BIOSCIENCES BIOTECHNOLOGY RESEARCH ASIA, June 2018. Vol. **15**(2), p. 369-376

The Nurses' Experiences of the Knowledge Creation Space in Clinical Setting: A Qualitative Study

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http://dx.doi.org/10.13005/bbra/2641

(Received: 08 January 2018; accepted: 27 June 2018)

The concept of nursing knowledge and development of its body has become more important along with growth in phenomenon of professionalism of nursing. Nursing as a profession should have a deep look at the creation of new knowledge to provide services to clients. The exploration of knowledge creation space in clinical setting may be is the first important step. The objectives of this study was to explore the nurses' experiences of knowledge creation space in clinical setting. A qualitative method with conventional content analysis approach was selected. Seventeen semi-structured interviews were conducted with staff nurses, head nurses, and supervisors working in tow teaching hospitals located in Tehran, Iran. The conventional content analysis approach was used for data analysis. Four main themes emerged from experiences of participants in this study included "scientific discussion", "sharing of clinical experiences", "Enrichment of conference and clinical unit rounds "and "Establishing interpersonal relations". It seems based on the experiences of the nurses who have participated in this study that the knowledge creation space in nursing to be an interactive space that is created following to formation of a scientific discussion, enrichment of clinical rounds and conferences and sharing clinical experiences among the nurses. Thus, the nursing managers should prepare the conditions in which the nurses to be encouraged for holding further scientific discussions upon clinical conferences and rounds, nursing reports, delivery and receiving the patients in addition to establishing appropriate interpersonal relationships and at the same time to show more tendency to share their clinical experiences with each other.

Keywords: Knowledge Creation Space, Nursing, Clinical Setting, Qualitative Study.

As Alvin Toffler said, we are now living in a 'knowledge-based society', where knowledge is the source of the highest quality power[1]. Knowledge has been considered one of the most important resources in health organization, because it is capable of making organizational and individual actions more intelligent, efficient and effective. Healthcare professionals and organizations must increase their knowledge, skills and attitudes for choosing wisely. They should build and renovate their knowledge in a systematic, explicit and definite way[2].

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There can be little doubt that one of the highest priorities for creating an appropriate future for nursing is that of identifying, structuring, and continuously advancing the knowledge that underlies the practices of professionals in the field[3]. The concept of nursing knowledge and development its body has become more important along with growth in phenomenon of professionalism of nursing[4]. During a study on nursing researches, which have been conducted by Mohammadi Yazdi Moghadam (2006) in four major advanced education centers during 30 past years, the results showed that approximately no new knowledge has been created in nursing field in Iran during 30 past years[4]. So this is synonymous with retardation of nursing knowledge in Iran from the global caravan of knowledge and science creation. Certainly, such a condition is deemed as a challenge that threatens the scientific life and position of nursing system in this country and continuance of such a trend will be followed by serious damages and losses.

Adli claims that she has proposed the first model of knowledge creation in Iran. She expresses the selection of position of knowledge- creation as one of distinctive features for her knowledge creation model compared to other models while mentioned the university as the place of knowledge creation and declares that the university should tell this story and start this journey[5]. But, the subject of knowledge creation is different in nursing since the nursing is a practical profession while most of attention and visions have been so far drawn in knowledge creation toward the university so it has been less focused on the clinical setting and at the same time the clinical setting is a rich space for knowledge[6].

Health care is a knowledge-rich domain[7]. The clinical setting constitutes an important part of nursing field and they can lead to developing nursing knowledge[8]. In this regard, Erault (2004) argues that nursing professional knowledge has been embedded in clinical situations and he implies that clinical nursing possesses a unique form and it consists of a rich space of knowledge[9]. Knowledge does not emerge in a people-free vacuum, but rather in a social context. Knowledge is contextual: it is created in a particular context, and it has a meaning relevant to that specific context[10]. Nonaka emphasizes that knowledge creation is context dependent. The context for knowledge creation is *ba*, a Japanese concept that roughly translates into the English 'space', originally developed by the Japanese philosopher Nishida (1970, 1990) and later refined by Shimizu (1995)[11].

It is for more than one century that nurses are striving for professionalization. One of the key components of professionalization is having a firm knowledge base. Nursing professional knowledge, in turn, is mainly placed in clinical situations[12]. After review on nursing studies during 30 recent years, Mohammadi suggests that the research should be internalized among the nurses as a professional activity and task within healthcare system. This issue indicates the importance of nursing research that is followed by knowledge creation in the nursing field however apparently little success has been achieved in this regard. It seems that with respect to statements of Nonaka, who argues a new generation of knowledge creation is going to formed that notices the context, one of the reasons for paying less attention to clinical setting as a rich space for knowledge is this point that inquiry and exploration of knowledge creation space in clinical setting may be deemed as the first important step in this trend.

Objectives

The objectives of this study were to explain the nurses' experiences of knowledge creation space in clinical setting.

Materials/ Patients and Methods

A qualitative method with conventional content analysis approach was selected. Qualitative content analysis is commonly used in nursing studies[13]. The method of Qualitative content analysis enables the researcher to include large amounts of textual information and systematically identify its properties, such as the frequencies of most used keywords by locating the more important structures of its communication content[14]. In conventional content analysis, coding categories are derived directly from the text data[15].

The study was conducted in 2012–13. Seventeen semi-structured interviews were conducted with staff nurses, head nurses, and supervisors working in tow teaching hospitals located in Tehran, Iran. Primarily, the study participants were recruited by using the purposive sampling method. The inclusion criterion was having a work experience of two years or more.

Thereafter, we continued sampling by using the theoretical sampling technique. The semi-structured interview method was used for data collection. In this method, researchers consider some topics or questions for guiding the interviews; however, they never confine interviews to the predetermined topics and questions. Rather, the flow of an interview is managed mainly based on the interviewer-interviewee direct interaction[16].

The primary interview questions of the current study were,

- May I ask you to explain about one of your working days?
- Would you please explain about your experience of sharing your knowledge and experiences in the clinical setting?
- Have you ever any experience regarding a new idea or subject?
- What do you do if you are exposed to a new idea and or new subject during the work?

We also used pointed questions—such as 'What do you mean by this?' 'Why?' and 'Would you please explain more about this?'—in order to delve into participants' experience. Interviews were arranged according to participants' preferences. All the interviews were conducted by a same interviewer (the first author). The aim of study were expressed and time and place of implementation of interview were determined for them based on agreement among both sides before execution of interview with participants and establishing appropriate relations with the given samples. The interviews were codified with respect to environmental factors, rate of tolerance, information, and inclination of participants. By taking permission from the interviewees, all of interviews were recorded, transcribed, and reviewed for several times. At next step, the primary codes were extracted. Then, those primary codes, which were overlapped and could be classified in the same group, included subthemes. Afterwards, each of these subthemes were reviewed and adjusted to the statements of the participants. At last phase, themes were finally corrected and defined and eventually 4 main themes were acquired.

We employed the Guba and Lincoln's criteria for maintaining the trustworthiness of the study findings. The credibility of the findings was established by using techniques such as prolonged engagement with data as well as peer-checking. Moreover, a summary of the interview transcripts together with the corresponding codes and themes were given to seven study participants. They approved the congruence between their own experience and the study findings[17].

RESULTS

The participants included 4 males and 9 females. They comprised of two head nurses, one supervisor, one matron, and the rest were nurses. In terms of education, one participant was nursing doctorate student, two were masters of nursing, and the rest of nurses have nursing BA degree. In terms of age group, they were in age range (24-48) with 33 years as mean value and work background of (2-26 years) with 10 years as mean rate. The research samples were prepared almost from all units of the hospitals in terms of working ward as well. Four main themes of participants' attitude were derived from analysis on data extracted from this study and they are given along with subthemes in Table 1.

Theme no 1: Scientific discussion

One of very important themes derived from participants' experiences in this study was scientific discussion that included 'informal scientific discussion and dialogue' and 'formal scientific discussion and dialogue'. The nurses referred regularly to this issue that the scientific discussions which have taken place among nurses and or between nurses with other colleagues like physicians might create appropriate scientific space in clinical field. It is a space that can lead to mutual consultation and innovation simultaneously with scientific discussion. Similarly, they implied that such discussions may be sometimes not formal; for example, one that occurs following to the questions, which are raised about the patient and or other cases. Some of statements proposed by participants are mentioned in the following.

Participant 7: In fact, we juxtaposed our ideas together and discussed about it. I came and said we had problem to prepare this equipment. On the other hand, our patients also need to it. We should do a job. One of other colleagues said that suction equipment could be used in this way. Later, we left these ideas and pondered further for this problem. We tested it several times and finally executed it. Of course, we have consulted with some of physicians as well.

Participant 13: There were some of patients with high risk for falling from the bed. The nurses had discussed personally about what it should be done for them and then they suggested tying the patients' hands with yellow handcuff for us in order to fasten the hands of patients by yellow handcuffs to prevent them from high risk of falling. At the moment, this is because of this point that everyone who sees this kind of patient whether nurse or physician the given patient has history for falling from the bed and or moving disability (pelagic disorder) or other problems so that patient is exposed to high risk for falling and thus s/he should observe certain points to prevent the patient from falling.

Theme no 2: Sharing of clinical experiences

One of the other themes extracted from interviews was 'sharing of clinical experiences' including subthemes of 'receiving experiences from other nurses' and 'transferring one's experiences to other nurses'. The nurses implied that they received most of experiences from colleagues in clinical space. These are the experiences, which are acquired only by the given nurse with working in clinical field and following to it the nurse may experience it for the second time and transfers it to other colleague as well. For instance, one of the nurses mentioned that:

Participant 9: One of the colleagues said that according to her experience it was proved that Diclofenac suppository is more efficient than Acetaminophen suppository to reduce fever and or as if it acts like putting out the fire by water while it is mentioned in medical book that the acetaminophen is antifebrile and Diclofenac is painkiller. I tested it for several times in fact as if it acted as the water puts off the fire and it could reduce well the fever degree in patient. Namely, it is very better than acetaminophen to reduce fever.

Participant 10: For example, a patient took antibiotic of vancomycin. I did not know what it occurred to the patient for the first time and when the results of patient's medical tests were given my colleague told my why did you inject this important drug to the patient? Then when I tended to inject it to the patient they told me if I checked up the result of the tests for the patient or not and or if I informed the state of U/A test to his/ her physician. These caused me to utilize from experience of others.

Theme no 3: Enrichment of clinical conferences and unit rounds

One of other crucial cases to which many nurses have referred was the subject of clinical conference and nursing rounds and reports, which formed in clinical field where it is an appropriate space for exchange of scientific information among the nurses, they implied that they tried to enrich and make it prolific by means of cases like proposing the practical cases and presentation of the case along with perfect explanation about disease and public participation so this measure was called under title of 'enrichment of clinical conferences and unit rounds' and in this regard several subthemes appeared in experiences of participants including participation in clinical conferences and unit rounds and make these conferences and unit rounds perfect). We may review some of statements by the participants in this sense.

Participant 3: We should certainly ask about scientific matters; namely, we should create this type of training space for this purpose. For example, someone may say alright, it should be done in this way. I ask yes, why should it be done so? And the given person should reply why. If that

Table 1. The extracted themes and subthemes from the given data out of experiences of participants

Main theme	Subthemes
Scientific discussion	Informal scientific discussion and dialogue, formal scientific discussion and dialogue
Sharing of clinical experiences	Receiving experiences from other nurses, transferring one's experiences to other nurses
Enrichment of conference and clinical unit rounds	Participation in conference and clinical ward rounds, making practical the scientific conference and unit rounds
Establishing interpersonal relations	Establishing the interpersonal relationship with other groups, establishing the interpersonal relationship with nursing colleagues

person could not reply at this moment so we ask this question from the next person and or we can told them to answer whoever knows it so that the rest of persons may also participate in this session. Alright, if this trend is repeated the current space may become scientific. For instance, we ask: Under what condition the endotracheal tube should be removed from air way (ex-tube) of the patient? For example, should it be done before NPO in order to swallow mouth water at least and or his/ her saliva? And or should the patient be conscious and also arterial blood gas (ABG) not to be blocked? That is only an example.

Theme no 4: Establishing interpersonal relationship

One of the other vital themes, which were visible in experiences of many nurses, was 'establishing interpersonal relationship' that consisted of subthemes of 'establishing interpersonal relations with other groups' and 'establishing interpersonal relations with nursing colleagues'. It can be implied according to experiences of nurses that establishing relationship with the nurses or other colleagues is deemed as one of the main cornerstones and constituent elements for knowledge creation space in clinical field.

Participant 16: Some of nurses have special experiences in some other fields like Taking blood sample. I established relationship with them in order to receive these experiences from them and after a while she explained for me that one of the other members of this group was very keen in insertion of NG- tube (nasogastric tube) and this nurse too.

Participant 10: When I got friendship with all of my colleagues and establish relationship with them I should consider these items; for example, they told me why they did not conduct that test on this patient, who comes with these symptoms and or some other patients, who are similar to this case.

DISCUSSION

There can be little doubt that one of the highest priorities for creating an appropriate future for nursing is that of identifying, structuring, and continuously advancing the knowledge that underlies the practices of professionals in the field[3].

The scientific discussion was one of the main themes, which were derived from data in this study. The results of current study showed that holding the scientific discussion is one of the important issues, which may lead to sharing of knowledge between nurses in clinical field and beyond of which it can lead to knowledge creation in clinical theme. The review on experiences of the nurses, who proposed their ideas in the clinical field, showed that most of these ideas have formed following to discussions among the nurses. For example, one of the nurses implies that s/he has designed an instrument like Gamco Suction Equipment to remove the secretions from surgical place in cardiac operation on patients following to his/ her discussion with other nurses and this instrument is still utilized. The concept of scientific discussion is currently accepted as intact principle publically in the advanced communities. Accordingly, many organizations try to prepare the conditions for holding scientific discussion since they believe in its helpful outcomes[18]. One of the subthemes of scientific discussion was formal scientific discussion and dialogue that refers to official discussions, especially ones, which are exchanged upon receiving and delivery of patients between medical units. Approximately all of nurses believed that very important information is shared between the nurses at this time and an appropriate scientific space forms during this short period of time since within this time interval, several good scientific discussions occur between nurses about patient and his/ her conditions. In this regard, Erault (2004) argues that nursing professional knowledge has been embedded within the clinical situations and he implies that the clinical nursing possesses a unique form. Likewise, he expresses that the clinical field is a rich space for knowledge[9]. Therefore, by considering this point that the clinical field is enriched with knowledge, the nursing high- ranking officials may extract new and modern subjects out of such spaces, which lead to create nursing modern knowledge with appropriate planning and taking some measures in this course and through attaching importance to scientific discussions, which lead to formation more knowledge- creation spaces in clinical field.

Sharing of clinical experiences was one of the other important themes, which refer to importance of sharing experience in clinical field. In this course, Nonaka maintains that the knowledge appears in '*Ba'* space (in this common

space) where those persons may propose their experiences and react to experiences from others[19]. This point is one of the important findings in this study that two important subjects of 'scientific discussion' and 'sharing of clinical experiences' in clinical space may prepare the needed grounds for knowledge creation and presentation of new idea for the nurses and in this sense Nonaka in his model explains about the second type under title of '*Ba'* that is an internalization process and the persons may reach to this process within the empirical activities, which they do[19].

In a study that was conducted by Skar (2010) with qualitative method, all nurses emphasized that under some conditions the knowledge that they have learned might not be good guidance for them while they expressed that the experiences, which have acquired after 2 or 3 years in an environment, might improve the body of their already learned knowledge. The nurses stated that there is further necessity for learning beyond the knowledge that is learned in the university and also they emphasized on importance of the experiences acquired from interventions into complex and difficult situations. For instance, they mentioned about establishing relationship with the patient that they have learned some of communication skills after entering in clinical field[8]. This point indicates the importance of the experiences, which the nurses exercise in clinical space; however, the results of the present study express this basic principle for knowledge creation that the valuable experiences of nurses in clinical field should be noticed. These personal experiences are so important that they have been introduced as practical guideline in clinical field as well. However, the various studies have shown that the experienced nurses utilize various sources of knowledge as practical guideline where the personal experience is assumed as one of the important issues. Thus, the academic learned knowledge is not considered as the only practical guideline for activities in clinical space and at the same time the personal experience, role models, and individual knowledge can be also assumed as sources of this type[20]. The aforesaid cases refer to importance of experience in clinical field i.e. the experiences exclusively form following to working under certain clinical conditions and the nurses share these experiences with each other. The nurses implied that the scientific dialogue forms between them during sharing these experiences, which can call them as a potential appropriate space for knowledge creation. It seems that renovation of such spaces utilization from them appropriately may essentially contribute to proposing of ideas and theorization and knowledge creation in nursing that is a subject that has been always deemed as main concerns for policymakers and sympathetic practitioners in nursing profession. Alternately, these experiences are of that type of experiences in which knowledge creation has formed but unfortunately they are never documented due to lack of due attention.

'Establishing interpersonal relationship' was another important theme that was extracted from analysis of interviews. This theme refers to importance of interpersonal relations for exchange of information and knowledge flow in clinical space. Most of nurses implied that establishing relationship was one of the main cornerstones in the knowledge creation space. In his knowledge creation model, Adli describes creating relationship- centered culture and generation of wide and multiple channels for knowledge creation[5]. Ghanei and Ghazipoor (2002) explored the relationships among members of faculty in universities and researching centers. The results of study indicated that the rate of communications among participants was noticeably related to amount of their knowledge creation so that the further relationship exists among colleagues inside and outside at any size, the more knowledge creation will be by them. Similarly, the results of investigation of Swibie and Simons (2002) showed that the fellow space and appropriate relationship are the main factors in process of knowledge creation[21]. The findings of this study also indicate the importance of communication for knowledge creation in clinical field. Likewise, in his study that was done with qualitative hermeneutic approach based on Gadamer's Philosophy of hermeneutics by aiming at definition of nurses' experiences from employing knowledge under clinical conditions, Skar (2010) concluded that it was necessary to establish appropriate interpersonal relations to develop body of knowledge in nurses[8]. As the knowledge sociologists have emphasized on importance of communications as the main mechanism for knowledge creation and

assumed knowledge advancement as a reflection from communication system, the statements of participants in this study also suggest this point that establishing relationship with other nurses and colleagues from other groups may essentially effect on knowledge creation.

Based on the experiences of the nurses, who have participated in this study, knowledge creation space in clinical nursing is an interactive space that forms between nurses together and or with other colleagues. This space forms at time of nursing reports and clinical conferences and rounds in which the scientific interactions are stronger and valuable experiences are exchanged following to appropriate interpersonal relations. Holding the useful and continuous discussions along with enrichment of them in the given space may lead to formation of new experiences and modern ideas. Thus, it seems that these spaces are the most appropriate spaces for creating new ideas and novel subjects and knowledge creation. Therefore, the officials of several units should prepare a mechanism in order to encourage the nurses for holding further scientific discussions upon clinical conferences and rounds, nursing reports, receiving and delivery of patients and to show more tendency to sharing their own clinical experiences in the given ward. Also, the policymakers, planners, and sympathetic practitioners in nursing profession should implement appropriate planning in line with developing and expansion of aforesaid cases at macro level.

ACKNOWLEDGMENTS

I would like to thank all of the nurses participated in this study. In addition, we gratefully acknowledge the financial support of this study by the Tarbiat Modares University, Tehran, Iran.

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