

Effect of a Nursing Care Training Program on Staff Nurses' Performance and Empowerment in Emergency Hospital at Zagazig University Hospitals

**Heba Mohamed Abdou⁽¹⁾, Neamat M Mohamed El-sayed⁽²⁾, Maha Abdeen Abdeen⁽³⁾
& Fatma Gouda Metwally⁽⁴⁾**

⁽¹⁾*Master degree, Nursing Administration Dep., Faculty of Nursing Zagazig University,* ⁽²⁾*Prof. of Nursing Administration Dep., Faculty of Nursing Damanhur University,* ⁽³⁾*Lecturer of Nursing Administration Dep., Faculty of Nursing Zagazig University,* ⁽⁴⁾*Lecturer of Nursing Administration Dep., Faculty of Nursing Zagazig University.*

Abstract:

Background: Improving the quality of patient care is the target of health professionals anywhere. It is believed that the quality of nursing care offered in a hospital is affected by a number of factors as nurses' preparation and training at work. **The aim** of the study was to measure effect of a nursing care training program on staff nurses' performance and empowerment. **Setting:** The present study was conducted in the Emergency Hospital at Zagazig University Hospitals. A **sample** of convenience 60 staff nurses, from the above mentioned settings, were recruited for the study, as inclusion criteria at the start of the study with overall responsibility for provision of direct nursing care to surgical patients and having at least one year of experience. **Tools:** Three tools were used for data collection: Knowledge questionnaire to examine staff nurses' knowledge related to care of surgical patients, an observational checklist for nurses' surgical practices and Nurses' psychological empowerment questionnaire it translate into Arabic. These tools were used before implementation of the program, immediately after its implementation and three months later. **Results** revealed that there are highly statistically significant positive correlations between knowledge, performance and psychological empowerment immediately and follow up for nurses caring for the surgical patients. Therefore, it **was concluded that**, study revealed lack in nurses' knowledge, performance and psychological empowerment before implementation of the training program. However, implementation of the designed training program had a positive effect on nurses' knowledge, performance and psychological empowerment immediately and at follow up phase (three months later) for nurses caring the surgical patients.

Key words: Psychological Empowerment, Performance, Emergency Hospitals.

Introduction:

High quality of patient care depends on a nursing workforce that is empowered to provide care according to professional nursing standards. Empowered nurses will certainly have the ability to resolve the patients' needs and their families' expectations and can effectively achieve their career and organizations goals.⁽¹⁾

Hospital emergency departments provide medical treatment for a broad spectrum of illnesses and injuries to patients who arrive either in person or by ambulance. The quality and efficient delivery of patient care in

emergency departments depend on a variety of interrelated elements, such as prompt offloading of ambulance patients, quick and accurate triage (that is, the process of prioritizing patients according to the urgency of their illness or injury), nurse and/or physician assessment, diagnostic and laboratory services, consultations with specialists, and treatment.⁽²⁾ Training can be defined as learning experience in that it seeks a relatively permanent change in nurses that will improve the ability to perform job.

It may mean changing what

nurses know, how they work, their attitudes toward their work or their interaction with their coworkers or supervisor. In addition, training is a planned program designed to improve performance at the individual, group and/or organizational level. Improved performance in turn, implies that there have been measurable changes in knowledge, skills, attitudes and /or social behavior.^(3,4)

Nursing performance is an important issue as it facilitates consistency and collaboration for nursing via modern matrons across clinical directorates. Performance can be defined as statistical information based on quantitative measures, has the resources and activities produced by health authorities and sent to the development of health.^(4,5)

Nurses are expected to perform their jobs well; their performance must be extraordinary to enhance power. One method of being extraordinary is to increase professional skills and knowledge until reaching an expertise level. Having knowledge and skills that others lack, greatly augments a nurse's power base, excellence that reflects knowledge and demonstrates skills, enhances a nurses' credibility and determines how she/he viewed by others. Empowerment is a term commonly used by managers in today's organizational environment.⁽⁶⁾

However, empowerment has been operationally defined and its definition varies from an application to other applications. Currently, the popular definition of empowerment relies loosely on the notion of dropping decision-making. Furthermore, empowerment for nurses may consist of three components: a workplace that has the requisite structures to promote empowerment, psychological belief in one's ability to be empowered, and acknowledgement

that there is power in the relationships and caring that nurses provide.⁽⁷⁾

Aim of the Study:

The aim of the work measure effect of a nursing care training program on nursing staff performance and our empowerment.

Research Hypothesis:

1. After implementation of the training program, nurses' knowledge test score will increase.
2. After implementation of the training program, nurses' performance score will increase.
3. After implementation of the training program, nurses' empowerment level will increase.

Subjects and Methods:

Design:

A quasi experimental intervention design was used to conduct the present study, with three phases of data collection. Data were collected pre-test or pre-intervention, immediately following the intervention (post-test), and at three months after the intervention (a second post-test).

Setting:

The present study was conducted at Emergency Hospital in Zagazig University Hospitals with a total capacity of 195 beds, included in an Intensive Care Unit and four departments: Neurology, Orthopedics, Cardio-thoracic, and Surgery.

Subjects:

The study includes a sample of a convenience nurses from the above mentioned settings, with an overall responsibility for provision of direct nursing care to surgical patients and having at least one year of experience. Their total number was 60 staff nurses who meet the inclusion criteria at the start of the study. All of them were females and were agreed to participate in the study.

Tools of data collection:

Three tools were used to collect data for this study.

Tool I: Knowledge questionnaire:

Was designed by the researcher to examine the staff nurses' knowledge related to care of surgical patient. It was composed of two parts:

- *Part one:* Covered personal characteristics e.g., age, department, educational qualifications, marital status, years of experience, and attending previous training program.
- *Part two:* This part was designed by the researcher guided by Abdeen⁽⁸⁾, Seada⁽⁹⁾; Swansburg and Swansburg⁽¹⁰⁾ the sheet included 55 questions of right and wrong answers. Based on the elements of pre-operative care, post operative care, general principles of sterilization &hygiene, wounds care, care of patient connected with Ryle tube, care of patient connected with chest tube, giving medication and fluids, and reporting and recording techniques. It was used before program, immediately after program and three months later.

Tool II: Observational checklist of surgical practices nurses: It was composed of two parts:

- *Part one:* Personal characteristics.
- *Part two:* Adapted from the Joint Commission on Accreditation of Hospital and the standards of surgical nursing practice by Abdeen⁽⁸⁾ & Seada⁽⁹⁾ Jernigan and Young⁽¹¹⁾

The observational checklist was used to measure nurses' performance before program, immediately after program and three months later. It includes 47 items categorized under 2 main dimensions that are:

1. **Routine pre- operative care:** 9 items.
2. **Post-operative care:** Items were grouped under the following dimensions: Hygiene and comfort

(10 items); Dietary need fluids & electrolytes (4 items), medication (6 items), daily ongoing care (7 items), and infection control measures (11 items).The scoring system for this tool the total grade was47. The items could be observed " Done " and item "Not done" or. These options have been scored respectively as "1" and "Zero". For each nurse, total score was calculated and converted into percent score by dividing nurses' total score by the maximum possible score. The score of each participant was categorized into "Unsatisfactory" that had score % < 60% (from 0-27) and "Satisfactory" that had score % ≥ 60% (from 28 to47)⁽¹²⁾

Tool III: Nurses' Psychological Empowerment Questionnaire:

Adapted from by Spreitzer⁽¹³⁾:It was utilized to asses nurses' psychological empowerment level before program, immediately after program and three months later, and it translated in to Arabic , composed of two parts: *Part one:* Personal characteristics. *Part two:* It consists of 20 statements which measure 4 separate but inter-related dimensions: Competence (Self-efficacy) : (8statements); Autonomy (self-determination):(4statements), Impact: (4 statements) and Meaning: (4 statements). The scoring system for this tool the total grade was100.The responses were on a five-point Likert scale rating from "strongly disagree" to "strongly agree" they were scored from 1 to 5 respectively for each statement. Then, each nurse, total score was calculated and converted into percent score by dividing nurses' total score by the maximum possible score. Then scores were categorized into "low" that had score < 60 % (from 0 to 59)," Moderate" that had score 60- < 75% (from 60 to 74) and "High " that had score ≥75 % (from 75 to 100).⁽¹⁴⁾

A nursing care training program has been developed for nurses based on actual assessment of their needs. These have been identified through the baseline testing of their knowledge, performance. The objectives of the program were to measure effect of a training program on staff nurses' performance in emergency hospital at Zagazig University Hospitals through improve the ability of them regarding to their knowledge, skills; and to identify effect of training on psychological empowerment. Total duration of a program was (16) hour, divided into (6) hours theory (introduction to a program, pre-operative care, post-operative care and reporting, recording technique); and (10) hours practice (general principles of sterilization &hygiene, wounds care, care of patient connected with Ryle tube, care of patient connected with chest tube, giving medication and fluids).

Validity and reliability:

The validity of the content for both knowledge questionnaire and observation checklist was examined by 9 experts. These experts were from Zagazig, Mansoura and Ain-shams University. Experts reviewed the content for clarity, relevance, applicability, comprehensiveness, understanding, and ease for implementation. Minor modifications were completed by the principle investigator based on feedback from the 9 experts. Since their feedback suggested only minor changes, tools were not re-submitted for additional examination for validity. The reviews by 9 experts supported the content validity of the tool. (reliability) for the different subscales which measures nurses knowledge, the overall Cronbach's Alpha for the total scale (0.835), factor validity for knowledge scale items (0.953) & (reliability) for

the tool which measures nurses self empowerment (0.905), factor validity for scale items (70.7%).

Pilot study

Was carried out on 10% of staff nurses from emergency hospital. The nurses who shared in pilot study were in the main study sample. A brief explanation of the purpose of the study was provided to every participant in the pilot study, and then she was provided with a copy of each study tools. Data collected from the pilot study were reviewed and used in making minor modifications to items of observational checklist prior to the final application of the study tools.

Administrative and ethical Considerations:

Before starting any step in the study, an official letter was issued from the Dean of the Faculty of Nursing to the Director of Zagazig University Hospitals, to request permission and cooperation to conduct the study. Then, oral official permissions had been obtained from the matron of hospital and then from units' head nurses. The researcher obtained lists of nurses' numbers in all wards needed in the study. After an explanation of study objectives, an individual oral consent was also obtained from each participant in the study.

The subjects who agreed to participate in the study were assured about confidentiality and anonymity of the study. They were informed about their right to refuse or withdraw from the study at any time without giving a reason.

Statistical Design:

Data entry and statistical analysis were done using Epi-info 6.2 and Statistical Package for Social Sciences (SPSS). Quality control was done at the stage of coding and data entry.

Data were presented using descriptive statistics in the form of

frequencies and percentages for qualitative variables, means and standard deviations for quantitative variables. Chi-square test was used to detect the relation between the variables. Paired t- test was used to compare between mean scores; r (correlation) to correlate between studied variables Pearson correlation analysis was used for assessment of the inter-relationships among quantitative variables. The given graphs were constructed using Microsoft Excel software.

Results:

Table (1): Reveals that 30% of nurses are from ICU, 46.7% of them were in age group between 20 and less than 30 years, with a mean $\pm SD$ of 34.6 ± 9.9 . Less than two thirds 63.3% were technical nurses with diploma degree from nursing schools; three quarters of them were married, 38.3% of them their years of experience in nursing were less than 10 years with a mean $\pm SD$ of 14.9 ± 10.5 , the majority 83.3% of nurses have not attended previous training program.

Table (2): Display This table reveals that the lowest mean score of knowledge in pre-test scores were of items (care of patient connected with Ryle tube, general principles of sterilization and hygiene, post operative care ; and care of patient connected with chest tube). This was reflected on the total mean scores (0.46 ± 0.91 , 0.73 ± 0.97 , 0.76 ± 1.01 & 0.85 ± 1.10) respectively. Grades obtained immediately post test were better than that in pre-test as there were significant statistical increase in nurses' knowledge regarding giving medication, and fluids (10.86 ± 1.35), routine pre-operative care (10.01 ± 1.52), then there were a slight significant decreases in three months later (10.60 ± 1.33 , 9.81 ± 1.56) respectively. All mean scores of different dimensions immediately post

test were significantly higher than the pre-test scores ($P < 0.001$). As well as, the same table shows a significant slight decrease in three months later relative to immediately post test scores.

Figure (1): Illustrates that 86.7% of the studied nurses in pre-program implementation phase have poor knowledge. A percentage improved to indicate that most of them 95% has good knowledge in immediate post program, while a slight decrease to 93.3% was detected three months after program.

Table (3): Reveals that the lowest mean score of performance in pre-test scores was post-operative care dimensions (dietary needs for fluids & electrolytes, medication, hygiene & comfort and daily ongoing care). This was reflected on the total mean scores (0.60 ± 0.86 , 1.20 ± 1.02 , 1.25 ± 1.60 & 1.40 ± 1.34) respectively. Grades obtained immediately post test were better than those in pre-test as there were significant statistically increases in nurses' performance regarding their post test scores of infection control measures (9.11 ± 1.13), hygiene and comfort (9.08 ± 1.36), then they slightly a significant decreases in three months later to hygiene and comfort (8.43 ± 1.45), and infection control measures (8.63 ± 1.64). All mean scores of different dimensions immediately post test were significantly higher than the pre-test scores ($P < 0.001$). As well as, the table shows a significant slight decrease in three months later mean scores relative to immediately post.

Figure (2): Illustrates that 88.3% of nurses' total performance scores in pre-program intervention was an unsatisfactory performance. The percentage improved to indicate that the most of them 90% had satisfactory performance in immediately post program, while performance improved

to be 91.7% in three months after program implementation.

Table (4): Reveals that the highest mean score of psychological empowerment pre-test scores was competence dimension this was reflected on total mean scores (14.40 ± 2.30). Grades obtained immediately post test were better than that in pre-test as there were significant statistical increases in nurses' psychological empowerment, their post-test scores of competence dimension and meaning dimension total mean scores respectively (34.06 ± 4.78 & 17.20 ± 2.26) respectively, then there were slight significant decrease for competence at three months later (33.35 ± 2.77). All mean scores of different dimensions immediately post test were significantly higher than the pre-test scores ($P < 0.000$). As well the table shows a significant slight decrease in three months later mean scores relative to immediately post test scores, except for impact, it was higher; and for meaning, they were nearly equal, for the rest of items, still post program mean higher than the pre-test scores ($P < 0.000$).

Figure (3): Illustrates that the studied nurses had low empowerment level in pre-program phase 86.7%, while the majority of them had high empowerment level 86.7% immediately post program phase, which improved to be 93.3% at three months after program phase.

Table (5): Demonstrate that highly statistically significant correlations were found between total knowledge scores, total performance scores and total empowerment, while correlations were significant for total pre-program nurses' empowerment with post and three months later knowledge.

Discussion:

Engaging nurses in a training program helps them to increase their professional value and achieve empowerment. High quality of patient care depends on a nursing workforce that is empowering them to provide care according to professional nursing standards. Empowered nurses will certainly have the ability to resolve the patients' needs and their families' expectations and can effectively achieve their career and organization's goals. But nurses who are not empowered often are not satisfied with their jobs, and do not have the motivation to do their job, leave and leave their employers in the search of another job. In addition, the nursing care of patients which is carried out by such nurses will definitely be less than expected and leads to dissatisfaction of the patients with the given services.⁽¹⁵⁾

The present study revealed a statistically significant increase in total nurses' knowledge score immediately post implementation of the training program relative to before program, followed by a statistically significant slight decrease in three months later assessment. This marked improvement, in nurses' knowledge following the training program, seems logical, when compared to pre-program, due to absence of training programs related to care of surgical patients received by the participants, and absence of orientation at the beginning of their work at their units, besides the limited course contents they had during their studying, all these led to the poor knowledge that nurses had before implementation of the program.

Therefore, they were highly receptive and interested in acquiring knowledge when engaged in the training program. In this respect, LeMone, Burke and Bauldaff⁽¹⁵⁾ clarified

that those who are pressured into educational experiences often do not learn as well as those who attend after working because of an identified need. Similarly, power is maintained through knowledge development, which is acquired through education and expertise as mentioned by Linton⁽¹⁶⁾ mentioned that orientation programs are required for unprepared new nurses to avoid stress and frustration in the work place and to help them gain necessary skills and confidence.

Performance is the primary operating characteristics of nursing service and is the primary functioning of the department regarding to nursing outcome. In this respect, Manojlovich⁽¹⁷⁾ pointed that nursing outcome has an effect of nursing on health care of the individual.

This study revealed a significant increase in total nurses' performance scores immediately post training program implementation for both dimensions of pre and post operative care, relative to before implementation of the program with significant slight increase in three months after program. It seems that before implementation of the program, nurses were lacking knowledge and hadn't the chance to demonstrate their skills and lack of standardized nursing care procedures, due to unavailability of guideline manuals that describe all nursing procedures, which were of great importance as indicated by Cherry and Jacob⁽¹⁸⁾ and Donabedian.⁽¹⁹⁾

Engaging nurses in a training program helps them increase their professional value and achieve empowerment. The results of the present study revealed a significant increase in the total mean score of nurses' psychological empowerment immediately after implementation of the program relative to before implementation of the program. These

scores slightly increased in the three months later.

On the same line Berman⁽²⁰⁾, revealed that individuals who update the skills and knowledge necessary to achieve high level of production or service quality, so their doing should enhance their empowerment level. The result of current study agreed also with O'Reilly⁽²¹⁾, who stated that changes were found in measures of career empowerment. He suggested that community care agencies should focus greater energies in determining how the policy objectives of empowerment are to be achieved through training, and in so doing make far more explicit the supposed linkages between training content, design, and its positive impact on individual behavior or self-agency.

The result of the present study revealed that highly statistically significant correlations were found between nurses' age, years of experience with their pre-program knowledge, while no statistically significant correlation was detected between nurses' age and their performance. This finding was in a harmony with Ro and Chen⁽²²⁾, Clarke⁽²³⁾ and Abd El-Aziz⁽²⁴⁾ who found that there were no statistically significant difference between nurses' age and years of experience with nurses' practice.

On contrary Maghawree⁽²⁵⁾, views that, day to day activities enhance nurses' experiences and their practices. This finding indicated that years of experience had no effect on nurses' acquiring knowledge and performance. Whereas, experience in a specific clinical area, is necessary but not sufficient to develop expertise as clarified by Mahmoud⁽²⁶⁾. In addition, expertise is not the same as experience, nor can expertise be acquired on nursing units with high turnover as identified by Tucker.⁽²⁷⁾

Furthermore, expert is the highest level of Benner's five stages of skill development: novice, advanced beginner, competent, proficient and expert. The findings of the current study revealed that there are highly statistically significant positive correlations between knowledge, performance and empowerment. The finding indicated that abilities for nurses would have been affected by their performance abilities. It seems logical, that nurses needed the knowledge abilities to achieve success in fulfillment of what they have performed. This may be that due to performance abilities of nurses would not have been attributed to their knowledge. However, they might be attributed to their experience gained from work environment. In a study carried by Peden-McAlpine⁽²⁸⁾, they stated that training programs can lead to positive learning outcomes and behavior change.

Therefore, the training program has led to improvement of the knowledge, performance and psychological empowerment of the studied nurses as related to surgical patients. The findings of the study pointed to a decline in this improvement three months after the program implementation in nurses' knowledge. Other interventions are needed to retain this improvement.

Conclusion:

In conclusion, the present study revealed lack in nurses' knowledge, performance and psychological empowerment before implementation of the training program. However, implementation of the designed training program had a positive effect on nurses' knowledge, performance and psychological empowerment immediately and at follow up phase

(three months later) for nurses caring the surgical patients.

Recommendations:

- In the light of the study findings, and to improve nurses' performance and empowerment, the following recommendations can be made:
 - Nurses should be allowed to participate in decision making to empower them, as well as increasing their feeling of autonomy.
 - Supervisors should enhance psychological empowerment of nurses through enhancing meaningfulness of their job objectives, assigning a more meaningful task to them, allowing them to be identified as important members of the organization and increasing motivation for high performance.
 - Supervisors should spend time on getting to know nurses, setting targets, identifying development needs, facilitating personal development plans and giving positive and corrective feedback. As a result, nurses' levels of self-efficacy will increase and they will experience that they make a difference in the workplace.
 - Encouragement of teamwork is an important tool for good climate and empowerment of nurses. Specific programs to enhance perceptions of empowerment for nurse managers to integrate staff nurses in decision-making, and to deal effectively with new ideas to promote empowerment of nurses.
 - Further researches are needed to expand nursing empowerment through investigation of the different strategies and tools that enhance nurses' empowerment.

Table (1): Distribution of study sample regarding personal characteristics

Items	No. (n = 60)	%
Department:		
▪ Surgery	14	23.3
▪ ICU	18	30
▪ Orthopedic	9	15
▪ Neurology	12	20
▪ Cardio-thoracic	7	11.7
Age (in years):		
▪ 20-	28	46.7
▪ 30-	15	25.0
▪ 40-50	17	28.3
Mean ±SD (34.6±9.9)		
Educational qualifications:		
▪ Professional nurses with bachelor degree in nursing.	17	28.4
▪ Technical nurses with diploma degree from technical institute.	5	8.3
▪ Technical nurses with diploma degree from nursing schools.	38	63.3
Marital status:		
▪ Married	45	75.0
▪ Un-married	15	25.0
Years of experience in nursing:		
▪ < 10	23	38.3
▪ 10 -	15	25.0
▪ 20 +	22	36.7
Mean ±SD (14.9 ± 10.5)		
Attending previous training program:		
▪ Yes	10	16.7
▪ No	50	83.3

Table (2): Total means scores of nurses' knowledge dimensions through different study phases (n=60)

Knowledge Dimension	Pre - Program	Immediately Post Program	Three Months Later	Paired t test (1)	P (1)	Paired t test (1)	P (2)
	Mean \pm SD	Mean \pm SD	Mean \pm SD				
▪ Routine pre-operative care	4.35 \pm 1.65	10.01 \pm 1.52	9.81 \pm 1.56	18.57	0.001**	17.21	0.001**
▪ Post-operative care	0.76 \pm 1.01	4.46 \pm 0.89	4.26 \pm 0.93	15.78	0.001**	15.31	0.001**
▪ General principles of sterilization & hygiene	0.73 \pm 0.97	5.51 \pm 0.81	5.10 \pm 1.00	21.56	0.001**	19.36	0.001**
▪ Wound care	1.20 \pm 1.21	5.43 \pm 0.90	4.86 \pm 0.92	17.77	0.001**	16.47	0.001**
▪ Care of patient connected with Ryle tube	0.46 \pm 0.91	4.70 \pm 0.56	4.31 \pm 0.6	26.73	0.001**	24.19	0.001**
▪ Care of patient connected with chest tube	0.85 \pm 1.10	4.36 \pm 0.84	3.83 \pm 1.02	16.00	0.001**	12.77	0.001**
▪ Giving medication and fluids	2.13 \pm 1.77	10.86 \pm 1.35	10.60 \pm 1.33	24.77	0.001**	25.74	0.001**
▪ Reporting & recording technique	1.03 \pm 1.78	4.43 \pm 1.01	4.15 \pm 0.89	10.80	0.001**	11.81	0.001**

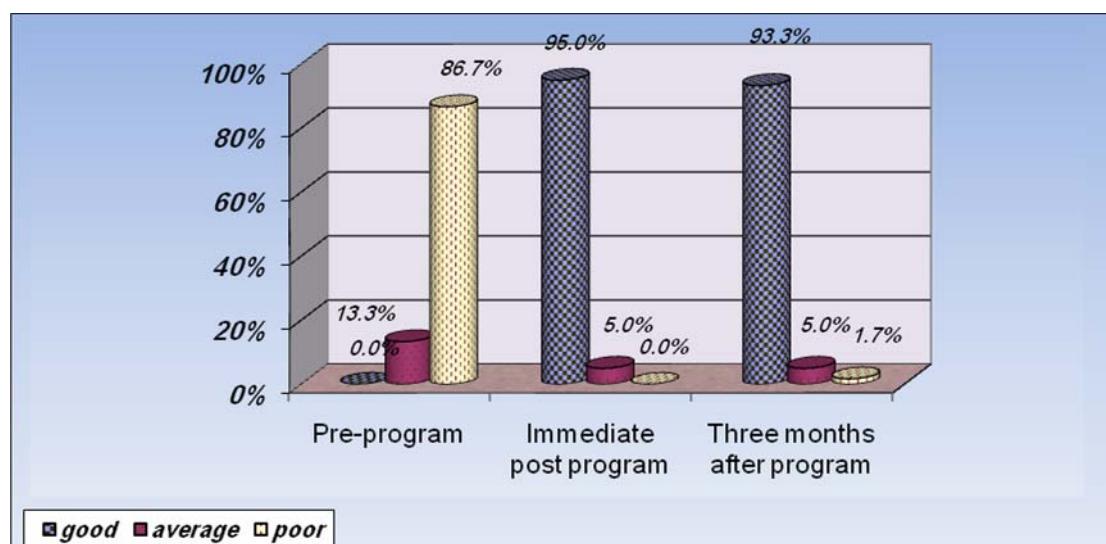
** Highly statistically significant at $P < .001$ **Figure (1): Level of nurses' knowledge through the program phases (n=60)**

Table (3): Total mean scores of nurses' performance dimensions through different study phases (n=60).

Performance Dimension	Pre - program	Immediately Post program	Three months later	Paired t- test (1)	P (1)	Paired t- test (2)	P (2)
	Mean ± SD	Mean ± SD	Mean ± SD				
I : Routine pre-operative care	1.53±1.83	7.33±1.55	7.76±1.33	15.69	0.001**	17.39	0.001**
II : Post-operative care:							
■ Hygiene & comfort	1.25±1.60	9.08±1.36	8.43±1.45	20.03	0.001**	21.22	0.001**
■ Dietary needs for fluids & electrolytes	0.60±0.86	3.41±0.78	3.70±0.64	14.53	0.001**	17.17	0.001**
■ Medication	1.20±1.02	5.03±1.02	6.21±0.92	15.72	0.001**	21.94	0.001**
■ Daily ongoing care	1.40±1.34	5.80±1.36	6.13±1.11	13.66	0.001**	16.14	0.001**
■ Infection control measures	2.15±1.74	9.11±1.13	8.63±1.64	22.09	0.001**	17.66	0.001**

** Highly statistically significant at $P < 0.001$

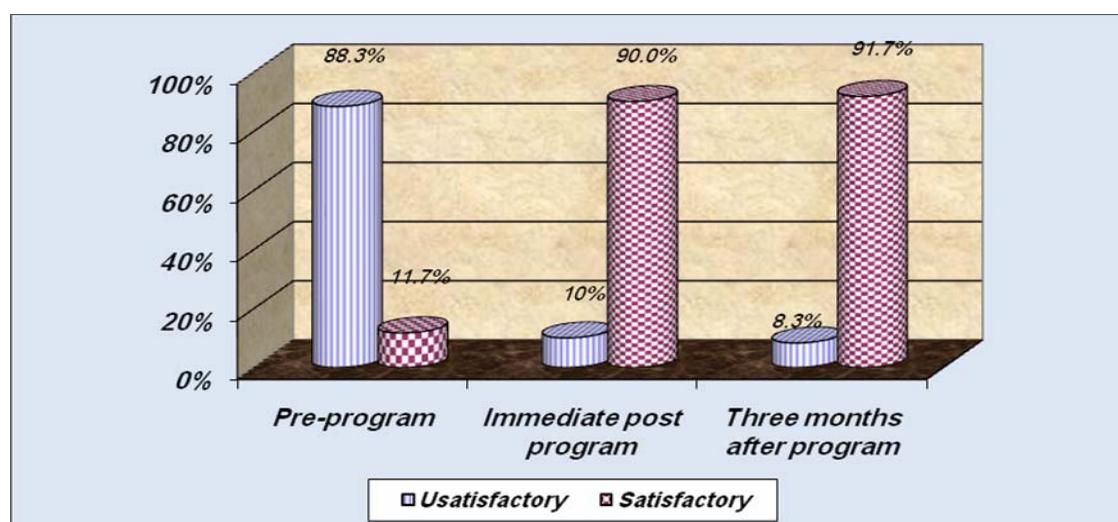
**Figure (2): Level of nurses' performance through the program phases (n=60)**

Table (4): Total means scores of nurses' psychological empowerment dimensions through different study phases (n=60).

Psychological Empowerment Dimensions	Pre - Program	Immediately Post Program	Three Months Later	Paired t-test (1)	P (1)	Paired t-test (2)	P (2)
	Mean ± SD	Mean ± SD	Mean ± SD			P	
▪ Competence	14.40±2.30	34.06±4.78	33.35±2.77	30.15	0.000**	39.49	0.000**
▪ Autonomy	7.70±1.39	16.96±2.40	14.40±2.25	27.78	0.000**	27.68	0.000**
▪ Impact	8.23±1.83	15.54±2.50	17.68±1.76	17.13	0.000**	24.35	0.000**
▪ Meaning	8.33±1.69	17.20±2.26	17.0±2.23	29.26	.000**	26.61	0.000**

** Highly statistically significant at $P < .001$

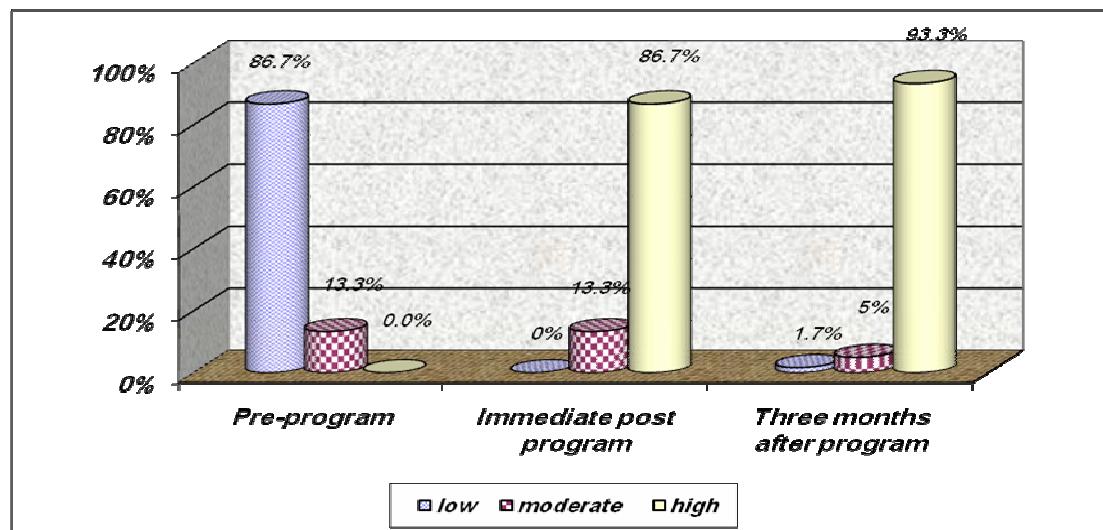
**Figure (3): Nurses' psychological empowerment level through the program phases (n=60)**

Table (5): Correlation between total knowledge, total performance and empowerment during different study phases (N=60)

Variables	Total knowledge score			Total performance score			Total empowerment score		
	Pre Program	Post program	Three months later	Pre Program	Post Program	Three months later	Pre Program	Post program	Three months later
• Total knowledge pre-program	r	.672	.673	.896	.732	.720	.333	.215ns	.075ns
	P value		.000**	.000**	.000**	.000**	.009**	.099	.566
• Total knowledge post program	r	.672	.993	.609	.938	.604	.301	.423	.451
	P value	.000**		.000**	.000**	.000**	.019*	.001**	.000**
• Total knowledge three months later	r	.673	.993	.606	.943	.606	.284	.420	.460
	P value	.000**	.000**		.000**	.000**	.028*	.001**	.000**
• Total performance pre- program	r	.896	.609	.606	.344	.224ns	.094ns		.720
	P value	.000**	.000**	.000**	.007**	.086	.474		.000**
• Total performance post program	r	.732	.938	.943	.362	.487	-.447	.720	.756
	P value	.000**	.000**	.000**	.005**	.000**	.000**	.000**	.000**
• Total performance three months later	r	.720	.604	.606	.503	.265	-.101ns	.727	.756
	P value	.000**	.000**	.000**	.000**	.041*	.441	.000**	.000**
• Total empowerment pre-program	r	.333	.301	.284		-.033ns	-.069ns	.344	.362
	P value	.009**	.019*	.028*		.804	.602	.007**	.005**
• Total empowerment post program	r	.215ns	.423	.420	-.033ns		.616	.224ns	.487
	P value	.099	.001**	.001**	.804		.000**	.086	.000**
• Total empowerment three months later	r	.075ns	.451	.460	-.069ns	.616		.094ns	.447
	P value	.566	.000**	.000**	.602	.000**		.474	.000**

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