingöl, 2008; Sharp, 2008; Sveinsdóttir et al., 2006; Yang & Chang, 2008)
Missing data	Missing data explained	1.0	11 of 104 (Zurmehly, 2008; Chang et al., 2010; DelliFraine et al., 2006; Djukic et al., 2010; Ellenbecker et al., 2008; Fillion et al., 2009; Manojlovich & Laschinger, 2007; Montoro-Rodriguez & Small, 2006; Penz et al., 2008; Sharp, 2008; Simpson, 2008; Yamashita et al., 2009)
Funding source	Funding source identified	1.0	40 of 104 (AbuAlRub et al., 2009; Abushaikha & Saca-Hazboun, 2009; Buerhaus et al., 2009; Chan at al., 2009; Chen et al., 2009; Choobineh et al., 2011; De Gieter et al., 2010; DelliFraine et al., 2006; Djukic et al., 2010; Drenkard, 2008; Ellenbecker et al., 2008; Etchegaray et al., 2010; Fillion et al., 2009; Flint et al., 2010; Gardulf et al., 2008; Jenaro et al., 2011; Kalisch et al., 2010; Lange et al., 2009; Larrabee et al., 2010; Li et al., 2010; Lynn et al., 2009; Mrayyan, 2006, 2007; Murrells et al., 2009; Ning et al., 2009; Penz et al., 2008; Pitkäaho et al., 2011; Rafferty et al., 2007; Rheingans, 2008; Ridley et al., 2009; Rochefort & Clarke, 2010; Seago et al., 2011; Spence Laschinger , 2008; Spetz & Herrera, 2010; Sveinsdóttir et al., 2006; Tourangeau, & Cranley, 2006; Ulrich et al., 2006; Weng et al., 2010; Wilson et al., 2008; Zangaro, & Johantgen, 2009)
Total		21.0	0 of 14

The next section will review the strengths and weaknesses within nurse job satisfaction research, based on this literature review. Eleven of 21 criteria were met by 50% or more of the studies, and 10 criteria fell below 50%.

3.2 Strengths of Research in Nurse Job Satisfaction

Criteria met by 50% or more of the studies included demographics (52%), content validity for the context of nursing (55%), reliability testing (66%), response rate (81%) and prospective data (89%). There were several criteria met by 100% of the 104 studies of this literature review, including identification of country of study, purpose of study, sample clearly described, study design clear, setting clear, and summary/implications provided. Country and prospective data were reviewed above, thus the remaining nine strengths are reported below.

3.2.1 Demographics

The most common demographic included in the studies was age (n=82 studies) followed by highest level of education (n=68), gender (n=66), marital status (n=37), unit (n=27), role (n=20), shift (n=19), years on the same unit (n=15), years in the same hospital (n=15), race (n=13), number of dependents (n=10), household income (n=9), continuing education (n=9), ethnicity (n=9), urban or rural setting (n=7), personal health (n=4), religion (n=4), overtime (n=4), model of nursing care (n=2) and unionized (n=2). There were 27 other unique types of demographics measured as well. As identified in Table 2, noted above, only 54 of the 104 studies collected data on demographics and analyzed the demographics in relationship to job satisfaction.

3.2.2 Validity of Measure for Context of Nursing

Fifty-seven of the 104 studies identified how the selected measure of job satisfaction was valid for the context of nursing. Most of the studies simply reported that the selected measure of job satisfaction was appropriate to use to in populations of nurses. However, some studies took the examination of the instrument as appropriate for nurses by having experts in nursing research examine the instrument for validity (Cai & Zhou, 2009). Others provided an extensive discussion

of why the instrument was appropriate for nurses (Castaneda-Hidalgo et al., 2009). Some authors reported the instrument was valid for nurses because it was specifically developed for use in nursing populations (Curtis, 2007; Flanagan, 2006). Finally, some authors conducted pilot studies in samples of nurses using the instrument to get feedback from the nurse respondents to make sure nurse respondents felt the instrument was true for nurses (AbuAlRub et al., 2009; Duddle & Boughton, 2008; Kekana et al., 2007).

3.2.3 Reliability

Reliability testing was conducted in 69 of 104 studies (66%). Most of the authors who reported conducting reliability testing within their research used Cronbach's alpha. However, there were other tests reported, including Hoyt reliability (Zurmehly, 2008) and test-retest (Hill, 2011; Iliopoulou & While, 2010; Kalisch et al., 2010). Cronbach's alpha for the remaining 65 studies in this literature review ranged from .36 to .92 with a mean alpha across studies of .78 with a standard deviation of .14. One study reported a Cronbach's alpha of .02, but the subscale with this low reliability was not used in the final analysis (Sorensen et al., 2009).

3.2.4 Response Rate

A total of 149,905 nurses responded to a job satisfaction survey in these 104 studies. Eighty-four of the studies reported the sample size, number of responses and response rate. Some of the 84 studies did not provide the number of nurses in the sample the nurses were drawn from but did report the number of responses and response rate, so it was possible to calculate the sample the respondents were drawn from (e.g. Flint et al., 2010). For the 84 studies, the number of nurses who responded to a job satisfaction survey was 81,654. The large drop in overall sample from the 104 to 84 studies was largely due to a large retrospective study that did not provide sample information (Coshov et al., 2009). The 81,654 nurses were drawn from a

combined sample of 201,316 which represents a 40.6% response rate from the 84 studies.

Response rates among the 84 studies ranged from 11% (Patel et al., 2008) to 99% (Weng et al., 2010). Eighteen of the 84 studies (20%) had a response rate below 40% (Buerhaus et al., 2009; Burtson, 2010; Choobineh et al., 2011; Cowin et al., 2008; Curtis, 2007; Etchegaray et al., 2010; Giallonardo et al., 2010; Goldman & Tabak, 2010; Lynn et al., 2009; Malloy & Penprase, 2010; Mourtzoglou, 2010; Murrells et al., 2009; Patel et al., 2008; Penz et al., 2008; Pittman, 2007; Russell & Gelder, 2008; Seago et al., 2011; Seed et al., 2010; Selebi & Minnaar, 2007; Simpson, 2008; Sorensen et al., 2009; Wyatt & Harrison, 2010).

3.2.5 Purpose

Purpose of the research, as 1 of 21 criteria, was met by 100% of the 104 studies. Most of the studies reported the primary purpose was examining the relationship of nurse job satisfaction with another variable of interest (n=56 studies), followed by describing nurse job satisfaction in a specific setting or population (n=15 studies), comparing nurse job satisfaction between specific demographics (n=14), testing a measure of nurse job satisfaction (n=10) and examining the impact of an intervention on nurse job satisfaction (n=9).

3.2.6 Setting Clear

All 104 studies reported the type of nurse being studied. Over half of the studies examined nurses in a hospital setting (n=55 studies). The next most frequent sample studied was nurses in mental health (n=6 studies) followed by nurses in critical care (n=4 studies), new graduate nurses (n=4 studies), nurses in home health (n=3 studies), nurses in public health (n=3 studies), and nurses in rural health (n=2 studies). There was one study each for nurses in pediatrics, acute care, attending an education program, dementia care, primary care, internal medicine, long-term care, nephrology, palliative, pediatric nursing, neonatal care, pediatric

oncology, quality assurance, state prison, surgical services, military, and union nurses. There were 10 studies with nurses from across clinical service lines or facilities.

3.2.7 Design

All the studies used descriptive methods with the most common primary analytic procedure being correlation (n=21) followed by regression analysis (n = 20), comparative (n=20), construct validation (n = 16), correlation and regression (n = 16) and cross-sectional description of nurse job satisfaction (n = 8). There were two studies that used both correlation and comparative and finally one study that focused on mixed methods.

3.2.8 Sampling

Another strength of the job satisfaction literature within this review was all 104 studies adequately reported the sampling procedure, enough to understand if the sample used random selection or not. Most used convenience sampling (n=68 studies), followed by random sampling (n=22), stratified random sampling (n=9), convenience sampling with over sampling of small demographics (n=1) and purposive sampling (n=1). There were three retrospective studies that provided a description of sampling from existing data but failed to report sampling procedures from the original data that the study was drawn from, so there was an inability to report on randomization of the original sample.

3.2.9 Summary/Implications Provided

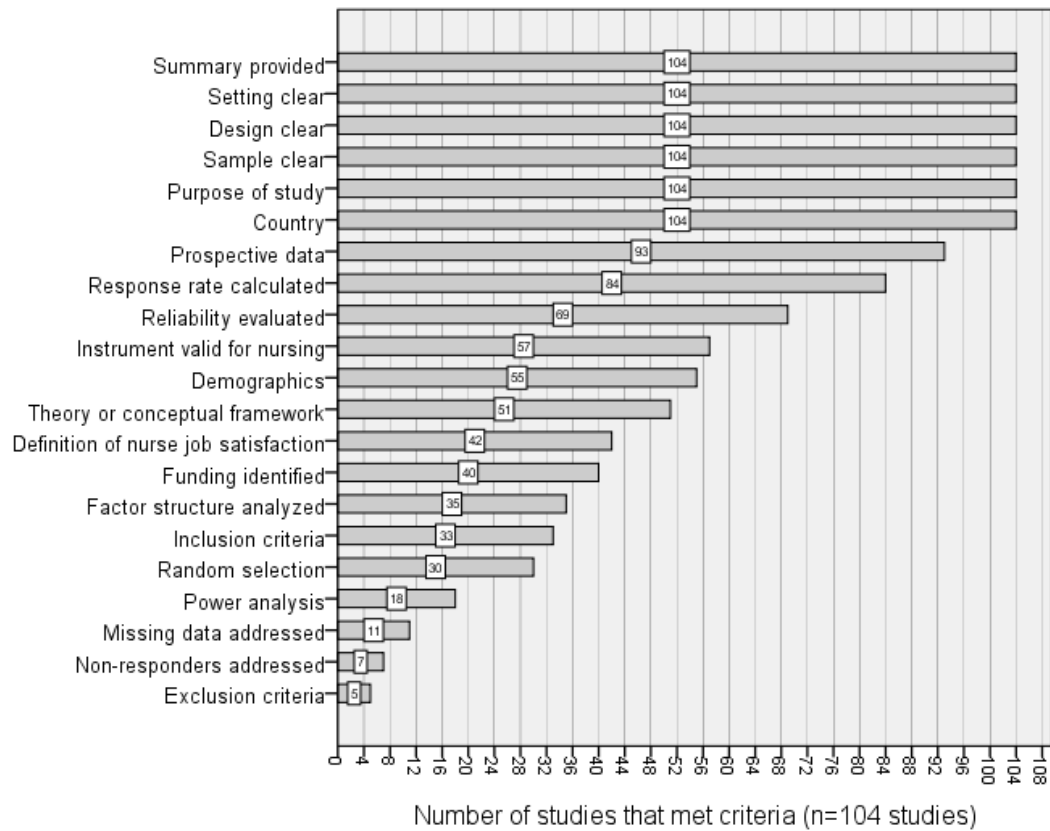
All studies provided discussion of how the results of the study were important to nursing services and/or healthcare at large.

3.3 Weaknesses of Research in Nurse Job Satisfaction

Ten of 21 criteria were below 50% of all studies, including exclusion criteria articulated (5%), non-responders explained (7%), missing data explained (11%), power analysis conducted

(17%), random sample (29%), inclusion criteria (32%), analysis of factor structure (34%), definition of job satisfaction (40%), funding source identified (38%) and theory/framework reviewed (49%). Figure 2 provides a visual review of the frequencies of each of the 21 criteria.

Figure 2, Frequency of 21 Criteria



3.3.1 Exclusion Criteria Articulated

Only 5% of studies articulated exclusion criteria. Fillion et al. (2009) excluded nurses who scored high on an anxiety and depression scale or were affected by mental health. Ea et al. (2008) excluded nurses born in the USA, while Ouzouni & Konstantinos (2009) excluded head nurses. Gardulf et al. (2008) excluded nurses who had left the hospital for three months or more (e.g. maternity leave). Rafferty et al. (2007) excluded several specific clinical areas, including pediatric, psychiatric, midwifery and OR. Managers were also excluded by Rafferty et al.

3.3.2 Non-Responders

Only seven studies accounted for non-responders, including Karagozoglu and Bingöl (2008), who reported that 8% of non-responders were on sick leave and 6.1% simply did not want to participate. Flanagan (2006) reported examining non-responders per the demand of the nurses' union, but no specifics were reported. Ellenbecker et al. (2007) reported analysis of the 26 agencies that declined to participate with the 123 participating agencies and found no difference that was statistically significant. Sharp (2008) reported the non-responders were those who owned their own business or were in a supervisor or manager position. Sveinsdóttir et al. (2006) reported demographics were used to examine differences between responders and non-responders and no statistically significant differences were found. Yang and Chang (2008) used a non-response bias test called time trend extrapolation where characteristics of early respondents were compared with those of late respondents and no differences were found, suggesting non-response bias is less likely. Djukic et al. (2010) reported a limitation of the study including an inability to study non-responders, which was especially important with a response rate of less than 50%.

3.3.3 Missing Data

Five studies reported only a few items or less than five percent of the data was missing and thus not an issue (Montoro-Rodriguez & Small, 2006; Chang et al., 2010; Simpson, 2008; Yamashita et al., 2009; Ellenbecker et al., 2008). Only one of the five studies with very little data missing reported imputing the missing data (Chang et al.). Three studies looked for patterns in the missing data (DelliFraine et al., 2006; Penz et al., 2008; Sharp, 2008). Fillion et al. (2009) reported analyzing missing data using a procedure proposed by Tabachnick and Fidell (1996). Manojlovich & Laschinger (2007) reported excluding surveys with missing data, but did not

report the criteria of missing data for exclusion. Djukic et al., (2010) reported 15 surveys were missing more than 50% of the data but provided no further discussion beyond this.

3.3.4 Power Analysis

Eighteen studies conducted a power analysis. Twelve of the 18 reported the power, alpha and effect size; three studies cited a publication by Tabachnick and Fidel; two studies cited power parameters by another author, and one reported that power analysis was conducted but provided no specifics.

3.3.5 Random Sample

Among the 30 studies that reported using random selection, two studies used random selection for the hospitals and convenience sampling for the nurses from each randomly selected hospital (Ellenbecker et al., 2008; Hall et al., 2008); two studies used random selection of nurses from one single hospital (Duddle & Boughton, 2008; Karanikola et al., 2007); one study used random selection of nurses from five hospitals (Abushaikha & Saca-Hazboun, 2009); one study used random selection of nurses from six hospitals (Choobineh et al., 2011), and one study used random selection of nurses from 19 hospitals (Hall & Doran, 2007). Six studies randomly selected nurses from a specific region of a country (Best & Thurston, 2006; Ellenbecker et al., 2007; Lynn et al., 2009; Murrells et al., 2009; Spence Laschinger, 2008; Sveinsdóttir et al., 2006;). Two studies randomly selected nurses from an entire country, and both studies were conducted in Iceland (Cowin et al., 2008; Sveinsdóttir, 2006). Four studies randomly selected names from an association (Giallonardo et al. 2010; Manojlovich & Laschinger, 2007; Rheingans, 2008; Ridley et al., 2009)

Only one study randomly selected nurses from more than one country (Ahmad & Oranye, 2010). Only one study was found that randomly selected the hospital and nurses (Kovner et al.,

2006;). Nine studies used stratified random sampling (Al-Enezi et al., 2009; Buerhaus et al., 2009; Castaneda-Hidalgo et al., 2009; Curtis, 2007; Moumtzoglou, 2010; Penz et al., 2008; Pittman, 2007; Robison & Pillemer, 2007; Spetz & Herrera, 2010).

3.3.6 Inclusion Criteria

Only 33 studies (32%) reported inclusion criteria. Most of those reported inclusion criteria that was consistent with the purpose of the study (n = 14; e.g. studying nurses employed in prison, the inclusion criteria was working with a prison as a nurse). Seven studies required the respondents to have worked for a minimum of time (e.g. 3 months or 12 months). Six of the 33 studies that cited inclusion criteria stated the inclusion criteria were met, but did not provide the criteria. Three studies required a minimum level of education, and two required a minimum number of hours worked per week.

3.3.7 Analysis of Factor Structure

Thirty-five studies examined the factor structure or model fit of the instrument of job satisfaction using principle component analysis (PCA), exploratory factor analysis (EFA), confirmatory factor analysis (CFA) or structural equation modeling (SEM). Three studies reported conducting a factor analysis but reported little to no specifics (Chen et al., 2009; Coshow et al., 2009; Halfer & Graf, 2006). Coshow et al. did report 10 of 12 factors of the original measure were found in their factor analysis of the Press Ganey survey.

Six studies examined the factor structure using principal component analysis (PCA; Al-Enezi et al., 2009; Castaneda-Hidalgo et al., 2009; Fairbrother, et al., 2009; Hwang et al., 2009; Moumtzoglou, 2010; Yamashita et al., 2009). Among these six studies, four reported the range of factor loadings, including Yamashita et al. (loadings = .42-.81), Hwang et al. (loadings = .41-.86), Moumtzoglou (loadings = .62-.87) and AlEnezi et al. (loadings = .39-.81). Three of the

studies that used PCA reviewed the sampling adequacy using Kaiser-Meyer-Olkin (KMO), including Yamashita et al. (.87), Castaneda-Hidalgo et al. (.71) and Moutzoglou (.87).

All six studies except Fairbrother et al reported using orthogonal rotation. Fairbrother et al. did not provide any specifics regarding methods or results of the PCA.

Four studies reported using EFA only (Choobineh et al., 2011; Duddle & Boughton, 2008; Ellenbecker et al., 2008; Leung et al., 2007). Both Duddle & Boughton and Choobineh et al. used principal axis factoring for extraction. Duddle & Boughton used oblique rotation while Choobineh et al. used Varimax, an orthogonal rotation. Ellenbecker et al. used alpha extraction and no report of rotation while Leung et al. used maximum likelihood with an oblique rotation. All four studies reported factor loadings, and found to be .60-.88 (Duddle & Boughton), .23-.80 (Choobineh et al.), .36-.82 (Leung et al.) and .40-.81 (Ellenbecker et al.). Explained variance for each factor analysis ranged from 50% (Leung et al.) to 62% (Ellenbecker et al.) to 68% (Duddle & Boughton). Choobineh et al. did not report explained variance from the factor analysis.

Seven studies used CFA only to study the factor structure of the measure of nurse job satisfaction (Bjørk et al., 2007; Chan et al., 2009; Djukic et al., 2010; Etchegaray et al., 2010; Kovner et al., 2006; Tsai & Wu, 2010; Weng et al., 2010). Chan et al. reported a marginally acceptable fit for the model with goodness of fit index (GFI; .82), SRMR (.06), comparative fit index (CFI; .79), and χ^2 /d.f. ratio (4.11) higher than the critical value (2.0). Bjørk et al. did not provide any specifics for the reported CFA conducted. Djukic et al. reported overall good fit using fit indices CFI (.97), TLI (.98), and RMSEA (.06). Etchegaray et al. reported acceptable fit with χ^2 (6.15, d.f. = 20), non-normed fit index (NNFI; 1.00), parsimonious normed fit index (PNFI; .48), and RMSEA (.00). Weng et al. reported acceptable fit with χ^2 /df (2.54), GFI (.97), AGFI (.93), SRMR (.01), CFA (.99), NFI (.98), RFI (.97), IFI (.99) TLI (.98) and RMSEA (.71).

Tsai & Wu did not report model fit indices, but did report that factor loading ranged from .48-.82. Kovner et al. did not provide any specifics regarding model fit from the CFA reported to have been conducted.

Three studies used both EFA and CFA (Flint et al., 2010; Karanikola et al., 2007; Murrells et al., 2009). Flint et al. used multiple fit indices to test the full model structure, including root mean square error of approximation (RMSEA; .06), comparative fit index (CFI; .91), standardized root mean square residual (SRMR; .05), all of which suggested good model fit. Murrells et al. examined the model fit for the CFA using RMSEA and the minimum of the discrepancy function where ratios between 2 and 5 were recommended. The final model for Murrells et al. had a ratio 3.43-3.44, indicating good fit. Both Flint et al. and Murrells et al. conducted the CFA after factor structures had been established in an EFA. Karanikola et al. did not provide any specifics regarding the CFA beyond stating it was conducted.

Seven studies used structural equation modeling (SEM) to examine the fit of the measure of nurse job satisfaction (Cortese et al., 2010; Flanagan, 2006; Güleriyüz et al., 2008; Larrabee et al., 2010; Laschinger et al., 2011; Manojlovich & Laschinger, 2007; Spence Laschinger, 2008). Cortese et al. reported good model fit using RMSEA (.04), SRMR (.04) non-normed fit index (NNFI; .98), adjusted goodness of fit index (AGFI; .96) and goodness of fit index (GFI; .99). Güleriyüz et al. reported good fit to the data with indices RMSEA (.05), GFI (.98), NFI (.97) and PClose (.49). Larrabee et al. also reported good model fit with GFI (.99) AGFI (.97), RMSEA (.04). Laschinger et al. reported reasonable fit with χ^2 (12.03, d.f. = 1), CFI (.98) TLI (.95), RMSEA (.06). Manojlovich & Laschinger reported the model fit the data well with χ^2 (96.4, d.f. = 10), NFI (.90), CFI (.43), and RMSEA (.18). Spence Laschinger established relatively good fit

using X^2 (17.9, d.f. = 11), CFI (.95), incremental fit index (IFI; .95) and RMSEA (.17). Flanagan did not provide details regarding model fit.

Cowin et al. (2008) used SEM as well, but first tested using CFA. Fit indices used by Cowin et al. in the final SEM confirmed model fit, including the Tucker-Lewis index (TLI; .89), relative noncentrality index (RNI; .90) and the RMSEA (.05). DelliFraine et al. (2006) also used CFA prior to further testing in a SEM. Fit indices reported by DelliFraine included GFI (.95), AGFI (.90), RMSEA under .08.

Two studies used EFA and SEM (Lynn et al., 2009; Lu et al., 2007) to examine fit of the measure used to examine nurse job satisfaction. Lynn et al. reported model fit using FLI (.90), RMSEA (.06). An EFA was used to identify the four factors of the SINS measure prior to examining in the SEM (Lynn et al.). Lu et al. reported adequate model fit using X^2 (79.30, d.f. = 33), RMSEA .07, GFI (.94), nonnormed fit index (.93) and the CFS (.95), Lu et al. also used an EFA to identify the factors to be examined further in the SEM.

3.3.8 Definitions of Job Satisfaction

Forty-two studies defined job satisfaction. No consistent definition was found. Job satisfaction was defined as a feeling (Chang et al. 2010; Cortese et al., 2010; Curtis, 2007; Lu, Chang et al, 2007; Moumtzoglou, 2010; Pitkäaho et al., 2011; Wilson et al. 2008), an attitude (Simpson, 2008), liking one's job (Cowin et al., 2008; Giallonardo et al. 2010; Karanikola et al. 2007), an affect (Abushaikha & Saca-Hazboun, 2009; Djukic et al., 2010; Güleriyüz et al., 2008; Yang & Chang, 2008), the sum of one's cognitive and affective appraisals of one's job (Djukic et al., 2010), or a difference between received and desired rewards (Sharp, 2008).

3.3.9 Funding Source Identified

Forty studies reported funding. The most common source of funding was reported to be by the government (n = 14), followed by a University (n = 13), a professional association (n = 4), a foundation or funding program (n = 4), a hospital research program (n = 2), a doctoral scholarship (n = 2) or a private company (n = 1).

3.3.10 Theory/Framework Reviewed

Fifty studies from this literature review used theory or a conceptual framework to explain job satisfaction and explain the results of their studies as it relates to job satisfaction (see Table 3). Some of the studies cited literature regarding nurses' job satisfaction without development of a theory or conceptual framework to measure and interpret nurse job satisfaction (Bjørk et al., 2007; Karagozoglou & Bingöl, 2008). Others referenced theory but did not provide explanation of how the theory was used in the measurement of nurses' job satisfaction and/or interpretation of the data (Chan et al., 2009; Djukic et al., 2010).

Table 3, Theories Used to Guide Development and Interpretation of Nurse Job Satisfaction

Theory or Conceptual Framework	n	Reference(s)
Herzberg – intrinsic and extrinsic motivators of job satisfaction	5	Curtis, 2007; Güleriyüz et al., 2008; Russell & Gelder, 2008; Selebi & Minnaar, 2007; Sharp, 2008
Maslow's theory of hierarchical needs as it relates to nurse job satisfaction	2	Burtson, 2010; Leung et al., 2007
Herzberg's and Maslow's theory	3	Abushaikha & Saca-Hazboun, 2009; Al-Enezi et al., 2009; MOUNTZOGLU, 2010;
Herzberg's and Shavelson's theory	1	Cowin et al., 2008
Warr's theory – intrinsic and extrinsic motivators of job satisfaction	1	Patel et al., 2008;
Ascribing intrinsic and extrinsic motivators of nurse job satisfaction without identifying theorist	3	Fairbrother, et al., 2009; Golbasi et al., 2008; Pitkääho et al., 2011
Caring theory	2	DelliFraine et al., 2006; Hill, 2011

Hackman and Oldham's (1975) theory	2	Kalisch, Lee, & Rochman, 2010; Murrells et al., 2009;
Donabedian's theory	2	Hall & Doran, 2007; Kalisch et al., 2011;
Emotional labor theory	1	Yang & Chang, 2008
Cohen-Mansfiel and Noelker's model in stress and job satisfaction	1	Montoro-Rodriguez & Small, 2006;
Price and Meuller's theory of met expectations	2	Best & Thurston, 2006; Zangaro, & Johantgen, 2009
Price met expectations theory combined with Gurney's theory of work satisfaction	1	Kovner et al., 2006;
Ellenbecker's (2004) theory of intrinsic characteristics of job satisfaction	1	AbuAIRub et al., 2009;
Social exchange theory	1	De Gieter et al., 2010;
Sociotechnical systems theory	1	Drenkard, 2006
Theory of acculturation	1	Ea et al., 2008
Scaufeli and Bakker's concept of work engagement integrated with Avolio's model of authentic leadership	1	Giallonardo et al., 2010;
Neal's theory of professional role development	1	Ellenbecker et al., 2008;
Person-environment fit theory	1	Karanikola et al., 2007
Leiter and Lashinger's nursing worklife model	1	Manojlovich & Laschinger, 2007
Karasek's job strain model to explain job content	1	Choobineh et al., 2011
Combined three theories of ethical climate and Kohlberg's moral development to explain job satisfaction	1	Goldman & Tabak, 2010
Framework to explain behavior of job satisfaction	12	Ahmad & Oranye, 2010; Cai & Zhou, 2009; Cortese et al., 2010; Fillion et al., 2009; Flanagan , 2006; Laschinger et al., 2011; Lautizi et al., 2009; Ning et al., 2009; Ridley et al., 2009; Simpson, 2008; Spence Laschinger, 2008; Tabak & Koprak, 2007
Built argument for job satisfaction as a multidimensional construct	3	Kekana et al., 2007; Tsai & Wu, 2010; Wilson et al., 2008

4. Discussion

This literature review supports the assertions by previous research that there are scientific gaps within the literature regarding the measurement and science of nurse job satisfaction. This

literature review found that only 40% of the 104 studies (n = 42) even provided a definition of nurse job satisfaction. Lack of definitions was cited as an issue by Hayes et al. (2010) in the early portion of this review. Definitions are important as they make observable or abstract phenomena applicable for theory and conceptual framework development (Polit & Hungler, 1999). Without definitions, it is difficult to clarify research variables and interpret research findings (Polit & Hungler). Definitions make concepts clear, which supports the development of propositions that serve as the structural foundation of nursing knowledge (Fawcett, 2000). Reynolds (1971), in his classic work, further asserts that clear definitions of concepts are essential to facilitate the dialogue of science in the development, testing and respecification of theory or frameworks that advance science.

Fawcett (2000) delineates how theory is structured by using propositions to show relationship. This literature review identified that theory was used by a minority of studies (n=36 studies; 35%). Poorly structured frameworks were also a concern reported by researchers within this literature review (Djukic et al., 2010; Rafferty et al., 2007; Sveinsdóttir, 2006). Fourteen of 36 studies used Herzberg's theory of similar framework that proposed job satisfaction is comprised of intrinsic and extrinsic factors. Abushaikha and Saca-Hazboun (2009) serves as an example from this literature review of how a definition of nurse job satisfaction as an affective orientation toward one's job was applied to the combined use of two theories, Herzberg's and Maslow's. This building of research structure used by Abushaikha and Saca-Hazboun, including defining job satisfaction and using theoretical frameworks, supported the articulation and measurement of the proposition that job satisfaction relates to burnout. The Abushaiskha et al. study helped to not only support the integration of research from various studies, but also aided in the interpretation of how job satisfaction as an affective orientation relates to burnout. Authors

of this study reported that participants in the study who had low levels of personal achievement, an intrinsic dimension of nurse job satisfaction, were at risk of low motivation to achieve more within their job and thus initiate the trajectory toward low engagement and burnout (Abushaiskha & Saca-Hazboun).

Karankola et al. (2007), like Abushaiskha and Saca-Hazboun, used the definition of job satisfaction as an affective orientation, but proposed the orientation of the nurse's job satisfaction related to the fit between person and environment. This definition and theory of person-environment fit guided the development of the literature review for Karankola et al., selection of job satisfaction instrument which was the 6-factor IWS, and the refinement of the IWS during factor analysis. Karankola et al. eliminated an item that evaluated the nurses' perception of the profession and ignored the affective orientation of the nurse. This elimination of the item by Karankola et al. during factor analysis and respecification of the IWS was guided by the structure of concepts within the theory of person and environment fit.

Gaps related to using the process of science, including but not limited to clear definitions, use of theory, and testing of factor structure of instruments inhibits the development of arguments regarding what promotes or relates to nurse job satisfaction. Instruments that are developed and tested for specific context(s) and samples using the process of science will assist with the exploration and specification of models that can span samples and setting in nursing.

In addition to the gaps identified in the scientific process identified by this literature review is the fact that all but two studies were isolated to a single country. Isolation of study samples also extended to the examination of nurse job satisfaction in a single unit, hospital, geographic location or clinical specialty. Such isolation of research in nurse job satisfaction, without replication or broader samples of nurses, inhibits the development of global models of

research. The fact that 56 different instruments were found in 104 studies also illustrates the difficulty in assembling a global model of nurse job satisfaction.

5. Implications

This literature review provides insight into the strengths and gaps in research in nurse job satisfaction. It is proposed that the findings of this review be used to enhance the science as it relates to gaps, including greater use of definitions, theory, testing of factor structure of instruments and subsequent respecification of measures. It may be that some core questions persist across the globe while respecification of measures for context reduce measurement error for greater precision in the science of measuring nurse job satisfaction. Despite the slight variation in scores derived from the Fink criteria when comparing regions of the world, the results were all within a 2-point range on a 21-point scale.

Although inclusion of demographics in the analysis was evident in 52% of the 104 studies, it seems appropriate to suggest more research in how nurse job satisfaction is influenced by demographics. This is most appropriate in the current environment globally to consider social determinants as possible predictors of environmental health. Examination of demographics as possible social determinants of environmental health was not addressed by any of the 104 studies within this review, but that only roughly half of the studies included demographics in the analysis of nurse job satisfaction suggests a possible opportunity for future research.

It is also important to consider what the instrument actually measures as evidenced by the development and research of the instrument itself. For example, when this literature review was initially conducted, there were six instruments commonly used to measure nurse job satisfaction (e.g. the NWIR, PES, etc.), but were actually developed to measure other constructs like the

work environment, productivity, and professional practice. While these constructs are similar, the historical review of the development of the instruments, available to any scientist/researcher, reveals they were developed to measure other constructs. This was further supported by some studies in this research using one of these six instruments to for measurement alongside an actual measure of nurse job satisfaction (e.g. Ridley et al., 2009; Rochefort, 2010).

6. Limitations

Limitations to this study include confinement of literature review to approximately five years. This confinement was selected to create some feasibility of conducting a global search, but more relevant was the assumption that identified literature would consider past research in job satisfaction, which would enhance the likelihood of capturing all existing instruments used to measure the latent construct of nurse job satisfaction.

Another limitation is that only one of the four authors of this study, the lead author, conducted the literature search and read every article. The entire process of conducting the literature review, developing the Fink (2005) criteria, and scoring of the articles was overseen and approved by a research committee of four PhD University faculty in a major metropolitan state university in Minneapolis, Minnesota, but the lead author was the only one who actually read every article in this literature review.

7. Conclusion

The aim of this literature review was to examine the state of research of nurse job satisfaction by identifying the instruments and scientific rigor of measuring the latent construct of nurse job satisfaction. Using the extraction tool provided an overview of the strengths and

weaknesses of the research over a five year period of time. While there were some successes identified, there are gaps that exist which preclude articulation of core dimensions of nurse job satisfaction that exist across contexts and demographics. More importantly, the gaps in research impede model specification of measuring nurse job satisfaction to connect to outcomes like turnover and quality of care.

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