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Investing in Human Relations for Healthy Nursing Practice Environment, Nurses' Job Satisfaction and Quality of Nursing Care

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Abstract Relationship between the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care have been studied for a way forward to superior healthcare delivery. However, the literature and management practices frequently viewed the relationship as one directional; which may have resulted to restructuring in the nursing practice environment that are insensitive to nurses' need. This paper provides evidence of reciprocal relationship between the three domains in the context of interactions between nurses at NSW health organisations. Mixed methods of survey questionnaire and one-on-one semi-structured interview were used in this research in sequential design, with 136 survey respondents and 21 interviewees. The research result identified interactions between nurses as a vehicle through which the reciprocal relationship between the domains are kept in motion. While healthy interactions between nurses that generate trust and gratitude were seen to positively impact the domains, the opposite was noticed in case of unhealthy interactions. Therefore, management practices in nursing administration should invest for healthy human relations to achieve enhancements across the three domains.

Keywords: *interactions between nurses, nursing practice environment, job satisfaction, quality of nursing care*

1. Introduction

Studies concerning with providing a better workplace for nurses, have consistently looked at how nursing practice environment affects critical nurse outcomes such as job satisfaction and quality of care [1,2,3,4,5,6]. Some of these studies [4,6] are based on the Structure-Process-Outcome (SPO) paradigm [7] and provide empirical evidence that nursing practice environment represents the structure and process, that can lead to the outcomes of nurses' job satisfaction and quality of nursing care. One of the valuable insights from these literatures is that, changes in the nursing practice environment could bring desirable positive outcomes in nurses' job satisfaction and quality of nursing care.

Nonetheless, the existing literature analyses the relationship between the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care as one-directional, rather than considering the possibility of "reciprocity" of directions that might exist. The term "reciprocity" here is referring to the mutual dependence of the three domains, that is, how each of these domains are impacting each other and mutually dependent on each other. For example, Reference [3] reported that nurses in an unfavourable nursing practice environment are 11 times more likely to deliver fair to poor quality of care. However, there were no reporting of how the delivery of fair to poor quality of care might also impact on nurses' job satisfaction and work environment. In fact, the author of this paper conducted a literature search from 1999 until February 2010 and failed to arrive at any paper that studied the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care in reciprocal directions. It may be mentioned, that the search was limited to articles written in English, published in peer reviewed journals and analysing nursing practice environment with a validated instrument.

Similar to the literature, management practices in healthcare organisations also seem skewed, towards a concept of one-directional relationship between the three domains. It seems that changes in the nursing practice environment are drawn, without a comprehensive view of how each of the domains can affect each other. A symptom in this regard is nurses are reported to believe, changes in health care system will worsen the timeliness, effectiveness and efficiency aspects of patient care [8]. Despite constant restructuring in the health system, substantial portion of nurses are still facing verbal abuse (56%), hostility at workplace (24%) and physical injuries (38%) (8: 324). Hence, there is a need to learn how to achieve improvements across the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care. A step towards that learning can be to comprehend the reciprocity between the three domains, especially for its human relations aspect.

The purpose of this paper is to draw insight for possible reciprocal relationships between the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care. Although this insight is not an

innovation, given the background in the previous paragraphs, it is believed that the insight is certainly not well articulated and practiced in nursing management. The research question that the paper addresses is:

"How are the domains of nursing practice environment, nurses' job satisfaction and quality of nursing care interrelated?"

The paper will approach the research question with mixed methods, including a survey questionnaire and one-on-one interviews. Data from the survey is expected provide a quantitative picture of the possibility of a reciprocal relationship between the domains. The interviews will search for insights of human relations aspect in answering the research question. That is, whether the lived experiences of interaction between nurses (e.g. nursing administrators, nurse managers, nurse clinicians, new graduate registered nurses) in the workplace could provide an insight behind the proposed interrelationship of the domains. Such research can contribute to fill the scarcity of reciprocal study between the domains in the literature. It has the potential to generate interest for investing behind human relations, as a gateway towards healthy nursing practice environment, nurses' job satisfaction and quality of care.

2. Conceptual Framework

The following section briefly describes the three domains, along with the importance of studying the interrelationship between the domains. Such information is pivotal to the conceptual framework of this paper. Sample scales of the three domains are provided in Appendix 1.

2.1 Nursing Practice Environment

In this paper, the nursing practice environment is referring to nurses' work context which is represented through organisational characteristics such as staffing and resource adequacy, nurse manager ability, nurse participation in hospital affairs, nursing foundation for quality of care, nurse-doctor relationship and cultural values [9,10,11].

2.2 Nurses' Job Satisfaction

The literature continue to find job satisfaction to be an ambiguous and yet important domain in management [12,13,14]. Reference [12] described that the domain can be defined as reaction to job from different perspectives such as emotional assessment, evaluation of attitude, expectation gap and appraisal of belief system. In this paper, job satisfaction is accepted as a contented emotional state that results when one is achieving the desired job values [15]. This study captured aspects of nurses' job satisfaction by assessing job values such as pride in the job, sense of fulfillment from committing to patient care and satisfaction with working conditions [16,17,18].

2.3 Quality of Nursing Care

In this study, the quality of nursing care domain is perceived as the degree to which the nurses' initiatives meet the individual need of patients [19,20]. An examination of quality of nursing care might involve assessment of the structures, processes and outcomes that meets patient needs for technical care, as well as the interpersonal relationship with nurses [20,21,22]. However, such a vast examination of nursing care is beyond the scope of this paper. The author of this paper attempted to capture aspects of quality of nursing care, by assessing nurses' initiatives regarding technical care, informational and emotional support to patients [22].

The importance of studying the association between the above mentioned three domains, as shown in Figure 1, was identified as early as in the 1980s, through 'magnet study'. The American Academy of Nursing (AAN) conducted this study in 1981, in response to hospitals facing a severe crisis in sourcing nursing staff and maintaining patient safety [2]. The AAN task force had studied 41 reputable hospitals, that is, hospitals that achieved low nurse turnover and high quality of nursing care even in the crisis period in USA. The task force revealed that reputable hospitals, which are commonly known as 'magnet hospitals', usually maintain certain organisational characteristics (e.g. staff & resource availability, nurse participation in hospital affairs) in the work place to function at a superior level with job satisfaction and quality care. As McClure, a member of the 1981 task force, explained:

Simply stated, these (magnet hospitals) were good places for all employees to work (not just nurses) and these were good places for patients to receive care. The goal of quality was not only stated in the mission of these institutions but it was lived on a daily basis (23: 119).

Figure 1. Conceptual Framework: The Magnet Study

Currently 'magnet hospitals' are designated by American Nurses Credentialing Centre (ANCC), to label hospitals with excellence in quality of care and innovative nursing practice [24]. Research has consistently shown that 'magnet hospitals' score favourably against the non-magnet ones, hospitals that do not have endorsement from ANCC, in the domains of nursing practice environment, nurses' job satisfaction and quality of nursing care [25,26,27,28]. Whereas, the association between the three domains are evidenced both in the magnet and non-magnet hospitals [1,3,6,26]. Therefore study of the relationships between three domains in Figure 1, can inform efforts towards positive changes in the context of both magnet and non-magnet hospitals.

3. Method

3.1 Design

The study employed mixed methods, including a survey questionnaire and one-on-one interviews with a two-stage sequential design. The survey questionnaire was conducted first, as it could provide a snapshot of the possibility of a reciprocal relationship between the domains in objective term. The interviews, that happened four months later than the survey, were necessary for deeper insight of human relations aspect in the interrelationship between the domains. Mixing of methods in this study is expected to integrate quantitative and qualitative views, resulting in a "superior explanation" (29: 115) of the relationship between the domains of nursing practice environment, nurses' job satisfaction and quality of nursing care.

The survey measured the nursing practice environment, nurses job satisfaction and quality of nursing care according to the adapted instruments of practice environment scale-nursing work index [10], organisational job satisfaction instrument [16] and nursing performance instrument/individual patient care [22] respectively. These instruments were adapted to the context of Australian nursing practice environment for language, content and structure [30,31]. The language component assessed whether items in the instrument contained words that are in use in the Australian context. The content component assessed whether the themes of the instrument are relevant to the Australian registered nurses. While the structure assessed respondents' comfort with structural matters of the instrument, such as the number of scale points in questions, the length of the instrument. The adaptation process covered review of existing literature, peer review, pilot study and confirmatory factorial and reliability analysis. The reliability analysis confirmed each of the three domains having a Cronbach's standardized alpha (CSA) value higher than the cut-off point of 0.7 (32, 33). All the domains also had acceptable factorial stance with factor loadings of at least 0.5 (34). Sample questions of the survey questionnaire for each of the three domains are provided in Appendix 1.

The on-on-one interviews began by reporting a summary of the findings from the survey, that is, the score on nursing practice environment, nurses' job satisfaction and quality of nursing care. This introduction provided a context for posing an overarching question about participants' feelings about their current nursing practice environment and to open up a discussion relevant to the research question. Query regarding the research question read as; "We have been talking about the three factors; nursing work environment, nurses' job satisfaction and quality of nursing care. Do you think these three are related?" As prescribed in the literature [35,36], an interview format was developed to prepare for the interviews . The format was helpful to steer the interviews to the extent that did not jeopardise the flow of independent thinking process, of the interviewees.

3.2 Participants

The data for this paper came from 136 survey respondents and 21 interviewees. In the survey sample, more that 70% belonged to public hospitals and 95% worked in hospital type work environment. The survey respondents came from clinical practice areas of; Medical/Surgical (23.6%), Critical care (18%), Midwifery (10.6%), Mental health (8.9%), Aged care (8.1%), Peri-operative (7.3%) and others (23.5%). Ninety two percent of them are females, with an average age of 50. The nursing classification composition of the survey sample is; bedside/registered nurse (61%), nurse manager (15%), clinical nurse specialists (13%), clinical nurse consultant (7%), clinical nurse educators (2%) and nurse educators (2%). Out of the 21 interviewees, the majority came from public hospitals and belonged to variety of clinical practice areas such as mixed medical, critical care, aged care, midwifery and paediatrics. The nursing classification of the interviewees are; bedside/registered nurses [7], nurse managers [7], clinical nurse consultants [3], clinical nurse specialists [2] and clinical educators [2]. The interviewees' age ranged from 39 to 63 years.

3.3 Procedure

The Nursing & Midwifery Board (NMB), New South Wales (NSW) had approved a request for assistance, in recruiting participants for the survey questionnaire. Subsequent to NMB's approval, ethical clearance was also received from the Human Research Ethics Committee of the University of Western Sydney in Australia. Participants in this study were recruited through purposive sampling from the register of the NMB, NSW. The respondents were required to be practicing nurses and have a minimum of two years of experience in an inpatient practice environment. These two desired characteristics of the research participants were printed in the introduction of the survey questionnaire. Such purposive recruitment ensured a research focus on practice environment, where nurses are likely to have high interaction with patients and thereby possess a thorough view of the relationship between the three domains.

The registrar at NMB had circulated survey packs in hard copy, to 2050 nurses at their residential addresses. A total of 157 packs were returned, achieving a response rate of 7.6%. A return of the questionnaire was deemed to be implied consent for voluntary participation. Sixty five respondents agreed to an interview by returning the signed interview consent forms, which they received during the survey. The interviewees were recruited again with a purposive method to arrive at nurses who belonged to a variety of clinical practice areas (e.g. medical, critical care, per-operative) and nursing classifications (e.g. clinical nurse consultants, nurse managers, clinical nurse educators, clinical nurse specialists, registered nurses). Nurses from such a variety of backgrounds were expected to provide pragmatic and comprehensive answers to the research question. Both the data for survey questionnaire and interview were collected in the year 2009.

4. Data Analysis

This section will explain how the data from the two methods, were analysed to study how the domains of nursing practice environment, nurses' job satisfaction and quality of nursing care are affecting each other. There are two parts in this section, the first part explains the quantitative analysis technique of mediation by regression and the next part is about the qualitative analysis of theme identification.

4.1 Mediation by Regression with the Survey Data

The mediator analysis technique was applied to learn about the possibility of reciprocity between the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care. A mediator works as the mechanism through which the independent variable can exert full or partial influence on the dependent variable [37]. Each domain was analysed for its role as a mediator, between the reciprocal relationships of the other two domains. The combined results of the mediator analysis of each of the domains of nursing practice environment, nurses' job satisfaction and quality of nursing care, as shown in Figure 2, can reveal whether there is reciprocity when the three domains are put in relationships at once.

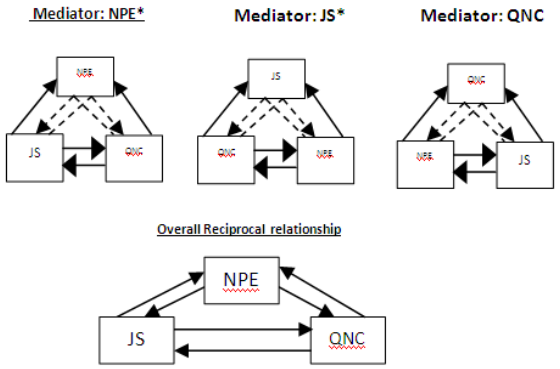

Figure 2. Mediators in the reciprocal relationship between nursing practice environment (NPE), nurses' job satisfaction (JS) and quality of nursing care (QNC)

Only detailed explanation of the mediating role of the nursing practice environment is provided here, since the steps are exactly the same for all of the three domains. In this analysis, the task was to assess whether nursing practice environment can influence the reciprocal relationship between nurses' job satisfaction and quality of nursing care. It should be clarified at this stage, that the authors of this paper applied the mediation analysis not to indicate cause and effect relationship between the domains. Instead, the mediation analysis was as indication of a role of nursing practice environment that influenced the association between job satisfaction and quality of nursing care. The following Figure 3 depicts the regression steps for the mediator analysis on the domain of nursing practice environment.

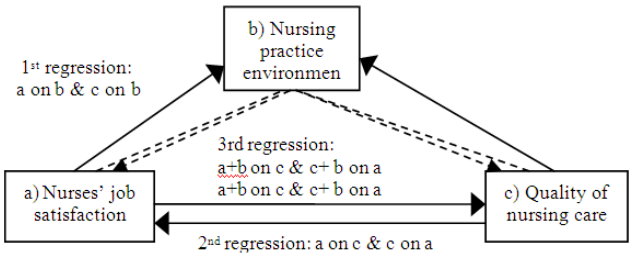

Figure 3. Mediator analysis on nursing practice environment as per Barron & Kenny

The analysis ran three regressions as shown above [37]. The first was between nurses' job satisfaction and nursing practice environment, to test the influence of nurses' job satisfaction towards the possible mediator nursing practice environment. The second had nurses' job satisfaction as an independent domain impacting the domain of quality of nursing care. Then the third and the last one had two independent domains, nurses' job satisfaction and nursing practice environment, impacting on the dependent variable of quality of nursing care. In order to capture the mediating role of nursing practice environment, between nurses' job satisfaction and quality of nursing care from both directions, another three regressions were run again. This time, the first regression was between quality of nursing care and nursing practice environment. The six arrows, including the ones with the broken lines in Figure 3, reflect mediator analysis on nursing practice environment from both directions.

According to reference [37], nursing practice environment can be a mediator if four conditions are met: first one, nurses' job satisfaction and quality of nursing care are found to have a significant influence on nursing practice environment in the first regressions; second one, nurses' job satisfaction and quality of nursing practice environment are found to be significant influencers to each other in the second regressions; third one, the third regressions show nursing practice environment to be a significant influencer to quality of nursing care and nurses' job satisfaction and lastly, the third regressions show reduction in the degree to which nurses' job satisfaction and quality of nursing care impact on each other in comparison to that of the second regression.

In the above four conditions, the significance is decided by the unstandardized coefficient (B) values at ranges of $p< 0.05$ to $p <0.001$. Regarding condition four, if the reduction is as such that the third regression is showing a zero influence between nurses' job satisfaction and quality of nursing care then nursing practice environment is evidenced to be a single and dominant mediator [37]. Since this study is not expecting the mediation analysis to represent a cause and effect relationship, the mediator role of nursing practice environment was not statistically validated by applying 'sobel' tests [37] or bootstrapping procedures [38]. As it is, there are criticisms that mediation results can indicate a valid causal relationship [39]. Rather it is preferred to learn more of nursing practice environment's role as a mediator, from nurses' real life experiences to be collected during interviews. Literature [38] suggests that combination of quantitative and qualitative information, can provide greater insights into mediation relations.

4.2 Theme Identification with the Interview Data

The data analysis started with the search of themes in each interview. Themes refer to recurrent concepts that describe aspects of experiences relevant to an inquiry [40]. Accordingly, themes were identified when discussions reflected intense and recurrent feelings in an interviewee. For example intense feeling was noticed, when an interviewee expressed frustration in situations when nurse administrators roll out impractical changes in the workplace. This feeling had intensity, as it reflected the interviewee's desire for greater control and respect in her job. Moreover, the interviewee had expressed such feeling of frustration frequently while describing interactions with

nursing administrators in the work environment. Thus, a theme was coded as "interaction with nursing administrators". Codes such as "interaction with nursing administrators" were considered provisional at this stage, since it reflected experiences of individual nurses rather than that of the collective group. The finalization of themes involved further search of commonality, within the group of 21 interviewees. This stage of analysis helped to amend the themes with suitable aspects of the relevant experience. Furthermore it could be assessed, whether the themes were reflected by majority or minority in the group. The amendment of the themes came to an end, when it was felt that the themes are representing stable experiences. A database of transcripts and memos were maintained in the QSR NVivo™ 8, to support the analysis process.

Three themes were finalized in relevance to the research question in this paper. These are; one, interaction between nurse managers and nurse clinicians, two, interaction with new graduate registered nurses and three, interaction with nursing administrators. Nurse managers refer to nurses working in the role of unit manager, while the nurse clinicians include nurses in classifications of registered/bedside nurses, clinical nurse specialists, clinical nurse educators and clinical nurse consultants. The new graduate registered nurses refer to fresh graduates from the university. Lastly, the nursing administrators relate to nurses working at higher organizational level, usually holding the position of Director of Nursing. It may be noted that none of the interviewees in this study, belonged to the roles of nursing administrators and new graduate registered nurse.

5. Results

In this section, survey and the interview results are presented to answer the research question: How are the three domains of nursing practice environment , nurses' job satisfaction and quality of nursing care interrelated?

5.1 Understanding the Relationship between the Domains with the Survey Data

The survey results answered the above mentioned research question through mediation test on each of the three domains in reciprocal directions, as shown in Figure 2. The combined picture of the three sets of mediation analysis revealed that the nursing practice environment, nurses' job satisfaction and quality of nursing care are interrelated, with possibility of reciprocal relationship. The analysis found each of the three domains to be capable of partially mediating the relationship between the other two domains. In this paper, to avoid being repetitive, results are explained only for the analysis of mediation on nursing practice environment. A summary of the mediation test results on nursing practice environment are presented in the following Table 1.

Table 1. Summary of mediator analysis on nursing practice environment (NPE) between reciprocal relationships of job satisfaction (JS) and quality of nursing care (QNC)

Initiates at JS	1st step regression: JS to NPE F (1, 133) = 68.9			2nd step regression: JS to QNC F (1, 133) = 37.1			3rd step regression: JS + NPE to QNC F (2,132) = 35.5		
	Unstandardized Coefficient B	Standard error	t-value	Unstandardized Coefficient B	Standard error	t-value	Unstandardized Coefficient B	Standard error	t-value
Constant	1.356	.391	3.464	2.664	.423	6.229	2.062	.404	5.108
JS	.585***	.070	8.306	.464***	.076	6.094	.204*†	.086	2.379
NPE							.444***	.086	5.175
Initiates at QNC	1st step regression: QNC to NPE F (1, 133) = 63.2			2nd step regression: QNC to JS F(1, 133) = 37.14			3rd step regression: QNC + NPE to JS F (2,132) = 38.5		
	Unstandardized Coefficient B	Standard error	t-value	Unstandardized Coefficient B	Standard d error	t-value	Unstandardized Coefficient B	Standard error	t-value
Constant	1.57	.381	4.129	3.014	.409	7.365	2.275	.392	5.801
QNC	.573***	.072	7.953	.471***	.077	6.094	.201*‡	.085	2.379
NPE							.471***	.084	5.606

Notes:
*** Unstandardised coefficient B value is significant at p <0.001
* Unstandardised coefficient B value is significant at p< 0.05
† Reduction in 3rd regression: 0.26
‡ Reduction in 3rd regression: 0.27

The mediator analysis results presented in the above table examined the relationship in both directions, being consistent to the intention of analysing reciprocal relationships as depicted in Figure 3. One set of regressions is for the direction where the relationship is initiated at nurses' job satisfaction (JS). The other set of regressions is for the other direction, where quality of nursing care (QNC) is the starting point. The results presented in Table 1 show that nursing practice environment is in line with most of the Baron and Kenny's [37] conditions of being a mediator in both directions.

According to Baron and Kenny's *first condition*, nurses' job satisfaction and quality of nursing care are found to have a significant (p< 0.001 level) influence on nursing practice environment. This is indicated by the unstandardised coefficient value of 0.585 (p< 0.001 level, for relationship initiating at nurses' job satisfaction) and 0.573 (p< 0.001 level, for relationship initiating at quality of nursing care) in the column of 1st step regressions in Table 1. The unstandardised coefficient values reflect explanatory power of nurses' job satisfaction or quality of nursing care. It measures possible response effect in nursing practice environment for a one standard deviation change in nurses' job satisfaction or quality of nursing care [34]. Readers can see Figure 3 to understand the directions of relationships that the 1st step regressions are referring to.

The *second condition* is also met as nurses' job satisfaction and quality of nursing care are found to be

significant influencers to each other. The unstandardised coefficient values of 0.464 ($p<0.001$ level, for relationships initiating at nurses' job satisfaction) and 0.471 ($p<0.001$, for the relationship initiating at quality of nursing care) in the column of 2nd step regressions are supporting the claim. The *third condition* of Baron and Kenny [37] has also been matched as nursing practice environment is found to be a significant influencer to quality of nursing care with unstandardised coefficient value of 0.444 ($p<0.001$ level) and to nurses' job satisfaction with unstandardised coefficient value of 0.471 ($p<0.001$ level) respectively. These data can be found in the column of 3rd step regression in Table 1.

In line with the *fourth condition*, it is seen in Table 1, there are reductions by unstandardised coefficient value of 0.26 (for relationship initiating at nurses' job satisfaction) and 0.27 (for relationship initiating at quality of nursing care) in the 3rd regressions from that of the corresponding 2nd regressions. However, contrary to the guidance of Baron and Kenny [37], the 3rd regressions still show the relationships between nurses' job satisfaction and quality of nursing care to be significant with unstandardised coefficient values of 0.204 ($p<0.05$ level) and 0.201 ($p<0.05$ level).

In view of recent literature [38,41], such a situation indicates that the proposed mediator (i.e. nursing practice environment) is not the only domain to account for the relationship between nurses' job satisfaction and quality of nursing care. Zhao et al. (41: 14) labels such a role of mediator as "complementary mediator" and Mackinnon et al (38: 602) labels it as "partial mediator". Therefore the results presented in Table 1, indicates nursing practice environment to be a partial mediator that partially influences the reciprocal relationships between nurses' job satisfaction and quality of nursing care. Additionally, it implies actions taken at the point of nurses' job satisfaction or quality of nursing care should influence the situation in a nursing practice environment and that, such influence can have a cascading impact to the third domain.

Having established the possibility of a partial mediator's role for the domain of nursing practice environment, it is time to look into analysis of mediations on the other two domains of nurses' job satisfaction and quality of nursing care. It was found that mediation results on these two domains met the first three conditions of Baron and Kenny (1986) completely. Regarding the fourth condition, the domain of nurses' job satisfaction showed reductions of 0.12 (for the relationship initiating at nursing practice environment) and 0.19 (for the relationship initiating at quality of nursing care). Similarly, on the fourth condition, the mediation analysis on quality of nursing care projected reductions of 0.11 (for the relationship initiating at nursing practice environment) and 0.18 (for the relationship initiating at nurses' job satisfaction. These results confirm that both the domains of nurses' job satisfaction and quality of nursing care can also be partial mediators between the reciprocal relationships of the other two domains. Therefore the collective view of the mediation analysis supports, that the relationships between the three domains can be reciprocal. With the support of the survey result, the next section (5.2) will look into the interview findings to understand the rationale behind the relationship.

5.2 Understanding the Relationship between the Domains with the Interview Data

Nurses gave account of experiences from workplace as they were asked about how the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care interrelate. Their account exhibited a common consensus that the three domains are definitely interrelated. A sense of reciprocity in the interrelationship of the domains was also indicated, in some of the responses. For instance, a nurse manager stated:

They (the domains of nursing practice environment, nurses' job satisfaction and quality of nursing care) affect each other all the time. I don't see that one is coming before the others. (NM-JK).

As mentioned in the introduction, the interviews were expected to shed light on the possible reciprocal relationship between the domains from the human relations perspective. Hence interaction between nurses in different roles (i.e. nursing administrators, nurse managers, nurse clinicians, new graduate registered nurses), in day to day work life was taken as the context to analyse the interviews. The interview result are segregated into three sections to highlight, how nurses perceived each of the domains of nursing practice environment, nurses' job satisfaction and quality of care to impact the other two domains.

5.2.1 Interaction between Nurses: Nursing Practice Environment Impacting the other Domains

An ample number of examples of interactions between nurses emerged as they were describing the interrelationship between nursing practice environment and the other two domains. Nurse clinicians mentioned that guidance from managers in the work environment, has a significant influence on their work and the quality of care. This influence came in different forms, such as the way a manager handles clinical errors, provides guidance for quality care, recognises clinicians for their hard work and manages resources of staffing and/or medical equipment in the ward.

Similarly, managers mentioned their dependence on the skill of the clinicians to maintain the quality of care in the workplace. While managers are not delivering direct patient care, they expressed that they are still responsible for the quality of care and are involved in its critical points. They gave accounts of guiding clinicians to deliver quality care by activities such as coordinating resources (e.g. staff, equipment), maintaining a high profile on the floor, ensuring staff education, endorsing standards of Australian Council on Healthcare standards (ACHS) about infection control, management of medication, discharge procedures, reporting quality of care [42]. Therefore the accounts from both nurse managers and nurse clinicians, indicated that interactions between them were an important element, through which nursing practice environment impacted the quality of nursing care.

The interactions between nurses that generate quality care, as mentioned above, were also found to be dependent on a sense of "trust". As a nurse manager expressed:

I think you set the standard, you know the quality of your staff and you trust the staff to give the best possible care. (NM-BC).

Here, the manager mentions that quality of care is developed through exchanges of managers' support and the clinicians' effort towards care. The statement, more importantly, indicates that trust has a role to play in these exchanges in the nursing practice environment. From discussions with interviewees, such a role of trust seemed quite necessary and logical. This is so, as the managers cannot be certain about how clinicians will actually deliver the care when they are in face to face contact with patients. Therefore, the managers have to provide the guidance to clinicians and trust that the clinicians will do their best. Likewise, the clinicians need to trust that the managers' guidance will be effective in providing quality care to patients. The clinicians can comply with managers' guidance with that trust in mind.

The interview data provided a similar picture in how nursing practice environment impacted nurses' job satisfaction. Nurses' accounts described how interactions between nursing administrators (e.g. Director of Nursing, General Manager) and nurses (e.g. nurse managers, clinicians) in the work environment, sometimes, generated emotions that negatively impacted nurses' sense of job satisfaction. During the discussion, majority of nurses explained that there is not enough visibility of the nursing administrators in the work place. While nurses understood that the nursing administrators have just too many things to do, they still worried that the lack of visibility is deterring the administrators from being (re) oriented to the working life of nurses at bedside. This note about disoriented nursing administrators is important; it could explain several of the nurse managers' frustrations with their job when administrators directed them to do things that they felt, were not necessarily practical.

Few of the nurses reflected on the visibility of nursing administrators a bit differently from the above. A nurse clinician explained that administrator's visit to the workplace generates a positive feeling for their job as it shows that the top management is aware of the hard work in the 'coal face'. Another nurse manager showed stronger negative perception about nursing administrators, stating that the administrator's distance from the coal face portrays a disrespectful attitude towards nurses. She used the following words to explain this sense of disrespect:

Our director of nursing, she has been director of nursing for three years. In three years she has been in theatre room once or not at all…she does not give the respect to the staff to even come down to the theatre units... you are only going to see the DON (Director of Nursing) if you are in trouble. (NM-SD).

The above information provide evidences to state that nurses' interactions with nursing administrators in the nursing practice environment, can significantly influence their feelings towards job. Therefore, the research result can propose that nursing practice environment can impact nurses' sense of job satisfaction through exchanges between nurses. In summary, the interview result identified the interaction between nurses to be an important platform for the interrelationship between the domains of nursing practice environment, nurses' job satisfaction and quality of care. Additionally, it is revealed that affective aspects such as "trust" and "respect" are crucial in maintaining a healthy interrelationship between the domains.

5.2.2 Interactions between Nurses: Nurses' Job Satisfaction Impacting the other Domains

During discussions with the interviewees, it was recognised that the positive sense of job satisfaction from successful exchanges between nurses, as explained in section 5.2.1, can perpetuate more positive interactions in the nursing practice environment. Nurses mentioned that when they enjoy the job and their interactions with colleagues, they exert a positive influence on the work environment. A nurse manager described the interplay between job satisfaction and the positive influences with the following words:

I'm very fortunate in particular...that all the Nursing Unit Managers...get on really well and we can talk to each other, and debrief with each other, and support each other. So when the chips are down, one person is having a bad day or you know having a hard time at work, we can be around there to support that person right. So in that sense its good job satisfaction for all. (NUM-CD).

A nurse clinician gave similar account as she mentioned how a nurse in state of contentment, is more likely to be supportive in the work environment. Such support is exhibited through simple actions such as, adjusting her roster hours to help colleagues. In return, the colleagues usually also express gratitude or offer an obligation of similar help in future; thereby generating force towards future positive interactions in the nursing practice environment. Furthermore, these perpetuating interactions could enhance quality of nursing care as a satisfied nurse is likely to be nurturing to patients. Support to this notion came from another clinician as she stated:

I think if you don't have job satisfaction then you become like a machine. And you can't give to people if you don't have anything to give. Part of job satisfaction is part of nurturing as well; nurturing patients, nurturing other people. (NC-RM).

In the above statement, nurses' job satisfaction appears as an important factor in developing a sense of nurturing within the workplace. The clinician perceives that a nurse cannot be expected to offer nurturing to patients and colleagues around her, if she herself is not satisfied. The view of the nurses as presented here, conveys that nurses' job satisfaction can create a wide impact in the other domains of nursing practice environment and quality of care. In addition to that, the findings in this section highlight that interactions between nurses can be a vehicle for the interrelation between nurses' job satisfaction and the other two domains.

5.2.3. Interactions between Nurses: Quality of Nursing Care Impacting the other Domains

Nurses in different roles, specially the nurse managers and nurse clinicians, were seen to feel an obligation to promote quality of care to the best of their ability. On occasions, nurse managers expressed dissatisfaction when administrative work blocked them from guiding clinicians in patient care. Their dissatisfaction is associated with the perception that guiding clinicians in patient care is part of their obligation to patient care.

It was also evident that majority of the nurses accepted achievements with patients, as crucial motivation for their job. This notion can be noticed in the following statements:

I would say that 90% of the reason I stay in this job is because I enjoy what I can do for patients. (NC-HH).

We work one on one with the women particularly in labour. We know the women in our team because we case load them so we look after them through the pregnancy. We come in for the birth 90% of the time and then we care for them two weeks after their birth. We believe the women are getting excellent care from us. We get good job satisfaction from what we do. (NC-KD).

Another point to note from the second statement (KD), is that the midwife has given a clear indication that quality of nursing care is impacting on nurses' sense of job satisfaction. It is seen that her sense of job satisfaction is enhanced, as she believed to have delivered excellent care to patients.

Once the finding in the above paragraph is placed against that of section 5.2.1, where quality of care was found to be developed through exchanges between nurses, we get a context to claim a similar role of the same (i.e. exchanges between nurses) in maintaining the interrelationship between quality of care and nurses' job satisfaction. Thereby, successful interactions between nurses are necessary to generate quality care and to ensure positive consequences of nurses' job satisfaction.

The notion in the above paragraph was further endorsed with discussions of exchanges between experienced registered nurses (i.e. nurse managers, nurse clinicians) and the new graduate registered nurses. Nurses' discussions often centred on the issue that new graduate registered nurses, when first emerging from university, are not yet ready to handle basic care of patients. The experienced nurses believed that the lack of skill of the new graduates, is due to the inadequate hospital work exposure in university education of nursing. A few of the nurse managers expressed grievances that sometimes new graduates have a certain superior attitude, being university trained against some of the hospital trained senior nurses, which makes it harder to work with them. It is quite easy to perceive how such discords between experienced and new graduate registered nurses could threaten the quality of care and nurses' sense of job satisfaction.

A constructive suggestion to mitigate the discord between the experienced and new graduate registered nurses came from a nurse manager. She referred to a practice where clinical nurse educators used to be physically present as new graduates performed different tasks in the ward. The manager believed such practice was effective in facilitating quality of care and nurturing nurses as;

It broke down that barrier of new graduates feeling like they have to know, broke down that barrier of being embarrassed to ask. It helped with that gap between senior and junior nurses where senior nurses felt respected and junior nurses focused on improving care and learning from what nurses on the wards are doing. (NM-JK).

In the above statement, interactions between nurses are found to be facilitating quality of care as new graduates are learning and improving care under the guidance of experienced (senior) nurses. An enhancement in nurses' sense of job satisfaction is also indicated here, since experienced nurses felt respected when new graduates learnt from them.

The information in sections 5.2.1, 5.2.2 and 5.2.3 have told stories of interactions between nurses to exhibit how each of the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care is impacting each other. Therefore, the interview result answered the research question by identifying 'interaction between nurses' as a vehicle through which the reciprocal relationship between the domains are kept in motion. This result is consistent to the quantitative one, provided in section 5.1, which indicated a reciprocal relationship between the three domains is possible. The next section will discuss the implication of the findings in this paper.

6. Discussions

This paper provides support for the perspective of a reciprocal relationship between nursing practice environment, nurses' job satisfaction and quality of nursing care. Such perspective adds to previous researchers' work [4,6] where, on the platform of structure-process-outcome paradigm [7], a better healthcare delivery is aimed through interventions in the nursing practice environment. Whereas, the knowledge of reciprocity between the domains communicates that improvement in healthcare delivery should come from interventions across the three domains. It is crucial to avoid management initiatives that may make the nursing practice environment efficient in the metric of resource utilisation, at the cost of nurses' job satisfaction and/or quality of nursing care. Such note of caution is necessary as rising cost of healthcare is making it harder to deliver quality care [43,44] . Nursing management need to be vigilant against cost cutting initiatives that can compromise ethical nursing practices and quality of care. Alternatively, researchers and practitioners should research for balanced progress in each of the domains of nursing practice environment, nurses' job satisfaction and quality of nursing care.

Another significant insight from this paper is the role of human relations, in maintaining positive status in each of the three domains. It was seen that healthy interactions between nurses in different roles (i.e. nursing administrators, nurse managers, nurse clinicians and new graduate registered nurses) are associated with feelings such as trust, respect and consequently provide positive disposition to nurses regarding their nursing practice environment, nurses' job satisfaction and quality of nursing care. On the other hand, absence of or unhealthy interactions between nurses were seen to create the opposite consequences. A point to note here is that certain notions of 'interaction between nurses', such as possibility of opposite consequences and dependence on trust, makes the phenomenon very similar to that of "Social Exchanges". Blau explains social exchanges as reciprocal actions based on trust and motivated towards "ends that are mutually advantageous and can only be achieved through interactions with other persons (45: 5) ". Due to the presence of trust, social exchanges are not negotiated in concrete terms and follow the basic process of "to return good for good received…to return evil for evil that has been done" (Adam Smith, cited in 45: 19).

As this paper finds the 'interaction between nurses' to be similar to the phenomenon of 'social exchanges', it makes a case for nursing management to invest behind human relations. Nursing management should invest time and money to understand the nature of affective feelings that are desirable for nurses in different roles. Priority should be given to management practices that can facilitate trust and healthy exchanges between nurses. Practitioners should be guided with further research to define trustworthy relationships amongst nursing staff [46]. In light of the interviews in this research, it is felt that some simple actions, for instance, monthly rewards to nurses for exemplary guidance to new graduates or occasional ward events with the director of nursing in an informal capacity, could generate valuable benefits in this regard.

Nursing practice environment, nurses' job satisfaction and quality of nursing care are three important domains of nursing work life. As nurses interact with each other to deliver patient care, they also experience an interrelationship between these three domains. The human relations aspect in the interrelationship between the three domains, makes it apparent that initiatives in one domain will inherently impact the others. Therefore, management practices in nursing administration cannot be compartmentalised, into any one of the domains. Investment in human relations seems to be the key to achieve benefits across the three domains. Given the understanding that unhealthy interaction between nurses can create mistrust and jeopardise progress in the three domains (i.e. nursing practice environment, nurses' job satisfaction and quality of nursing care), there is little doubt to the merit of such investment.

7. Limitations

One important limitation of this paper, is that the survey achieved only a 7.6% response rate. This could have made the study vulnerable to non-response bias, where a "significant number of people in the survey sample do not respond to the questionnaire and that these people have different characteristics from those who do respond, moreover when those different characteristics have importance to the study" (47: 10). An attempt taken to minimise the possible non-response bias was to mention the screening criteria (i.e. nurses to be currently in practice and having minimum of two years' experience at inpatient NSW health organisations) in the survey questionnaire. However, in line with the low response rate, this paper is not proposed to represent a generalisable picture of the nursing practice environment in NSW health service organisations. In any case, proposition of 'generalisability' is not consistent to the inherent design of this paper, as the paper applied mixed methods, which included qualitative analysis as well.

8. Conclusion

This paper found evidence to argue that the relationship between the nursing practice environment, nurses' job satisfaction and quality of nursing care can be reciprocal. Whereas, the current literature mostly studied the relationship between the three domains in one direction, assuming improvement in nursing practice environment will lead to similar consequences in nurses' job satisfaction and quality of nursing care. Such assumption is risky as hospital practitioners are focusing on cost efficiency, ignoring nurses' voices in this matter. The paper proposes, management practices that invest for better interactions between nurses, will benefit from enhancements in each of the three domains of nursing practice environment, nurses' job satisfaction and quality of nursing care.

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References

[1] Aiken LH, Sermeus W, Van den Heede K, Sloane DM, Busse R, McKee M, et al. Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. BMJ: British Medical Journal. 2012;344.

[2] McClure M, Poulin M, Sovie M, Wandelt M. Attraction and Retention of Professional Nurses Kansas City: American Academy of Nurses; 1983.

[3] Patrician PA, Shang J, Lake ET. Organizational determinants of work outcomes and quality care ratings among Army Medical Department registered nurses. Research in Nursing & Health. 2010;33(2):99-110.

[4] Schmalenberg C, Kramer M. Essentials of Productive Nurse Work Environment. Nursing Research. 2008;57(1):2-13.

[5] Sermeus W, Aiken LH, Van den Heede K, Rafferty AM, Griffiths P, Moreno-Casbas MT, et al. Nurse forecasting in Europe (RN4CAST): Rationale, design and methodology. BMC nursing. 2011;10(1):6.

[6] Van Bogaert P, Clarke S, Roelant E, Meulemans H, Van de Heyning P. Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: a multilevel modelling approach. Journal of Clinical Nursing. 2010;19(11-12):1664-74.

[7] Donabedian A. Quality of care: problems of measurement. II. Some issues in evaluating the quality of nursing care. American Journal of Public Health 1969;59(10):4.

[8] Hess R, Norman LD, Donelan K. Are Nurses Ready for Health Care Reform? A Decade of Survey Research. Nursing Economics. 2012;30(6):318.

[9] Kramer M, Schmalenberg C. Development and Evaluation of Essentials of Magnetism Tool. Journal of Nursing Administration. 2004;34(7/8):365-78.

[10] Lake ET. Development of the Practice Environment Scale of the Nursing Work Index Resarch in Nursing & Health 2002;25:176-88.

[11] Warshawsky NE, Havens DS. Global use of the practice environment scale of the Nursing Work Index. Nursing Research. 2011;60(1):17.

[12] Ravari ALI, Bazargan M, Vanaki Z, Mirzaei T. Job satisfaction among Iranian hospital-based practicing nurses: examining the influence of self-expectation, social interaction and organisational situations. Journal of Nursing Management. 2012;20(4):522-33.

[13] Thompson ER, Phua FTT. A Brief Index of Affective Job Satisfaction. Group & Organization Management. 2012;37(3):275-307.

[14] Weiss HM. Deconstructing job satisfaction: Separating evaluations, beliefs and affective experiences. Human Resource Management Review. 2002;12(2):173-94.

[15] Locke EA. Waht is Job Satisfaction? Organizational Behaviour and Human Performance. 1969;4:309-36.

[16] Hinshaw AS, Smeltzer CH, Atwood JR. Innovative retention strategies for nursing staff. The Journal of Nursing Administration. 1987;17(6):8-16.
[17] Sauter MA, Boyle D, Wallace D, Andrews JL, Johnson MS, Bates M, et al. Psychometric Evaluation of the Organizational Job Satisfaction Scale. Journal of Nursing Measurement. 1997;5(1):53-69.
[18] Hinshaw AS, Smeltzer C, Atwood JR. Innovative retention strategies for nursing staff. Journal of Nursing Administration. 1987;17(6).
[19] Anne MW. The delivery of quality nursing care: a grounded theory study of the nurse's perspective. Journal of Advanced Nursing. 1998;27(4):808-16.
[20] Lindgren M, Andersson IS. The Karen instruments for measuring quality of nursing care: construct validity and internal consistency. International Journal for Quality in Health Care. 2011;23(3):292-301.
[21] Donabedian A. Evaluating the Quality of Medical Care. Milbank Quarterly. 2005;83(4):691-729.
[22] Greenslade JH, Jimmieson NL. Distinguishing between task and contextual performance for nurses: development of a job performance scale. Journal of Advanced Nursing. 2007;58(6):602-11.
[23] McClure M. Magnet Hospitals: Insights and Issues. Nursing Administration Quarterly. 2005;29(3):198-201.
[24] American Nurses Credentialing Centre. Magnet Recognition Program. 2010.
[25] Aiken LH, Buchan J, Ball J, Rafferty AM. Transformative impact of Magnet designation: England case study. Journal of Clinical Nursing. 2008;17(24):3330-7.
[26] Aiken LH, Clarke SP, Sloane DM, Lake ET, Cheney T. Effects of Hospital Care Environment on Patient Mortality and Nurse Outcomes. Journal of Nursing Administration. 2008;38(5):223-9.
[27] Luzinski C, Lundmark V. State of the Science Related to Nurse Work Environments, Safe Practices, and Organizational Outcomes. Journal of Nursing Administration. 2012;42(10):S1-S2.
[28] Ulrich BT, Lavandero Rn, Hart KA, Woods D, Leggett J, Taylor D. Critical Care Nurses' Work Environments: A Baseline Status Report. Critical Care Nurse. 2006;26(5):46-57.
[29] Johnson RB, Onwuegbuzie AJ, Turner LA. Toward a Definition of Mixed Methods Research. Journal of Mixed Methods Research. 2007;1(2):112-33.
[30] Snyder C, Watson M, Jackson J, Cella D, Halyard M. Patient Reported Outcome Instrument Selection: DEsigning a Measurement Strategy. Value in Health. 2007;Vol. 10:S76-S85.
[31] Dawis RV. Scale Construction. Journal of Counselling Psychology. 1987;34(4):481-9.
[32] Joseph F. Hair J, William C. B, Barry J. B, Rolpf E. A. Mutlivariate Data Analysis. New Jersesy: Prentice Hall; 2009.
[33] Malhotra N. Basic Marketing Research; a decision-making approach. New Jersey 07458: Prentice Hall; 2009.
[34] Joseph F. Hair J, Black WC, Babin BJ, Andersom RE. Mulivariate Data Analysis. New Jersey: Pearson Prentice Hall; 2006.
[35] Creswell JW, Plano Clark VL. Designing & constructing mixed methods research. Thousand Oaks, California 91320: Sage Publications, Inc.; 2007.
[36] Fylan F. Chapter 6: Semi-structured interviewing. In J. Miles & P. Gilbert (Eds.), A Handbook of Research Methods for Clinical and Health Psychology New York, USA: Oxford University Press; 2005.
[37] Baron RM, Kenny DA. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology. 1986;51(6):1173-82.
[38] MacKinnon DP, Fairchild AJ, Fritz MS. Mediation Analysis. Annual Review of Psychology. 2007;58(1):593-614.
[39] Fiedler K, Schott M, Meiser T. What mediation analysis can (not) do. Journal of Experimental Social Psychology. 2011;47(6):1231-6.
[40] Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. Health Services Research. 2007;42(4):1758-72.
[41] Zhao X, Lynch JG, Jr., Chen Q. Reconsidering Baron and Kenny: Myths and Truths About Mediation Analysis. Journal of Consumer Research, Vol 37, August 2010. 2010:p. 14.
[42] Australian Council on Healthcare Standards. EQuIP 5 Guidelines. 2010.
[43] Zittel B, Ezzeddine SH, Makatjane M, Graham I, Luangamornlert S, Pemo T. Divergence and convergence in nursing and health care among six countries participating in ICN's 2010 Global Nursing Leadership Institute. International Nursing Review. 2012;59(1):48-54.
[44] Warelow P, Edward K-L, Vinek J. Care: What Nurses Say and What Nurses Do. Holistic Nursing Practice. 2008;22(3):146-53.
[45] Blau PM. Exchange and Power in Social life. New York: Wiley & Sons Inc.; 1986.
[46] Mullarkey M, Duffy A, Timmins F. Trust between nursing management and staff in critical care: a literature review. Nursing in Critical Care. 2011;16(2):85-91.
[47] Dillman DA. Mail and Internet Surveys: The Tailored Design Method. New Jersey: John Wiley & Sons,Inc.; 2007.

Appendix 1. Sample Questions in the Three Domains

- **Nursing Practice Environment**
  - Cultural values:
    - Concern for patients is paramount
    - Cultural values are transmitted to new team members
  - Nurse manager ability
    - Nurses are praised & recognised for a job well done
    - Nurse unit managers provide the needed resources
  - Nurse participation in hospital affairs
    - The Director of Nursing in the hospital is highly visible and accessible to staff
    - The Director of Nursing in the hospital is equal in power & authority to other top-level hospital executives
  - Nursing foundations for quality of care
    - There is an active quality assurance program
    - There is a preceptor program for newly hired registered nurses
  - Staffing and resource adequacy
    - Adequate support services allow me to spend time with my patients
    - Generally, there are enough staff to get work done
  - Nurse-doctor relations
    - Doctors & nurses have good working relations
    - There is collaboration (joint practice) between nurses & doctors
- **Nurses' job satisfaction**
  - My job doesn't add up to anything significant
  - If I had to make the decision all over again, I would choose the same line of work
- **Quality of nursing care**
  - Generally, nurses I work with evaluate the effectiveness of nursing care
  - Generally, nurses meet emotional needs of patients

Please note that the all the questions in the three domains had item a scale of: 1 = Strongly disagree , 2 = Disagree , 3 = Somewhat disagree, 4 = Neutral , 5 = Somewhat agree , 6 = Agree and 7 = Strongly agree.