Knowledge Embeddedness, Knowledge Sources and Clinical Knowledge Transfer: A Study of Nurse Students of a Public University in Malaysia

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ABSTRACT

Past studies highlighted the importance of acquiring and using new knowledge in various organizational settings. As clinical placement activities among nurse students are exploratory in nature and involve multiple sources, it is thus interesting to explore knowledge transfer from the perspective of knowledge sources. Thus, the study explores: (1) the level of knowledge transfer from preceptor; (2) the level of knowledge transfer from patient; and (3) the relationship between knowledge embeddedness and knowledge transfer by preceptor; and patient. Data were collected from 136 nursing degree students of a public university and were analyzed using SPSS. It was found that as knowledge embeddedness decreases, the greater knowledge transfer occurs from the preceptor and patients. The findings of this study are expected to contribute to success of current approaches taken to grow the student nurses within the Malaysia education system.

Keywords: knowledge embeddedness, knowledge source, knowledge transfer, clinical placement

I INTRODUCTION

In the last decade, the health care sector has faced great changes (De Jonge et al., 2000 & Frese, 2000). The 21st century is evidencing the escalation in patient demands for high quality of specialized care throughout the world. In nursing profession, where the critical focus is to provide outstanding quality of care for the population served, the challenge to fulfill the demands is intensified. Whilst developing clinical competence of practicing nurses are the critical key strategy, steps should also be taken to address above issues at academic setting. Nurse students also need to have “sounds theoretical knowledge as well as proficient practical skills” (Castledine, 1996 in Cheraghi et al., 2010). To support this, hands on experience has been highlighted as a basis of health professional education (Heath, 2002; Roxburgh et al., 2008).

Yet, student nurses are reported to most often fail in sequencing the theory of clinical situations with the reality of practice (Rolfe, 2002) questioning over the quality of nursing care of this student nurses. Student nurse’s competence deficiency problem should not be pointed to individual weaknesses of student nurses alone. According to Nonaka & Takeuchi (1995), transfer of knowledge failures can occur “as tasks being transferred to situations and contexts which are not exactly similar to that already learned”. In nursing discipline, such disparity between what are taught in a classroom setting and what are experienced during clinical placement are ever well-known (Gerrish, 2000; Henderson, 2002; Corlett, 2000; Corlet et al., 2003 and Maben et al., 2006).

At the point of clinical placement, knowledge can be learned, acquired and transferred among others, for instances, from/to clinical instructor, ward staff, peer, and patient; each with certain degree of importance, constraint and contribution. Argote and Ingram (2000) argued that knowledge can be embedded in people, tools, routines and sub-network elements knowledge. Generally, at clinical placement, knowledge at least to some degree, is acquired from certain source and embedded in specific ward, tools, nursing procedure, routine and individual personnel within clinical placement surrounding. This further suggests for more studies that hinge upon the aspects of knowledge embeddedness, level of knowledge transfer by source of knowledge and relationship between both variables under studied.

Therefore, this study will address:

1. The level of knowledge transfer from preceptor.
2. The level of knowledge transfer from patient.
3. The relationship between knowledge embeddedness and knowledge transfer by preceptor.
4. The relationship between knowledge embeddedness and knowledge transfer by patient.

II CONCEPTUAL FRAMEWORK

The conceptual framework of this study is drawn from multiple streams of literature from nursing, psychology, learning to knowledge management to investigate subject under studied below.

A. Knowledge transfer in a clinical placement

Learning in nursing program accounts for both theory–practice transfer and practice–practice transfer.
At the point of clinical placement, it is not always feasible to foretell the environmental change, because the “demand in terms of the number and distribution of patients over the various diseases and the number of elective and emergency patients is uncertain” (Van Merode et al. 2004). As a result, learning in clinical settings is more “challenging, unpredictable and stressful” (Hosoda, 2006). At the point of clinical placement, nursing care needs to be individualized. Different patient may need different nursing care that differs from each other. As beginner, student nurses’ knowledge of how things should be done is limited. The nurse students are reported of having high expectations to learn the practical application of nursing theory, skills and routines of performance (Holmlund et al., 2010; Liimatainen et al., 2001) beforehand clinical practice, yet afterwards accounted to be frustrated (Corlett, 2000) for the detachment of theoretical knowledge from the doing in the practice (Ousey et al., 2007; Scherer et al., 2007; Maben et al., 2006; Sharif et al., 2005; Higginson, 2004; Wolf et al., 2004; Corlett et al., 2003 and Rolfe, 2002).

B. Knowledge Embeddedness and Knowledge transfer

Embeddedness is a recognized characteristic of knowledge. Knowledge can be embedded in people, tools, routines, best practices and sub-network elements (Argote et al., 2000 and Szulanski, 1996). At the point of clinical placement, student nurses engage with several personnel in performing daily nursing duty. Student nurses learn from knowledge embedded in preceptor, ward staff nurse, other student nurse, healthcare practitioner, and patient. Knowledge transfer is complicated because knowledge is often embedded in individual’s experiences in form of insight and intuitive (Nonaka, 1994). Knowledge also embedded in the social relationship among actors; the source of knowledge and recipient of knowledge (Meier, 2011 & Chen, 2004). As such in the clinical placement knowledge is embedded in the relationship between the student nurses and the preceptor, ward staff nurse, group member (other nurse student), healthcare practitioner, and patient.

On the other hand, knowledge was also embedded in tool, routine and procedure. In nursing work, tasks are often written down in protocols that student nurse’s utilised different tools, follow varying routine and adhere to many procedure in performing nursing care. Knowledge at this point is embedded in explicit from. Additionally, for the reason of the surrounding of clinical placement is continuously unpredictable, student nurses face of not knowing what to do with such environmental uncertainty than in stable and predictable environments. Therefore, the challenge of transferring know-how embedded in an unpredictable context deems even more difficult. In view of all, this study posits that the lesser knowledge embeddedness, the easier for the nurse students to acquire and use new knowledge at the point of clinical placement, thus the greater knowledge transfer.

C. Knowledge Sources and Knowledge transfer

Knowledge at the point of clinical placement among student nurses can be acquired from the preceptor, ward staff nurse, group member (other nurse student), healthcare practitioner and patient. At the point of clinical placement, preceptor would be the major source of knowledge to mentor how care is actually given in practice. Chickerella and Lutz (1981) defined preceptorship in nursing as “an individualized teaching-learning method in which a student is assigned to a particular preceptor, so she/he experiences day-to-day practice with a role model and a resource person immediately available within the clinical setting which identified to have significant outcomes for nursing students”.

Other than preceptor, nurse students learn from contact with the patients. A pioneer study on patient-oriented learning by Osler (1905) identified that “the best teaching is that taught the patient himself”. The importance of learning from patient contact has been repeated emphasized in almost all practice-based profession. To nursing education, patient as source of knowledge would be a common concept that according to Suikkala and Leino-Kilpi (2001), “the relationship with a patient is an important part of a meaningful learning process”. In view of that, human simulator has been widely incorporated into nursing curricula (Murray et al., 2008) that serve as education strategy to achieve the outcome of applying active learning in the clinical context (Ciofi, 2001). As knowledge may embed in unspecified patient and varies in accordance to the sickness in which the patient suffers, learning may depended on patient contact and thus some knowledge is transferable from patient to nurse.

III RESEARCH MODEL

Following Minbaeva et al.’s (2003) definition of knowledge transfer, as to acquire and use the new knowledge with adaptation to clinical placement context, the research model of this study is as presented in Figure 1.1.
Figure 1. Research Model

H1: The lower the knowledge embeddedness, the greater knowledge transfer from the preceptor.

H2: The lower the knowledge embeddedness, the greater knowledge transfer from the patient.

IV METHODOLOGY

A quantitative approach was undertaken in this present study. Data were collected using questionnaire survey, personally administered to full-time nurse students of Degree in Nursing Program in a public higher learning institution, Malaysia. Since the respondents are required to have at least once practical experience of clinical practice, only nurse students from second semesters onwards are included in this study. 200 questionnaires were distributed, of which only 136 were returned and only 133 was found usable for purposes of the study. The usable response rate was 66.5 percent. The four items of knowledge embeddedness scale developed by Cummings, et. al. (2003) was utilized to assess how well knowledge is embedded in the organization. Measurement items for knowledge transfer were adapted from Minbaeva et al. (2010). This variable was assessed with four items that are characterized by the extent to which the recipient acquires and uses the new knowledge. The item ratings for both measurements were obtained from a five point Likert scale, ranging from 1= ‘Strongly Disagree’ to 5= ‘Strongly Agree’. Data was analyzed using Statistical Package for Social Sciences (SPSS Version 20).

V FINDING AND ANALYSIS

The sample selected from this study comprised of full time nurse degree students of a public university in Malaysia. Majority of the respondents are female (92.5%) and Malay was found to be the highest in terms of ethnicity with 97 percent. Finally, in terms of semester, most of the respondents are in semester 4 (40.6%), followed by semester 6 (36.8%), semester 2 (21.8%) and semester 3 (.8%). All variables were found to be reliable. The coefficient alphas for knowledge embeddedness was .88, knowledge transfer (receptor) .87 and knowledge transfer (patient) .84. Referring to Table 1, the highest mean score for variable understudied above is knowledge transfer with preceptor as the source of knowledge (M= 3.8; SD= .80). This is followed by knowledge transfer with patient as the source of knowledge (M= 2.88; SD= .89), which indicate the knowledge transfer level is moderate. The knowledge embeddedness was found to have a mean of 2.46 and standard deviation of .60.

Table 1 Mean and Standard Deviation

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
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<tbody>
<tr>
<td>Knowledge Embeddedness</td>
<td>2.46</td>
<td>.60</td>
</tr>
<tr>
<td>Knowledge Transfer (Preceptor)</td>
<td>3.80</td>
<td>.80</td>
</tr>
<tr>
<td>Knowledge Transfer (Patient)</td>
<td>2.89</td>
<td>.89</td>
</tr>
</tbody>
</table>

(N=133) Note: “0-1.7=low; 1.8-3.34=moderate; 3.35-5=high”

Correlations among variables are displayed in Table 2. The magnitude of the correlation for all variables measures range from (r) = -.183 to (r) = .260. Knowledge embeddedness was found to be negative and significantly correlated by both knowledge transfer sources: knowledge transfer (preceptor) (r) = -.275 (p < 0.01); and knowledge transfer (patient) (r) = -.183 (p < 0.05).

Table 2 Correlation between Knowledge Embeddedness and Knowledge Transfer by Source of Knowledge

<table>
<thead>
<tr>
<th></th>
<th>KE</th>
<th>KT- PR</th>
<th>KT- P</th>
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<tbody>
<tr>
<td>KE</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KT-PR</td>
<td>-.275**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KT-P</td>
<td>-.183*</td>
<td>.260</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: KE : Knowledge Embeddedness, KT-PR: Knowledge Transfer -Preceptor, KT-P: Knowledge Transfer-Patient
** Correlation is significant at the 0.01 level (two-tailed)
* Correlation is significant at the 0.05 level (two-tailed)

To further investigate the relationship between variables, regression analyses were conducted (Table

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http://www.kmice.cms.net.my/
3). Knowledge embeddedness explained 7.6 percent of the variance in knowledge transfer from the preceptor. As for knowledge transfer from the patient, knowledge embeddedness explained 3.4 percent of the variance. Of these two dependent variables, knowledge embeddedness makes the largest contribution (beta = -.275) on knowledge transfer (preceptor), although knowledge embeddedness also made a statistically significant contribution (beta = -.183) to knowledge transfer (patient). Hypothesis 1 and Hypothesis 2 are thus supported.

Table 3 Results of Regression Analysis Between Knowledge Embeddedness and Knowledge Transfer by Preceptor

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Knowledge Transfer (Preceptor)</th>
<th>Knowledge Transfer (Patient)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge embeddedness</td>
<td>-.275**</td>
<td>-.183*</td>
</tr>
<tr>
<td>F value</td>
<td>10.70</td>
<td>4.55</td>
</tr>
<tr>
<td>R²</td>
<td>.076</td>
<td>.034</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.068</td>
<td>.026</td>
</tr>
</tbody>
</table>

VI DISCUSSION
The findings showed that the level of knowledge transfer from the preceptor is high, indicating that the students have gained most knowledge from the preceptor. This reflected the important role of a preceptor as the biggest contributor of knowledge among nurse students as indicated by Chickerella and Lutz (1981). Student nurses in this study also perceived that they have gained knowledge from the patient, even though less compared to the one they received from preceptor. This is indicated by the moderate level of knowledge transfer from the patient in the study. Such findings are also consistent with findings from other studies, suggesting that low credibility of unreliable source may somewhat impede the knowledge transfer process.

Knowledge embeddedness is amongst the notably nature of knowledge affecting knowledge transfer in the literature (Dixon, 2000). The focal point of knowledge embeddedness concept is the notion of knowledge complexity (Dixon, 2000). Knowledge at the point of clinical placement is, at least to some degree, related to, and embedded in specific people, tool, technology, task and routines. The transfer of knowledge at the point of clinical placement is complex that the degree of knowledge transfer achievable is based on the degree embeddedness of the knowledge being transferred. The research has shown that preceptors are an important source of embedded knowledge (Ryan-Nicholls, 2004). The transfer of people-embedded knowledge for clinical preceptor; would require the preceptor to transfer his or her knowledge in equipping the student nurses with the essential knowledge for their jobs.

However, such type of teaching as noted by Irby (1995), “often occurs at a rapid pace with multiple demands on the preceptor; is variable in teaching and learning opportunities as cases vary unpredictably in number, type, and complexity; and has a relative lack of continuity”. As such, knowledge transfer from preceptor is challenging and in turn may not optimal achieved. Prior research has focused on the relationship between the source and the recipient of knowledge. According to Meier (2011) and Chen (2004), a transfer of knowledge “requires numerous individual interactions, exchanges and smooth communication between the source and the recipient” Consistent with this line of reasoning, it seems knowledge transfer slightly attainable in a busy setting, due to the fact that the preceptor would carry the knowledge with them that extracting their tacit knowledge in such setting is task-demanding.

Szulanski (1996) found that source credibility was not a significant factor in the transfer of best practices. In contradictory to finding of Ko et al., (2005) that source credibility is positively associated with knowledge transfer. A common practice in nursing discipline, preceptor of a clinical placement is an “experienced practitioner who teaches, instructs, supervises, and serves as a role model for a student nurse, for a set period of time in a formalized program” (Usher et al., 1999), but sometime the preceptors might as well newly hired staff. As preceptorships are “an essential component of education, providing students with reality based and skills-oriented learning experiences” (Yonge et al. 2002), the extent to which a student nurses perceives a preceptor as trustworthy as opposed to patient is deem higher. According to Mizerski et al. (1979), knowledge provided by the source with high credibility is “perceived to be useful”.

At the point of clinical, learning from patient might as well be present. Although according to Suikkala and Leino-Kilpi (2001), “the relationship with a patient is an important part of a meaningful learning process”. Yet knowledge derived from patient as source of knowledge, is only circulate by sickness in which the patient suffers as opposed to professional knowledge presented by the preceptor. When the source lacked of credibility in the eyes of the recipient, that knowledge will be regarded as unnecessary of transfer and be discounted.
VII CONCLUSION

While clinical placement is proven significant for the development of clinically competent student nurses, it is the learning processes through which knowledge is acquired and applied (knowledge transfer) to determine whether the learning was a success. As knowledge in clinical placement context can be of different degrees of embeddedness and embedded across different elements; in people, technology, tool, routine and procedure, whether knowledge transfer ultimately gets put into practice may not be easily to achieve. The more deeply knowledge is embedded, thus the higher degree of difficulty to transfer knowledge. The unpredictability of a clinical placement environment is further to some degree affecting the ease of transfer. In summary, for the reason of knowledge embeddedness makes all the difference, this study suggests for deep understanding on the embeddedness of to-be-transferred-knowledge to allow the nursing manager and educator to be in positions to devise an appropriate planning teaching and planning strategy that consider knowledge embeddedness notion in the strategy.

REFERENCES


Ko, Dong-Gil, Kirsch, L. J. & King, W. R. Antecedent of Knowledge Transfer from Consultants to Clients in Enterprise System Implementation, MIS Quarterly Vol. 29 No. 1/March 2005


Appleton, New York and London.


