ABSTRACT

Introduction: Continuing education plays a vital role in updating/application of the current knowledge of health care system among nurses and other health care providers. The primary aim of the present study is to evaluate the knowledge of ward sisters in managerial and supervisory areas and the factors affecting it. It also attempted to assess the feasibility of education program for nurses.

Methodology: Present study was part of a cross sectional study between January 2013 to December 2013 conducted to determine ward nurses' managerial and supervision areas. This study used a pre experimental research design, one group pretest posttest design.

Result: Years of experience as staff nurse and their total professional experience was positively associated with the acquired knowledge regarding the patient management. Significant rise in the mean knowledge score was noted after in service education programme (P value < 0.05).

Conclusion: Nurses have vital role in managing patient flow, staffing, patient and family concerns, interdepartmental issues and a myriad of other administrative processes with their existing knowledge. Continuing nursing education plays a significant role in widening the scope of existing knowledge.

Keywords: Nurse, knowledge, education, staff.

INTRODUCTION

Health care is based on education, self regulation and autonomy. The high degree of generalized and systematic knowledge that health care practitioners apply is a characteristic of their professionalism. The basis for nurses' knowledge is an educational system that must be supplemented with continuing education after graduation. Continuing nursing education (CNE) courses are designed to provide nurses with a method to stay current as changes occur within the health care system and to assure delivery of high quality patient care.

Continuing education (CE), or lifelong learning, exposes nurses to current advances in nursing knowledge and enables them to connect this knowledge to practice. There is an association among continuing education, or lifelong learning, critical thinking and clinical reasoning. Additionally, CNE has been shown to improve communication and teamwork skills and collegiality in nurses and other health care providers. The complexity of the health care settings contributes to the need for CNE as a means to increase nurses' knowledge and help them to transform their practice. The importance of CE has been increasingly debated in nursing literature over the last few years. CE is intended to ensure that nurses' knowledge is current. However, it is difficult to determine whether nurses who attend these courses are implementing what they learn. Some studies show that CE positively affects nurses' knowledge, task performance, self confidence, self esteem, communication, collegiality, teamwork and multi-professional cooperation. In the course of a career, nurses assume various leadership roles. Therefore, CE in leadership is a key part of a nurse's career development. This CE must begin immediately after graduation and continue systematically throughout a nurse's career. Despite a growing body of empirical research on this topic, the effectiveness of CE remains underexplored. Key roles of leaders in health care organizations include creating a learning friendly environment and presenting knowledge as a virtue. Nurse leaders must possess knowledge of health care, leadership and management. Self assessment of knowledge in these areas was used in this research as a measure of the effectiveness of CE programs.

There are many approaches to assessing the success of CE. The most suitable method of assessing a specific program with a small group of participants is the quantitative method of conducting interviews and surveys before and after completion of the program. A survey of representative samples is more appropriate for the assessment of a larger population of participants. In these cases self assessments of respondents are often used. The goal of such assessment is to provide professional associations with results showing the contribution of CE program to improve knowledge. However self assessment of knowledge can be affected by various factors including level
of education and number of CE hours. However, no method is perfect and finding a process for evaluating CE that is reliable, valid and efficient remains a goal. The present study aimed to determine the knowledge of ward sisters in managerial and supervisory areas, to find the association of knowledge of ward sisters with selected factors like age, education, professional experience. It also attempted to develop an in-service education programme to develop knowledge regarding management and supervision and to determine the effectiveness of CE on ward sisters' knowledge in management and supervision.

**METHODS**

This study was part of a larger research project conducted to determine managerial and supervision that was conducted between January 2013 to December 2013. Data for this study came from a cross-sectional self administered survey of ward sisters at a Central Government Hospital under ministry of health and family welfare, Government of India. This study used an experimental research design, one group pretest post test design. Approval from the hospital institutional review board was obtained before the initiation of this study. Completion of the pretest was considered as informed consent for the purpose of this study. All participant responses were de-identified by the investigator using subject numbers to maintain participant's anonymity. A convenience sample of 151 ward sisters from general wards was obtained from multispecialty government hospitals in Delhi.

Structured knowledge questionnaire on management and supervision was developed by the researcher to measure the knowledge of ward sisters. The reliability of the survey instrument was assessed with Cronbach’s alpha (0.928). The value indicated a high level of reliability of the instrument. Factor analysis was applied to determine the construct validity of items. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.823 and indicated that factor analysis was appropriate. The result of Bartlett's test was significant (p<.000). This questionnaire was administered to the selected group and the data collected were coded and entered in the computer using Microsoft Excel Software. The variables were coded in SPSS and statistical methods t test applied to find the significant difference in the knowledge and the results were then delineated. It had two sections: a demographic section and the main research section. The demographic section included basic question about the ward sister (age, years of experience, years of experience as ward sister and staff nurse) and exposure to health management training. The main research section included the ward sisters’ self-assessment of knowledge in management and supervision. Respondents were asked to rate their proficiency in each of a list of competency items on a likert type scale from 1 (very poor), 2 (poor), 3 (reasonable), 4 (good) and 5 (excellent). These competencies were derived from the literature and several other stakeholders with an interest in hospital management. Data were analysed with SPSS software, version 20.0. Descriptive statistics were used to describe the sample. Internal consistency was examined with Chronbach’s alpha. Factor analysis using principal components analysis was used to extract factors of the scale comprised coherent groups of items. The Kaiser-Meyer-Olkin test and Bartlett's test of sphericity were applied to measure sampling adequacy. Relationships between variables were analyzed with 't' test, for quantifiable variables. A significance level of alpha being 0.05 was used for all statistical tests.

The programme began with a focus group followed by a survey of managerial and supervisory learning needs of a cohort of 151 nursing sisters. The learning topics were built on these findings. The participants were assured that senior leadership was not informed regarding which ward sister attended or any of the specifics of discussions. The creation of this peer driven learning environment required the selection of learning activities that maximized the opportunities for participants to focus on their common experiences and best practices. The design also specified a novel and carefully designed role for the facilitator. Each of the 3 hour session was focused on 1 topic (team work) that was introduced with key concepts (eg coherent teams are grounded in trust). These concepts are illustrated and discussed by drawing upon ward sisters own case examples, often submitted as homework or in class activities and discussions designed to elicit peer consultation and exemplary practice. The facilitator introduced several key ideas, focused on shaping opportunities to draw out the lived experiences of the managers and to initiate shared problem solving and solutions. The facilitator's biggest challenge was to maintain a focus on shared solutions and to turn complaints into commitments for change. The facilitator asked managers to describe a successful resolution of a conflict with a physician or a current challenge with team members or to make a list of interruptions that prevented them in meeting their priorities. These are incorporated in the handouts or power point examples in the sessions. Facilitator led activities included the following: best practice group brainstorm, initiation of peer advising, discussion of self assessment, creation of peer success narratives and behavior rehearsals with communication models based on ward sister case examples.

**RESULT**

This section describes the findings related to knowledge of ward sisters regarding management and supervision. To achieve this objective, a pre tested, structured knowledge questionnaire was used as instrument to gauge the knowledge. Keeping in mind the demographic characteristics of ward sisters, the data were grouped into two categories as ward sisters with age less than 50 years and more than 50 years, professional education as General Nursing and midwifery and graduation and above, less than ten years of experience and more than ten years of experience. Independent t test was computed to test the significant difference in terms of demographic variables of age, education level and years of experience. The analysis is given in table 1.
Data presented in table 1 indicates that there is statistically significant difference in the self-assessed knowledge of ward sisters with years of experience as staff nurse and their total professional experience. Knowledge is more in nurses having more than 20 years of experience and those having more than 10 years as staff nurses.

Data presented in table 2 shows that there is significant difference between the mean pretest and posttest scores as the 'f' value 96.695 (P value ≤ 0.05). There is a significant rise in the mean knowledge score after in-service education programme. As shown in table, mean pretest day knowledge score of ward sisters regarding management and supervision was 52.31, which increased to 69.88 at day 2 and decreased to 57.68 after 3 months. The knowledge score at three time points were compared using one-way ANOVA.

**TABLE 1: Comparison between ward sisters knowledge score and age, Education and years of experience**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
<th>( t ) Value</th>
<th>( P ) Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 30 years</td>
<td>80</td>
<td>54.67</td>
<td>5.97</td>
<td>3.790</td>
</tr>
<tr>
<td>More than 50 years</td>
<td>71</td>
<td>56.88</td>
<td>7.41</td>
<td>0.053</td>
</tr>
<tr>
<td>Professional Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>136</td>
<td>55.36</td>
<td>6.64</td>
<td>3.690</td>
</tr>
<tr>
<td>Graduation and above</td>
<td>15</td>
<td>58.91</td>
<td>5.99</td>
<td>0.060</td>
</tr>
<tr>
<td>Years of Experience in the department</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 10 years</td>
<td>70</td>
<td>54.16</td>
<td>6.60</td>
<td>0.170</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>81</td>
<td>57.04</td>
<td>6.64</td>
<td>0.681</td>
</tr>
<tr>
<td>Years of Experience as ward sister</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 10 years</td>
<td>79</td>
<td>55.10</td>
<td>6.55</td>
<td>0.116</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>72</td>
<td>56.38</td>
<td>6.95</td>
<td>0.734</td>
</tr>
<tr>
<td>Years of experience as Staff nurse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 10 years</td>
<td>83</td>
<td>55.05</td>
<td>5.68</td>
<td>6.592</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>68</td>
<td>56.25</td>
<td>7.51</td>
<td>0.011</td>
</tr>
<tr>
<td>Total Professional Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 20 years</td>
<td>76</td>
<td>55.08</td>
<td>5.79</td>
<td>5.407</td>
</tr>
<tr>
<td>More than 20 years</td>
<td>75</td>
<td>56.34</td>
<td>7.59</td>
<td>0.021</td>
</tr>
<tr>
<td>Total experience in central government setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 20 years</td>
<td>86</td>
<td>55.26</td>
<td>6.10</td>
<td>2.811</td>
</tr>
<tr>
<td>More than 20 years</td>
<td>65</td>
<td>56.30</td>
<td>7.54</td>
<td>0.096</td>
</tr>
<tr>
<td>Attended in-service education programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attended</td>
<td>135</td>
<td>56.13</td>
<td>6.66</td>
<td>0.210</td>
</tr>
</tbody>
</table>

The difference in the mean scores for knowledge was statistically significant when compared between pretest, post test at Day 2 and after 3 months. Thus it is inferred that the difference obtained in mean knowledge score is true and not by chance. The in-service education programme on management and supervision was effective in improving knowledge of ward sisters regarding management and supervision.

In order to understand the difference more specific paired 't' test was done to compare the knowledge score of ward sisters. Data presented in the table 3 shows that the mean pretest knowledge score was 52.31 and the mean post test knowledge score was 69.88 with a mean difference of 17.57. The mean difference is found to be statistically significant as evident by t-value 20.458 (p ≤ 0.05).

**TABLE 3: Mean, Standard Deviation, Standard Error of Mean difference, and 't' value of pre-test and post-test knowledge scores of ward sisters**

<table>
<thead>
<tr>
<th>Knowledge Score</th>
<th>Mean ± SD</th>
<th>'t' Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>52.31 ± 11.73</td>
<td>20.458</td>
<td>0.000**</td>
</tr>
<tr>
<td>Post Test</td>
<td>69.88 ± 10.73</td>
<td>17.754</td>
<td>0.000**</td>
</tr>
<tr>
<td>Post test after 3 months</td>
<td>57.68 ± 11.27</td>
<td>7.539</td>
<td>0.000**</td>
</tr>
</tbody>
</table>

It also shows that the mean difference between knowledge score of ward sisters in pretest and post test after 3 month was 5.37 and is statistically significant as t-value 17.754 (P value ≤ 0.05). The difference between mean knowledge score between post test at day 2 and post test after 3 months was 12.20 which is statistically significant as t-value 7.539 (P value ≤ 0.05). Hence null hypothesis H04 was rejected and research hypothesis is accepted. This indicated that the in-service education programme on management and supervision developed and implemented was effective in increasing the knowledge of ward sisters and it was reducing significantly over a period of time.

**DISCUSSION**

Present study reports that almost half of the nurses had average knowledge regarding the management of the patient in critical situation. Several studies, suggest that nurses lack current knowledge with regard to management and supervision. Study of healthcare managerial skills and roles indicates that six out of Mintzberg's ten roles are perceived important by senior managers. These six roles are leader, liaison, monitor, entrepreneur, disturbance handler, and resource allocator. In the functional approach to management, the well-known functions are planning, organizing, commanding, coordinating, controlling, staffing the organization, acting as the organization's...
representative to the outside world, and bargaining with other people in the environment. To understand a nurse manager's roles and functions in detail, job characteristics theory and competency models provide a good basis for breaking down managerial roles and functions into more specific professional and managerial activities that might be performed in the course of structuring a hospital's nursing resources. Job characteristics theory (JCT) argues that skill variety is one of the critical contributors to a manager's feelings about his or her work and, consequently, to whether that work seems to be a meaningful occupation. Skill variety is the degree to which a job role requires many different activities. Thus, knowledge and skills are the job characteristics that foster people's psychological states and, through them, enhance their internal work motivation and job performance. People with sufficient knowledge and skills to perform their tasks well should feel positive about their job performance, while people who lack sufficient knowledge and skills tend to have negative feelings toward their job. Proficiency in each of the work activities depends on the manager's command of critical competencies at the skill and knowledge levels; these competencies enable a manager to contribute to organizational success. The skills and knowledge sets required by nurse managers follow well-known conventional competencies described in the literature, and the concepts of Sandwich who argues that a skill implies an ability that can be developed and thus is not necessarily inborn but is manifested in good performance.

A pilot study conducted to explore characteristics/competencies of outstanding nurse managers reported following competencies: Directing others, Self-confidence, Use of influence strategies Interpersonal sensitivity, Initiative, Group management, Achievement orientation, Direct persuasion and Analytical thinking. Another study described core competencies identified for nurse managers in a small, acute care facility. The following core competencies were identified as: Staffing and Scheduling, Organization and Delegation, Documentation, Financial management, Human resources management, Communication and Collaboration, Leadership, Computer skills, Performance Improvement, Staff Development etc. Study looked at leadership development outside of nursing to identify competencies required for superior nursing leadership. The article synthesized research conducted during the past 5 years, in non-healthcare organizations, on leadership competencies that separated superior leaders form average leaders. This study emphasized emotional competencies such as interpersonal skills, innovation, effective leadership, and networking. Other competencies identified were empathy, self-discipline, and initiative as essential for strong nursing leaders. Kleinman studied perceptions of nurse managers and nurse executives regarding competencies required for nursing management roles and the educational preparation required to attain them and found groups to be in basic agreement about required competencies, though nurse managers appear less clear about nurse executive role responsibilities. Nurse executives value the acquisition of a master's degree as essential for nurse manager performance, while fewer nurse managers agree. Strategies nurse executives may employ to develop nurse manager business knowledge include traditional undergraduate and graduate degree programs, online programs, certificate programs, continuing education, in-service education offerings, seminars, and mentoring activities.

Adult learning theory provided the theoretical framework for this study. It emphasizes andragogy, described real as self directed learning in which the adult controls the learning experience, applies the learning to the world setting and draws on professional and life experience as resources for learning. Applying the principles of adult learning theory to the acquisition and retention of knowledge about management and supervision may prove of great value to ward sisters because the knowledge gained can be applied directly to clinical practice. The design for the in-service education programme content and process drew upon a hybrid of 4 theoretical anchors. First phenomenology defines experience in terms of the people who live it and urges the consideration of participant's life worlds and the meaning they attach to their experiences. Second, the premise of andragogy suggests that adult learners are rich resources for each other and that their learning must be grounded in real life tasks. Third, the practice of appreciative inquiry urges the description of what works and defines solutions rather than detailing problems. Fourth, Grounding was located in positive deviance methodology, suggesting the imperative to discover uncommon solutions to shared problems.

The present study account significant difference in the scores of nurses at pre and post test suggesting the importance of implementing education programmes as a part of training course. Such skill based competency program can be used as an important adjunct to continuing nursing education activities when it is critical to assess a nurse's ability to competently and safely perform a particular skill in the patient care setting. A skill based competency course is defined as a programme developed to a) deliver educational content necessary to teach the participant a skill or skill set, b) evaluate the participant's ability to perform a specific skill or skill set and demonstrate that the participant successfully completing the course can accurately and consistently apply the skill or skill set in practice. There are three stages in the process of building a skill based competency programme – Content development, content delivery and evaluation. Content development began with individuals who have education in adult learning principles and expertise in the skill, which are critical elements to develop accurate and relevant outcome statements, educational content, teaching methods and evaluation process. Outcome statements should clearly and concisely identify the skill to be performed and the specific setting or circumstances under which the skill will be applied.

Once the skill is defined, course developers identify the target audience, determine effective methods to teach the skill to adult learners, determine educational content and identify the strategies to validate competence for the skill. Teaching content to adult learners must include thoughtful consideration to factors such as assessing their level of expertise, stimulating the environment and providing sufficient time for practice, demonstration and feedback. Evaluation strategies must include methods to evaluate knowledge, skill performance and
professional behaviors associated with the skill. Method used to evaluate knowledge may include successful completion of a multiple choice examination or analysis of a case study. Successful knowledge criteria may be a score of at least 50% on a multiple choice test. Skill performance criteria are observable, objective behaviors communicated as a check sheet or skills performance guide used by participants as well as evaluators to ensure consistent performance.

Successful preparation for managerial practice requires the manager to master the skilled know-how of clinical leadership, he/she forms new habits of thought and action. Delivery of content and elaborate methods of evaluating the learner's mastery of that content do not help the manager learn how to live in chaotic organizations; solve unpredictable, open ended real problems; or address the confusion and loss of direction and control most managers describe. The goal of teaching for excellence in a practice is 2-fold: that the learner develops mastery of the skilled know-how of the practice and that he/she undergoes the personal transformation that is necessary to build ethical leadership comportment.

A qualitative study of charge nurse competencies, described the importance of clinical, critical thinking, organisational and human relations competencies. Another study identified three common themes before the development of a programme targeted at different levels of leadership, including the charge nurse role. These included management of unit performance, management of people and resources and empowerment of self and others.

Krugman and Smith described the development of structured orientation to the charge nurse role using Kouzes and Posner's leadership model as theoretical framework. Sherman described the development of a 1 day workshop designed for a community to cover basic content in the areas of supervision and delegation, communication, conflict resolution and team building. Swearingen reported on the development of a charge nurse programme designed to help build skills to manage daily issues on the unit. Content included conflict management, assignment of care, team building, generational diversity, assertiveness, communication, ethics and patient satisfaction.

There is concurrence in the literature that, because the role is used differently across organizations, leadership development should be tailored to address the organizational expectations of the charge nurse.

The 2009 accreditation manual defines continuing nursing education (CNE) as “systematic professional learning experiences designed to augment the knowledge, skills, and attitudes of nurses and therefore enrich the nurses' contributions to quality health care and their pursuit of professional career goals.”

Eloise & Miriam propose that nurse manager development programs include reflection on paradigm cases that are meaningful to the leader and by which the knowhow and judgment embedded in nurse manager practice can be articulated. The experiential learning derived from having one's preconceived notions turned around is essential to refine and strengthen practice. The habit of reflection sets up one's readiness for continuous learning and change that are part of practice development. The learner must be an active partner in creating the curriculum, because knowing how he/she learns, what values and beliefs are important to him/her, what particular talents and strength he/she possesses, what inspires him/her and why he/she is interested in being a clinical leader are foundational to building authentic leadership behaviors. Furthermore, learning must be grounded in the ethical demand of the practice, so that the learner can see how he/she is connected to something larger and more important than himself/herself and live out the good for which the practice exists.

The literature regarding leadership development of nurse managers has concentrated on three areas: the definitions of leadership competencies, the identification of learning domains and the creation of inventive and wide ranging approaches and educational training models to enhance leadership development.

The relevance of experiential learning in the leadership development of Nurse Managers (NMs) has been explored in an effort to harness the knowledge embedded in shared NM practice narratives. The widespread and increasing use of action research in nursing to identify problems, improving clinical outcomes and enhance management practice was instrumental in the choice of this approach. Action research methodology, including the typology of participatory action research, can be defined as a process of inquiry that describes and interprets social situations while executing a change intervention fostering both improvement and involvement. Hallmarks are the emphasis on process and outcomes, the collaboration between researchers and participants and the incorporation of local knowledge. The central dynamic tension of action methodology is a cyclical process where cycles of inquiry, action and evaluation are interrelated and repeated. This process was well suited to the iterative nature of designing innovative approach to managerial and supervisory development.

The present study had few limitations. Small sample size which was limited to one of the hospital of Delhi therefore results cannot be generalized.

It can be concluded from the present study that nurses serve as frontline unit leaders in the absence of or in conjunction with the nurse manager and play a mission essential role in managing patient flow, staffing, patient and family concerns, interdepartmental issues and a myriad of other administrative processes. They often perform these functions in the absence of any specialized education, training and orientation. Further research should be conducted on a larger sample and studies comparing private set up and government setup nursing staff should also be done.

CONFLICT OF INTEREST

There is no conflict of interest to declare.
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