

Original Article

Problem Solving Training for First Line Nurse Managers

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Abstract

Background: The ability to solve problems is of special concern for professionals who are interested in helping others create solutions to problems that are particularly troublesome

Objective: This paper evaluates the effects of an interactive problem solving training program on first-line nurse managers' self-reported problem solving skills.

Methodology: The data for this evaluation study was collected between December 2011 and May 2012. Data were collected on three occasions using the Problem Solving Inventory. The changes in the Problem Solving Inventory score were analyzed by one-way variance analysis for repeated measures.

Results: Based on the scores of the Problem Solving Inventory, statistically significant improvements were observed in the FNMs' perceived problem solving skills, problem solving confidence, and approach-avoidance behaviors ($p < 0.05$). Although the personal control behaviors improved, the change was not statistically significant.

Conclusion: Despite this positive change, nurses still had a moderate level of perception for their problem solving skills. Providing counselling and guidance by independent and qualified nurse managers would also positively impact the development of these skills and behaviours.

Keywords: Nurse Managers, Problem Solving, Training Program, Nursing.

Introduction

The ability to solve problems is of special concern for professionals who are interested in helping others create solutions to problems that are particularly troublesome (Hepner & Peterson, 1982). Problem solving ability is related to a person's critical thinking skills, and the development of these skills is considered a prerequisite to nurses' professional practice (Bentley, 2001). Nurse managers are faced with problem-solving challenges in a constantly changing and developing health care world. They also play an important role in creating a

positive environment with a high quality of care which benefits both patients and health staff (Zori, 2009). For this reason, nurse managers must have critical thinking and effective problem solving skills in order to improve the patient care system, attain positive patient and institutional outcomes, and achieve institutional aims (Huber, 2010; Thomas, & Herrin 2008; Roussel, Swansburg, & Swansburg, 2006).

In today's field of health care, nurse managers are tasked with targeting institutional goals while facing economic, political and legal limitations. At the same time, they must deal with fulfilling

all that is required with the clinical services they provide (Kang et al., 2010). This complex work environment requires nurse managers to remain current with the latest scientific developments in their fields. They must also be able to effectively analyze problems and make the best decisions for each situation. The issues of patient safety, high quality services, and cost-effective care continue to be very important, and these require effective problem solving skills which can be taught and learned (Marquis & Huston, 2009). This means that nurses working in managerial positions must develop their problem solving skills. The current literature recommends that nurse manager candidates should receive additional training in several areas to include problem solving skills. This training should be required before promotion to managerial positions (Marquis & Huston, 2009; Allison & McLaughlin-Rendenning, 1998).

Background

The definition of a problem is “a deficiency or undesired situation” (Le Storti et al., 1999). On the other hand, problem solving is to take action against an undesired situation (Chambers, 2009). Huber (2010, p:94) defined problem solving as “the process of fixing something that needs to be fixed.” Hepner & Peterson, (1982) explained the problem solving process and people’s perception and evaluation of problems using three approaches. These three approaches, which also form the conceptual framework of the current study, are problem solving confidence, approach-avoidance, and personal control.

Today’s complex health care system recognizes first-line nurse managers (FNMs) as the leaders in providing patient care services. They are also responsible for planning, organizing, conducting, controlling and evaluating the resources needed to provide safe and high quality patient care. (Roussel et al., 2006; Marquis & Huston, 2009; Bondas, 2013; Yoder-Wise, 2003). According to Bondas (2013), FNMs have responsibilities which involve many facets of nursing. Because they care deeply about the future of nursing care, their energies need to be focused on several important areas: the direction and content of nursing, individual and family-centered nursing care, the development of relationships and dialogues with a focus on nursing care, creation of a culture for nursing care, and staff and organization. Drach-Zahavy & Dagan (2002)

reported that the professional duties and functions of FNMs are more toward clinical care operations rather than professional duties in system coordination, operational actions, leadership, staff management, and quality promotion: Similar conclusions were also reported by Kang et al. (2010).

Not only are FNMs expected to fulfill all these functions and responsibilities, they are also expected to abide by the requirements of senior management and any financial and organizational limitations. For instance, one very important problem for health care institutions is the need to continue providing safe and high quality 24-hour care. This expectation exists despite a personnel shortage. FNMs are also expected to be able to effectively solve the problems involving both patients and staff members. The second paragraph of the 10th article in the Turkish Nursing Regulation (2010) states that “*First line nurse managers are responsible for conducting nursing services to determine and meet the care requirements of patients in service and unit in accordance with the nursing process.*” This statement indicates that FNMs have the responsibility of solving problems and working towards improving the quality and safety of patient care.

FNMs are expected to be able to handle any and all problems brought to them. The staff and senior managers also expect first line nurse managers to exhibit self-confidence in their problem solving abilities. Furthermore, in order to be effective problem solvers, they need to be able to control their emotions and behaviors.

Inability to effectively solve problems causes negative outcomes in patient care. It can also accelerate nurses’ discontent and stress in their professional life (Cetin et al., 2011; Kaya et al., 2011; Tyson et al., 2002). On the other hand, mortality and morbidity rates are reported to be lower in institutions where nurses possess effective problem solving skills (Hoyt, 2007). Zori, Nosek & Musil (2010) stated that nurse managers with developed critical thinking skills are more successful in creating a positive working environment. Results of this same study also found that nurses with positive perceptions of their working environments were in a better position to provide a safer and higher level of care to patients.

The literature contains many Turkish studies about problem solving in the field of nursing (Tercanli, 2011; Erkus, 2011; Terzioglu 2006; (Abaan and Altintoprak,2005); Kaya 2005; Kelleci & Golbasi, 2005). Terzioglu (2006) stated that nurse managers do not feel confident in their problem solving capabilities. Abaan and Altintoprak (2005) determined that nurses have a moderate level of problem solving ability. The studies of nurse managers in Turkey found that although nurses are inclined to evaluate themselves more favorably than the reality, a self-evaluation of their problem solving skills is not at a desired level. Abaan and Altintoprak (2005) revealed an interesting finding. In a self-evaluation of their problem solving abilities, nurses with management responsibilities rated themselves less capable than nurses without these duties; however, there was no statistically significant difference. Similarly, Kelleci & Golbasi (2005) reported that FNMs are not up to par in problem solving skills compared to clinical nurses.

For several reasons, FNMs in Turkey experience difficulties in effectively managing the problems they encounter. The issues are not resolved by using scientific problem-solving steps. The health care /nursing system is not analyzed from a “system perspective” and last-minute or spontaneous resolutions tend to dominate how FNMs handle workplace difficulties. Furthermore, FNMs have been known to depend on others, such as higher-level managers, to solve the problems they encounter in patient care services; they do not see themselves as problem solvers. This could indicate that FNMs lack the ability to solve problems effectively and are thus limited in being innovative with creative ideas and critical thinking.

The ability to effectively solve problems can be learned in basic nursing education courses.²⁷ However, in today’s rapidly changing and more complex and chaotic health care environments, education should be ongoing in order to meet the requirements of the health care system and provide safe and high quality health care services. Education programs for FNMs in management positions need to teach skills for effective problem solving. In addition, the core nursing curriculum should be designed to evaluate the efficacy of these programs.

This study was carried out to evaluate the effects of an interactive problem solving training program on FNMs’ self-reported problem solving skills. Therefore, the study results have important implications for all health care institutions and managers. The results of this study will be a resource for managers who want to develop similar training programs and strategies to improve the problem solving skills of FNM.

Methods

Aim

This paper reports the effects of an interactive problem solving training program on the self-reported problem solving behaviors of FNMs . The hypothesis and questions of the study are given below.

Study hypothesis

H1: “The training program to improve the problem solving and decision making skills of FNMs has shown positive results in the problem solving self-evaluation of FNMs”.

Study questions

- Do the results of the problem solving and decision making training program for FNMs differ among nurses based on their working time?
- Do the results of the problem solving and decision making training programs for FNMs differ among nurses according to the time they have worked as FNMs?

Design

The data for this evaluation study was collected between December 2011 and May 2012. This approach provided evidence about what the researchers were doing, what worked and why, and it tended to focus on a particular program, product, method, procedure, event or policy: ‘It is an applied form of research that gives utilitarian answers to practical questions for decision-makers such as: Who is benefitting from the program or service? Is the program cost-effective? Should the intervention or program be continued? Is the program achieving its intended goals? In what areas does the program need to be improved? (Marquis, & Huston, 2009, p. 269).

Participants

The study was conducted in four Ministry of Health hospitals in a city located in the central Anatolian region of Turkey. Participating hospitals were two general hospitals, one training and research hospital, and one maternity and children's hospital. The total bed capacity varied between 320 and 740 with 1725 nurses working in these hospitals; 98 nurses were FNMs. There were between 3-71 nurses working in the clinics of each FNM.

Participation in the study required that nurse managers be matched with the study inclusion criteria. According to these criteria, the FNMs needed a bachelor's degree and work experience for at least six months as a FNM. Furthermore, their working hours could not interfere with regular attendance for the training. Thirty-nine FNMs matched these criteria and agreed to participate in the study sample group.

Instruments

Study data were collected with the Demographic Data Form and the Problem Solving Inventory.

Problem Solving Inventory

The Problem Solving Inventory was developed by Heppner & Peterson (1982). It is a self-reported tool evaluating personal perceptions of problem solving approaches. The Turkish adaptation of the inventory was developed by Sahin, Sahin and Heppner in 1993. The reliability and validity studies of the inventory for nurses were carried out by Erenler (2007). The original inventory was applied by Heppner and Petersen on teacher candidates, and the Cronbach Alpha internal consistency was determined as 0.90. There are studies by Heppner indicating that this inventory is reliable for various groups (Nota et al., 2009; Heppner, Witty, & Dixon, 2004). The Cronbach-alpha reliability coefficient was found to be 0.88 and the split half reliability was found to be 0.81 by Sahin, Sahin and Heppner (1997). The validity ratio of the scale was found to be 0.33–0.45. However, Erenler (2007) used the inventory with nurses and determined the Cronbach Alpha coefficient as 0.77. These results indicate the validity and reliability of the inventory. The inventory has been used in various nursing studies and is recommended for this purpose (Terzioglu 2006; Kaya 2005; Baumberger-Henry, 2005; Lake, 2002).

The Problem Solving Inventory has 36 items and a 6-point Likert scale (1: almost always, 6: almost never). The items contain positive and negative judgments which are later reversed in the evaluation of scores. Items 9, 22 and 29 of the inventory are not included in the scoring. The inventory consists of three dimensions: "Problem Solving Confidence", "Approach-Avoidance Style" and "Personal Control."

The Problem Solving Confidence is defined as an individual's self-assurance, a belief, and trust in a wide range of one's problem-solving activities.

The Approach-Avoidance Style refers to a general tendency to approach or avoid different problem solving activities. The Personal Control is defined as believing one is in control of one's emotions and behaviors while solving problems (Heppner & Baker 1997). In this inventory, the minimum and maximum scores that can be attained are 11 and 66 in the "Problem Solving Confidence" dimension, 16 and 96 in the "Approach-Avoidance Style" dimension, and 5 and 30 in the "Personal Control" dimension.

For the inventory, the overall score was a minimum of 32 and a maximum of 92.

A lower score demonstrates that the study participant has effective and successful problem solving behaviors and attitudes. A higher score indicates a personal perception distortion in problem solving (Sahin et al., 1997).

Problem Solving Training Program

After reviewing the literature, topics for the problem solving training program were chosen (Roussel, Swansburg & Swansburg, 2006; Kang et al., 2010; Marquis & Huston, 2009; Bondas, 2013).

The content of the training program was developed in accordance with the learning objectives. These included: thinking and problem perception, critical thinking and decision making processes-models, tools managers use in decision making, problem solving processes-models and problem solving strategies. The training program was developed as an interactive education program. The program included 3 hours of theoretical study and 5 hours of individual study.

Problem Solving Training Program and Application of Data Collection Tools

Participants were given the demographic datasheet and the problem solving inventory two weeks before the beginning of the program. After completion of the inventory, the training program was initiated. Participants were asked to find a solution to a real problem occurring in clinics. They were instructed to use the scientific method to solve problems during the program, and this process was continued during discussions with the group. Also on-the-job consultation and support were provided to FNMs twice through hospital visits where the FNMs work. The second evaluation was conducted just after completion of the training program, and the last evaluation was completed six months later.

Ethical Considerations

Permission to conduct this study was received from the Ethics Committee of the Provincial Directorate of Health. In addition, after receiving information about all aspects of the study, applicants gave their written consent to participate.

Data analysis

The data were analyzed using SPSS 20.0 for Windows. The Kolmogorov Smirnov Test and Skewness and Kurtosis values were used to evaluate the normality of the distribution.

The changes in the Problem Solving Inventory score were analyzed by one-way variance analysis for repeated measures. In addition, the two-way variance analysis was used to determine whether the working time as nurse and first line nurse managers affected the scores of the Problem Solving Inventory. The statistical significance was defined as $p < 0.05$.

Results

The mean age of the FNM study participants was 33.8 ± 4.5 years. The average working time in the profession was 13.5 ± 5.8 years, average working time in the hospital was 8.3 ± 6.1 years, and average working time as a FNM was 2.8 ± 2.1 years.

Table 1 demonstrates the distribution of the FNMs' mean scores of the Problem Solving Inventory according to the evaluation sequence. The changes in the Problem Solving Inventory of FNMs over time were evaluated three times: prior to the training, immediately afterward, and six months later. According to these evaluations, there were significant changes in the Problem

Solving Confidence, Approach-Avoidance and Personal Control dimensions as well as in overall inventory scores ($p < 0.05$). This result supports the hypothesis of the study. The mean scores of FNMs in Problem Solving Confidence (25.7 ± 5.4), Approach-Avoidance (41.0 ± 6.0) and overall inventory (78.5 ± 10.3) were found statistically lower in the second evaluation than in the first evaluation. On the other hand, the mean scores in Problem Solving Confidence (29.6 ± 8.9) and overall inventory (81.1 ± 13.9) were higher in the third evaluation than in the second evaluation but lower than in the first evaluation. The statistical difference in the Personal Control dimension of the inventory in the third evaluation (10.6 ± 2.5) was significant. The mean score of the last evaluation was lower than the first (12.6 ± 2.5) and second (11.8 ± 1.6) evaluations. Since lower scores are desired for problem solving skills, the decreases in the scores of first line nurse managers after the training program were favorable.

Table 2 shows the answers to the questions of the study, working time of FNMs in the profession, working time as FNM and the distribution of mean scores from the Problem Solving Inventory. In the two-way variance analysis for repeated measures, there were significant changes in working time in the profession and Problem Solving Confidence ($F=4.786$, $p=0.011$), Personal Control ($F=4.540$, $p=0.017$) and the overall problem solving score ($F=4.727$, $p=0.015$). The mean scores in Problem Solving Confidence and overall inventory were lower in the second evaluation in the groups with 11 years or more professional experience than in the first evaluation. On the other hand, the mean score of the group with 11 years or more professional experience in the Personal Control dimension was significantly lower in the third evaluation than in the second evaluation. There were similar changes in Approach-Avoidance behavior ($F=1.994$, $p=0.146$). Considering intergroup changes, the group with 11 years or more professional experience had a lower mean score in the Personal Control category ($F=5.268$, $p=0.027$). There was no difference among groups in other categories.

In terms of working time as FNM, there were significant changes over time in Problem Solving Confidence ($F=5.444$, $p=0.009$), Approach-Avoidance ($F=3.345$, $p=0.043$), Personal Control ($F=5.598$, $p=0.008$) and overall problem solving

scores ($F=5.977$, $p=0.004$). There was no ($P>0.05$) statistically significant difference among groups

Table 1. Distribution of the FNMs' mean scores of the Problem Solving Inventory according to the evaluation sequence.

Problem Solving Inventory	Evaluations			Statistical Evaluation	
	1.Evaluation (1)	2.Evaluation (2)	3.Evaluation (3)	F	p
Problem Solving Confidence*	31.7±8.8	25.7±5.4	29.6±8.9	6.084	0.005
Approach – Avoidance *	44.0±6.6	41.0±6.0	40.8±7.1	3.777	0.030
Personal Control**	12.6±2.5	11.8±1.6	10.6±2.5	6.154	0.005
Total*	88.4±15.0	78.5±10.3	81.1±13.9	6.687	0.003

*1-2 **3-1, 3-2

Table 2. Distribution of mean scores for Problem Solving Inventory of the FNMs according to working years in profession and working years as first line nurse manager (n:39).

Problem Solving Inventory	Working Years	Evaluations			Statistical Evaluation		
		1.Evaluation	2.Evaluation	3.Evaluation	Time	Group & Time	Group
Working Years in Profession							
Problem Solving Confidence	1-10 years	31.6±10.5	26.1±4.3	29.6±9.5	F=4.786	F=0.024	F=0.011
	11 years and above	31.8±8.4	25.5±5.8	29.6±9.5	p=0.011	p=0.964	p=0.919
Approach - Avoidance	1-10 years	43.5±6.8	43.0±6.2	40.1±5.8	F=1.994	F=1.012	F=0.892
	11 years and above	44.2±6.6	40.1±5.8	40.1±7.8	p=0.146	p=0.365	p=0.351
Personal Control	1-10 years	13.5±3.1	12.2±2.1	11.7±1.5	F=4.540	F=0.998	F=5.268
	11 years and above	12.5±2.1	11.6±1.2	10.1±2.7	p=0.017	p=0.379	p=0.027
Total	1-10 years	88.6±16.8	81.4±9.8	84.0±9.6	F=4.727	F=0.260	F=0.914
	11 years and above	88.3±14.5	77.2±10.5	79.8±15.4	p=0.015	p=0.746	p=0.345
Working Years as First Line Nurse Manager							
Problem Solving Confidence	1-2 years	31.5±8.2	24.7±4.1	29.9±8.4	F=5.444	F=0.167	F=0.584
	3 years and above	32.1±9.9	27.1±6.4	29.9±9.8	p=0.009	p=0.847	p=0.450
Approach - Avoidance	1-2 years	44.6±6.4	41.4±5.0	40.6±7.7	F=3.345	F=0.360	F=0.189
	3 years and above	43.1±6.9	40.3±7.4	41.2±6.3	p=0.043	p=0.689	p=0.666
Personal Control	1-2 years	13.1±2.9	12.0±1.6	10.8±2.5	F=5.598	F=0.637	F=2.363
	3 years and above	11.8±1.5	11.6±1.5	10.3±2.5	p=0.008	p=0.535	p=0.133
Total	1-2 years	89.3±14.0	78.2±8.7	80.9±14.4	F=5.977	F=0.161	F=0.007
	3 years and above	87.2±16.7	79.0±12.6	81.5±13.9	p=0.004	p=0.827	p=0.936

Discussion

Based on the Problem Solving Inventory self ratings, FNMs' perceived problem solving skills

increased in a statistically significant way with the implementation of the training program. Similarly, the King et al. (2007) and Eskin, Kurt and Demirkiran (2012) studies revealed that the problem solving scores (averages) of nurses improved with problem solving training.

In our case, the improved results in self-assessments of FNMs' problem solving skills from the first to second evaluation were probably due to increased pressure during the study. Government officials were seeking the decentralization of health care governance in order to create a more competitive environment. This process required that all units and all occupational groups in the institutions work together to solve the problems they would encounter. To fulfill the institutional goals and to demonstrate the institutions' provision of certain standards of service, nurse managers were required to take on greater responsibilities and solve problems using the effective problem solving steps they had learned. The training program was interactive, and FNMs were asked to find solutions to actual problems. One goal of the program was to improve FNM's perceptions of their problem solving skills using participative, experiential learning, and facilitative teaching.

The lower score from the inventory indicates effective problem solving behavior. The mean score changes between 32 and 192 for overall inventory, 11 and 66 for confidence in problem solving skill, 16 and 96 for approach-avoidance, and 5 and 30 for the personal control dimension. Although the score for problem solving abilities increased after implementation of the problem solving training program, FNMs still have only a moderate level of problem solving skill (See Table 1). Other study results have also reported nurses' perceptions of their problem solving skills to be at a moderate level (Terzioglu 2006; Abaan and Altintoprak, 2005; Erenler 2007). In clinical environments, nurse managers may face various problems that directly affect patient care and often require emergency actions (Huber, 2010; Roussel, Swansburg, & Swansburg, 2006; Yoder-Wise, 2003). As stated by Drach-Zahavy & Dagan (2002), FNMs concentrate more on their responsibilities in clinical applications than on planning and proactive problem solving. Nurses' moderate self-perception of their problem solving skills could be influenced by the difficulties they encounter in providing quality,

safe, and effective nursing services. They seem to perceive their role to be as caregivers rather than as managers. The personal control score within the Problem Solving Inventory indicates a person's ability to maintain control in problematic situations. In our study this score was higher than other scores. The legitimate power of FNMs in line with hospital regulations could make positive contributions to personal control. But it is clear that FNMs require a certain level of professional experience to be able to effectively manage and maintain control in difficult situations (Nursing Regulation, 2010). Similar results have been reported by other studies (Abaan and Altintoprak, 2005; Altun, 2003). The findings of the current study are similar to the results in the literature; however, there are still some fundamental differences. The study group evaluated themselves more competent/positive in personal control than what was found in the literature, while they assessed themselves slightly more negative/incompetent in confidence in problem solving skills and approach-avoidance dimensions.

In evaluating the changes based on working time in the profession, nurses with 11 years or more professional experience showed more confidence over time in problem solving skills and personal control. As nurses gain more experience in their profession, they become familiar with the work system and improve their control and self-confidence in all their professional duties. For this reason, it can be expected that nurses with 11 years or more professional experience had higher scores in all evaluations in perception of personal control in problem solving. In fact, the results of the current study support this idea. However, there was no change in the approach-avoidance score over time. This would indicate that experience is important in developing effective problem solving behavior, though it is not the most significant point. This is because approach-avoidance necessitates reviewing the previous problem solving efforts and searching for alternative solutions (Heppner, Krauskopf, 2001). Approach-avoidance behavior reflects the critical thinking side of the problem solving process. Approach-avoidance behavior is related to FNMs developing different approaches to problem solving for various problems (Heppner & Peterson, 1982). It can be expected that more experienced nurses learn to develop many different ways to solve problems. However, a

desired result could not be obtained in this study. Studies in the literature have reported that higher levels of professional experience improve problem solving behaviors (Kaya 2005). Other studies have reported no effect in this regard (Kelleci & Golbasi, 2005). Nurses working as FNMs for 1-2 years and 3≤ years had similar scores from the inventory in the evaluation made before the training. However, in the second evaluation made after the training, there was a more significant decrease in the scores of FNM nurses with 1-2 years of experience (e.g. they considered themselves more competent in problem solving). This result could be interpreted that FNMs were more willing to strive for continuous improvement and acquisition of new knowledge to solve the problems of the system. They were therefore more interested in the training and more motivated in learning new ways to change attitudes and ways of doing things.

Conclusion

This study includes training designed for FNMs with managerial problem solving, problem solving, critical thinking and decision making processes-models, tools and problem solving processes-models used by managers and problem solving strategies. Nurses were also asked to handle a problem encountered in clinics using problem solving and critical decision making processes. In the evaluation made by FNMs just after the training, positive changes were seen in the perception of their problem solving skills. And, in the third evaluation, there was a change in self-confidence in problem solving skills and overall score; the change was positive compared to the first evaluation and negative compared to the second evaluation. There was also a positive yet statistically insignificant improvement in approach-avoidance and personal control dimensions in the third evaluation. However, despite this positive change, nurses still had a moderate level of perception for their problem solving skills, and there was an increase in the “confidence in problem solving skill” in the third evaluation. Therefore, some recommendations can be made pertaining to the content of the training program. A training program designed for FNMs to develop problem solving behaviors should contain appropriate subject content. The goal would be to increase the perception of self-sufficiency, which could contribute to an increase in nurse managers’ confidence in their

problem solving skills. Part of the training should contain activities to improve techniques in using research resources. It should also offer information on how to use critical thinking skills to determine effective problem solutions, which could positively affect the development of approach-avoidance behaviors. If problems encountered in the clinics need to be solved by a team, it is important to design the training programs for the whole team. Another important factor in the success of an effective training program is the institutional possibilities. Training for nurses with a review of institutional possibilities and institutional changes could prove to be important in developing nurses’ problem solving behaviors. Providing counselling and guidance by independent and qualified nurse managers would also positively impact the development of these skills and behaviours.

Study Limitations

The problem solving training program in this research was prepared only for nurses with baccalaureate degrees, but it should also be modified to train nurses with other qualifications. Moreover, the results of this research are limited to the FNMs at the hospital in which the study was conducted.

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