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Abstract:

Background: Nursing professional practice model creates a work environment for nurses that supports commitment to nurture and care and increases engagement to work. Work engagement is the strength of the mental and emotional connection nurses feel toward the work they do, team, and organization. Aim of the study: To assess the effectiveness of implementing nursing professional practice model on nurses' work engagement. Study design: A quasi-experimental research design was utilized. Setting: The study was conducted at critical care units at Benha University Hospital. Study subjects: Representative random sample of 170 nurses working in the above-mentioned setting. Tools of data collection: Three tools were employed; Tool I) Professional Practice Model Knowledge Structured Questionnaire, Tool II) Professional Practice Model self-report Questionnaire, Tool III) Work Engagement Scale. Results: The majority (92.9, 89.4% %) of nurses had adequate knowledge about nursing professional practice model at immediate post and follow up phases compared with preprogram phase. As well as the majority (98.2 %, 96.5 %) had satisfactory practice level at immediate post and follow up compared with pre-program phase. Additionally, 29.4% of nurses had low work engagement level at pre-program phase, which improved to 88.8%, 88.2% at immediate post and follow up phases. Conclusion: There was a positive correlation between nurses' total knowledge, practice and work engagement immediately post and follow up (after three months) of the program phases compared with pre-program phase. Recommendations: In-service training and education programs must be a continuous process for refreshing and increasing nurses' knowledge and practices about nursing professional practice model.

Keywords: Nursing professional practice model, Nurses, Nurses work engagement

Introduction:

Critical care units are often the portal of entry into a hospital. Care can become very task-oriented, fragmented and unsatisfactory for the patient. Challenges face nursing staff with high volumes, high acuities, short staffing, and a gap in utilizing professional practice. Professional practice for nurses means being able to work within professional standards of accountable practice to be and responsibility for decision making; work collaboratively with physicians and other health

team members; and have autonomy and control over practice (Bloemhof et al., 2021).

A Nursing Professional Practice Model (NPPM) is a powerful depiction of essential elements that define what it means to be a professional nurse. The NPPM describes how nurses practice, collaborate, communicate, and develop professionally to provide high-quality care to those served in the organization and its communities (**Olender et al., 2020**). Nursing professional practice model has five key elements namely; professional values,

professional relationships, a patient care delivery model, shared governance, and compensation and rewards (Sari et al., 2021).

Nursing professional practice model creates a work environment for critical care nurses that support commitment. This model displays the important values that nurses identify as critical to practice. Having a model to guide consistent nursing practice improves critical care nurse and patients' satisfaction, enhances patients' outcomes and has better nurses' engagement (Bloemhof et al., 2021).

Work engagement is the strength of the mental and emotional connection nurses feel do, toward the work they teams, and Nurses' organization. work engagement improves workplace morale and encourages nurses to buy into the leadership's overall goals, priorities, and strategy. Nurses who are engaged take a holistic view of the organization and understand their position, where they fit in, and how their actions contribute to its success (Parr et al., 2021).

Nurses work engagement strategies can be classified into three dimensions based on desired end results to cognitive engagement, engagement, and emotional physical engagement. Work engagement is essential for organizations because it is an active, positive and rewarding work-related psychological state (Huang et al., 2022). The health care organization must understand the ways of supporting staff nurses to facilitate nursing engagement because nurses with high level of work engagement will have high level of performance, gain satisfaction from patients, increase productivity and reduce turnover intention (Jenita & George, 2022).

Nursing professional practice model allows nurses to clearly articulate contributions to practice from the profession, feel connected within the context of relationships to the patient, to own practice, to the roles of other providers in contributing to the plan. Also, allows the nurse to better plan, manage, adapt to change, more satisfied and, engaged with their work (**Olender et al., 2020**).

Significance of the study:

Nursing professional practice model helps to describe, guide, unify and measure nursing practice. Healthcare organizations that have introduced a professional practice model into nursing plan, seek to create and optimize an environment that embraces patient centered care. These environments that are supportive of nursing professional practice result in positive outcomes for both nurses and patients, as it increase quality of care, patients' satisfaction, and also increase nurses' job satisfaction and engagement to their work (Olender et al., 2020).

Aim of the study:

The current study aimed to assess the effectiveness of implementing nursing professional practice model on nurses' work engagement.

Research Hypotheses:

Implementation of educational program will lead to significant improvement of knowledge and practice regarding nursing professional practice model among nurses and significant improvement of their work engagement.

Subjects and Method:

Research design:

A quasi-experimental research design was utilized to achieve the aim of the study with pretest, posttest, and was carried follow up assessments out in this study.

Study setting:

The current study was conducted at Critical Care Units at Benha University Hospital.

Subjects:

Representative random sample of nurses (n=170) who were working in the above mentioned setting during the time of data collection.

Tools of data collection:

To achieve the aim of the study the following three tools were used.

Tool (1): Professional Practice Model Knowledge Structured Questionnaire:

It was developed by researcher based on literature review Gentile & Marzinski, (2020), Olender et al., (2020) and Sohal, (2020) to assess nurses' knowledge regarding professional practice model. It was consisted of two parts:

Part (1): It included personal data of nurses' age, sex, marital status, educational qualification, unit, years of experience, attendance training courses about nursing professional practice model, and share in any nursing professional association.

Part (2): It consisted of 60 questions in the form of multiple choice questions, and true and false to assess nurses' knowledge regarding nursing professional practice model.

Scoring system:

Each question was granted one point for the correct answer, and zero for the wrong one. The total score for all questions was 60. Total scores were expressed according to cut off point as percentages. The participants who had a percent 60% it was considered adequate knowledge level and inadequate knowledge level if less than 60%.

Tool (2): Professional Practice Model Self - report Questionnaire

It was developed by the researcher based on review of related literature Price et al., (2019), Qu et al., (2019) & Alghamdi &

Baker, (2020) to assess nurses' practice related to nursing professional practice model. It consisted of five elements, which contained 90 items.

Scoring system:

Nurses' responses were allocated as follow: (3) Always, (2) Sometimes, (1) Never. Total scores were expressed according to cut off point as percentages. If the score was 60% or more it was considered satisfactory practice level and unsatisfactory practice level if less than 60%.

Tool (3) Work Engagement Scale

It was adapted by **Rich et al.,** (2010) and used by the researcher to assess the levels of nurses' work engagement. It consisted of 16 items divided into 3 dimensions namely cognitive work engagement, emotional work engagement, and physical work engagement.

Scoring system:-

Nurses responses were allocated as follow: (3) Always, (2) Sometimes, (1) Never. So the total score were expressed according to cut off point as percentages. The participant who had more than 75% had high level of work engagement, participant who had the score from (60-75%) indicate had moderate level of work engagement, and the participant who had the score of less than (60%) had low level of work engagement.

Content validity:

These three tools were tested for validity (Face, Content) through distribution of the tool to a jury of seven experts on field of Nursing Administration. Modifications were done in the light of their valuable comments such as modifying some words to give the most appropriate meaning for the phrase which were not clear.

Reliability of the tools:

These three tools were tested for reliability to estimate the consistency of measurement. The reliability of first tool was done using Cranach's Alpha Coefficient test was (0.965), reliability of second tool was (0.988), and reliability of third tool was (0.961).

Ethical considerations:

The respondent rights were protected by ensuring voluntary participation, so the informed consent was obtained by explaining purpose, nature time of conducting the study, potential benefits of the study, how data was collected, any invasive procedure, expected outcomes and the respondent rights to withdraw from the research study at any time without any reasons.

Pilot Study:

Pilot study was carried out from the beginning of January, 2022 to the end of January, 2022 to assess tools clarity and applicability. It was done on 10% from the subjects (17 nurses) worked at Critical Care Units at Benha University Hospital and were included in the main study subjects because there is little modifications were required. Pilot study was carried out to evaluate the effectiveness of the proposed data collection tools, and assess the feasibility of the study. In addition, to estimate the time required to fill the appendices that approximately ranged from 20 - 25 minutes.

Field work:

At Benha University Hospital; The Director of Nursing and some of Assistants encouraged the nurses especially in Critical Care Units to participate in the study in order to learn and get benefits from the program. The head nurses and the supervisors of each individual nursing unit were then contacted, and agreed to provide time for their staff to

attend the education program. The following phases were adopted to achieve the aim of the current study: Assessment, planning, implementation, evaluation, and follow up phases. These phases were carried out from the beginning of February, 2022 to the end of October, 2022.

A-Assessment phase:

- The process of data collection was carried out in February, 2022 to assess nurses' knowledge and practice regarding nursing professional practice model before implementation of the program.
- The researcher was available at the previously mentioned settings four days weekly in the morning shifts to collect baseline data.
- At the beginning, the researcher welcomed the nurses, gave a brief idea about the aim and activity of the program for all nurses.
- Then, the researcher collected data by using the different tools of data collection in the available hospital classroom.
- The time required for finishing each questionnaire was around, 10-20 minutes.

B- Planning phase:

- This phase started at March, 2022 based on baseline data obtained from pre-test assessment and relevant review of literature. Program was developed based on determined needs and relevant review of literature.
- Program construction in a form of printed Arabic form and included different topics to develop nurses' knowledge and practice by using nursing professional practice model. Also, the researcher prepared power point presentation of the topics.

C-Implementation phase:

This phase was initiated from the beginning of April 2022 to the June, 2022 for three days weekly. The researcher visited each previous mentioned setting in the two shifts

(morning and afternoon) then, the researcher divided the subjects to seventeen groups, and each group composed of 10 nurses.

- -The program involved (6) sessions and were implemented according to working circumstances. The duration of each session was two hours depending on workload.
- Different instructional strategies, method of teaching, media and method of evaluation were selected to suit the nurses' needs and achieve the objectives and contents of the program.
- Different methods of teaching were used such as discussion, brain storming, simulation and case study. Instructional media included, PowerPoint, colored images.
- At the beginning of each session an orientation to the program and its aims took place. Feedback was given at the beginning of each session about the previous one and at the end of each session about the current session and program situations given to participants to write their suggestion for alternative solutions.

D- Evaluation Phase:

The time of the data collection lasted for three months from the beginning of August, 2022 to the end of October, 2022, during this phase the impact of the in-service education program was evaluated (immediately post program phases), using the same tools which were used before the program. Immediate evaluation included, immediate post program implemented for all subjects using the same tools which were used before the program. Follow up after three months of program implementation, all the study tools were applied for nurses to test the follow up gain in the nurses' knowledge, practice regarding nursing professional practice model. The data was analysis and the results interpreted and clinical significance of findings were evaluated for comprehended discussion of the data analysis results of the study.

Statistical analysis:

Data were verified prior to computerized entry. The Statistical Package for Social Sciences (SPSS version 25.0) was used for that purpose, followed by data analysis and tabulation. Descriptive statistics were applied quantitative data (e.g., mean. standard deviation, frequency and a percentage, $(\chi 2)$ test was utilized to compare percentage between studied variable. Paired t test was used to compare mean scores between pre and post program. Non – significant level value was considered when p> 0.05. A significant level value was considered when p<0.05. And a highly significant level value was considered when p<0.001. The standard deviation: as a measure of dispersion of results around the mean (for quantitative variable). T. test is a test of significance used for comparison between two variables for the same sample and Pearson correlation (r) test was used for association between total scores.

Results:

Table (1): Shows that, more than half (52.4%) of nurses were less than 30 years old with mean score 30.41±6.43. As far as their sex, majority (94.7%) of nurses were female, and more than three quarters (77.6%). of them were married. Concerning educational qualification, more than half (54.1%) of nurses had bachelor degree in nursing. Regarding to unit, 22.9 % of nurses was working in intensive care unit. As regard to their years of experience, more than half (55.3%) of nurses had less than 10 years of experience with mean score 9.14±7.08. Finally, all study group didn't attend any training courses about nursing professional practice model.

Figure (1): Indicates that, the majority (97.1%) of nurses had inadequate knowledge about nursing professional practice model at preprogram phase, but it improved and increased to become 92.9 % and 89.4 % had adequate knowledge at immediate post and follow up phases (after three months).

Figure (2): Indicates that, about three-quarters (74.1%) of nurses had unsatisfactory practice level about nursing professional practice model at pre-program phase, but it improved and increased to 98.2 % and 96.5 % satisfactory practice level at immediate post and follow up phases (after three months), respectively.

Figure (3): Indicates that, more than one-quarter (29.4%) of nurses had low work engagement level at preprogram phase, which improved to 88.8% and 88.2% at immediate post and follow up phases (after three months) had high work engagement, respectively.

Table (2): Shows that there were highly statistical significant positive correlation between nurses' knowledge, practices about nursing professional practice model, and levels of work engagement at post program.

Table (1): Distribution of nurses according to their personnel data (n= 170).

Personnel data	No.	%						
Age in years								
< 30 years	89	52.4						
30:< 40 years	56	32.9						
≥ ٤ · years	25	14.7						
Range	19-45							
Mean ± SD	30.41±6.43							
Sex								
Male	9	5.3						
Female	161	94.7						
Marital status								
Married	132	77.6						
Unmarried	38	22.4						
Educational qualification								
Diploma Degree in Nursing	25	14.7						
Technical Nursing Institution	51	30.0						
Bachelor Degree in Nursing	92	54.1						
Post -graduation studies	2	1.2						
Unit								
Intensive care unit	39	22.9						
Coronary care unit	17	10.0						
Cardiology care unit	14	8.2						
Thoracic care unit	9	5.3						
Cardio thoracic care unit	8	4.7						
Psychiatric care unit	18	10.6						
Emergency care unit	16	9.4						
Immediately care unit	16	9.4						
Neonatal care unit	21	12.4						
Hepatic care unit	12	7.1						
Years of experience								
< 10 years	94	55.3						
10:< 20 years	59	34.7						
\geq 20 years	17	10.0						
Range 1-27								
Mean ± SD 9.14±								
Attending training courses regarding nursing professional practice								
Yes	0	0.0						
No	170	100.0						

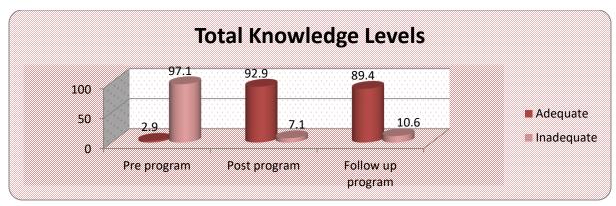


Figure (1): Level total knowledge about nursing professional practice model among nurses through program phases (n= 170)

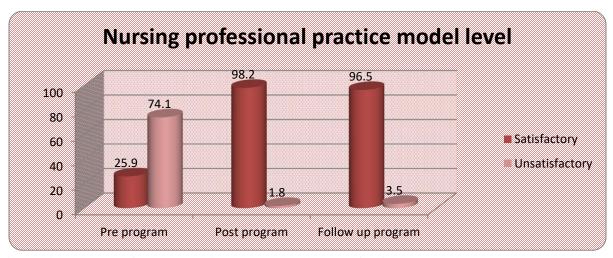


Figure (2): Levels of total practice about nursing professional practice model among nurses through program phases (n= 170)

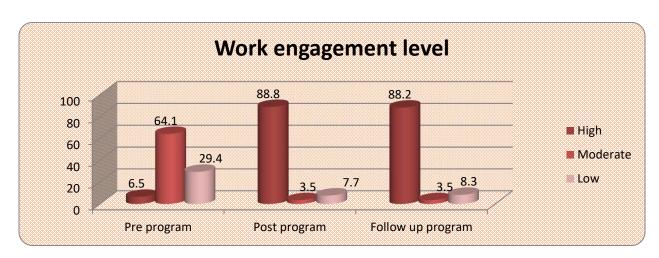


Figure (3): Nurses' work engagement levels through program phases (n₌ 170)

Table (2): Correlation matrix nurses' knowledge and their practices of nursing professional practice model and levels of work engagement (Post program).

Variables	Total knowledge		Total practices		Total work engagement	
	r	P	R	P	r	P
Total knowledge	-		0.397	0.000**	0.212	0.000**
Total practices	0.397	0.000**	-	-	0.371	0.000**
Total work engagement	0.212	0.000**	0.371	0.000**	-	-

Discussion:

Nursing professional practice models are an innovative strategy for improving the quality of care in most healthcare settings, when nurses engage in the everyday process of creating, implementing, and sustaining a professional practice model, they gain a renewed sense of commitment, enthusiasm, and belief in the value of nursing. Nurses who practice nursing under such conditions exert more decisionmaking authority, further develop clinical and administrative leadership skills, and report increased professional autonomy, accountability, and job satisfaction. enhance engagement (Rojas-Rivera et al., 2023).

Work engagement is considered a key indicator of any organizational health because it significantly influences nurses' job satisfaction, absence rates, patient satisfaction, and organizational success. Highly engaged nurses are more positive about their jobs and organizations, treat colleges with more respect, help others improve work efficacy, continually improve work-related skills and highly active (Gaikwad & Swaminathan, 2022).

Throughout the present study that total number of nurses was (170) nurses; more than half of nurses were less than 30 years old and had bachelor degree in nursing. While, majority

of them were female. Concerning to unit, more than one-fifth of them were working in intensive care unit. While, more than half of them had less than 10 years of experience with mean score 9.14±7.08. Finally, all studied nurses didn't attend any training courses about nursing professional practice model and didn't share in any nursing professional association.

The present study illustrated that the program had a greater effect on improving level total knowledge about nursing professional practice model among studied nurses through post and follow-up phases of the program compared with the preprogram phase, the majority of nurses had inadequate knowledge about nursing professional practice model at preprogram phase, but the majority of them had adequate knowledge immediately post program and follow up phase.

From researcher point of view inadequacy nurses' knowledge related to nursing professional practice model through preprogram phase might be due to nurses didn't have any training for it than before or lack of interest from nurses to acquire new knowledge. In other hand, this improvement could be due to simple, clear and concise way of presentation and discussion.

This finding is supported by **Rojas-Rivera** et al., (2023) founded that nurses acquired new knowledge after implementation the model.

Also, this result agreed with **Bloemhof et al.**, (2021) stated that the studied nurses had more knowledge about professional practice model after implementing strategies compared with insufficient knowledge before implementation.

The present study indicated that, the program had a greater effect on improving total practice levels about nursing professional practice model among nurses through program phases, about three-quarters of nurses had unsatisfactory practice level about nursing professional practice model at pre-program phase, but nearly all of them had satisfactory practice level at immediate post and follow up phases, respectively.

From researcher point of view, nurses didn't practice ethical guideline, and don't know how to practice shared governance. Improvement in the practice of nurses could have resulted from utilizing creative teaching approaches that can facilitate the interactions and collaboration in the learning process, The decline that occurred in practice scores at the follow-up phase could be explained by a gradual decrease in nurses' practice over time due to many causes such as; there is no continuing training, increasing work load in critical care units, and lack of monitoring.

This finding is paralleled with **Bloemhof** et al., (2021) stated that more than half of the studied nurses had insufficient practice level regarding nursing professional practice model before implementing intervention while the majority of them had sufficient practice after implementing intervention.

Concerning nurses' work engagement levels through program phases the present study indicated that, more than one-quarter of nurses had low work engagement level at preprogram phase, which improved to be the majority of

them had high work engagement at immediate post and follow up phases, respectively.

From researcher point of view may be due to nurses' supervisory and organizational support, collaboration with health team, rewards and recognition, job characteristics and stable workforce motivates nurses to be more engaged at work especially in critical care units.

The present study was consistent with Keleekai-Brapoh & Toresco, (2020) founded that there were high work engagement levels among nurses. Also, this result agreed with Ghazawy et al., (2021) reported that nurses in their study were having moderate work engagement levels.

This result is inconsistent with Allande-Cussó et al., (2021) reported that nurses in their study were having moderate work engagement levels. On the same respect, this results disagree with Eguchi et al., (2020) reported that the study nurses have generally low levels of work engagement associated with undesirable effects such as an increased turnover rate, low job satisfaction and inadequate execution of job tasks and duties.

The present study revealed there was highly statistically significant positive correlation between nurse's knowledge and regarding nursing professional practices practice model and nurses work engagement throughout the post program. From researcher's point of view, this may be due to nurses' knowledge and practice directly influenced by which reflected each other on engagement. Moreover, nurses' knowledge and practice was considered the baseline that helping in achieving best outcome.

This result is supported with **Qu et al.**, (2019) founded that positive correlation between acquisition of knowledge and nurses

practice. Also, this result was supported with **Sohal**, (2020) stated that there were positive correlation between work engagement and nurses' knowledge, practice and thus had a positive effect on nurses' professional practice.

Conclusion:

The educational program about nursing professional practice model making succeeded in improving nurses' knowledge and practices regarding nursing professional practice model and their level of work engagement.

Recommendations:

- In-service training and education programs must be a continuous process for refreshing and increasing nurses' knowledge and practices about nursing professional practice model.
- Encouraging nurses at different levels to improve and update their knowledge by selflearning. This can be achieved by establishing of small nursing library within the hospital departments supplied with recent handouts with update knowledge and practice about nursing professional practice model.
- Applying the educational program in other departments and other hospitals with difference circumstances to prove its effectiveness.

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فاعلية تنفيذ نموذج الممارسة المهنية التمريضية على إندماج الممرضين في العمل أنوار إبراهيم نمر - رضا عبدالفتاح أبوجاد - محضية مرسي الشحات

يخلق نموذج الممارسة المهنية التمريضية بيئة عمل الممرضين تدعم التزامهم بالرعاية وتزيد من إندمجهم في العمل. لذلك هدفت الدراسة إلى تقييم فاعلية تطبيق نموذج الممارسة المهنية التمريضية على إندماج الممرضين في العمل. وقد تم استخدام تصميم بحث شبه تجريبي لتحقيق هدف الدراسة. وقد أجريت الدراسة في وحدات الرعاية الحرجة بمستشفى بنها الجامعي. تكونت عينة الدراسة من ١٧٠ممرض و ممرضة يعملون في البيئة المذكورة أعلاه. واظهرت النتائج بأن كان لدى غالبية الممرضين (٤,٩٢,٩,٨٩٪) معرفة كافية بنموذج الممارسة المهنية للتمريض في مراحل ما بعد المتابعة الفورية مقارنة بمرحلة ما قبل البرنامج. بالإضافة إلى أن الغالبية (٢,٨٨٪ ، ٥,٦٠٪) كان لديهم مستوى ممارسة مرض في مرحلة ما بعد المتابعة الفورية مقارنة بمرحلة ما قبل البرنامج، على التوالي. بالإضافة إلى ذلك ، كان لدى ٤,٩٠٪ من الممرضين مستوى إندماج عمل منخفض في مرحلة ما قبل البرنامج ، والذي تحسن إلى ٨٨٨٪ ، و ٢٨٨٪ في مراحل التنفيذ والمتابعة. الخلاصة: كانت هناك علاقة إيجابية بين المعرفة الكلية للممرضين وممارساتهم وإندماجهم في العمل مباشرة بعد تنفيذ البرنامج والمتابعة (بعد ثلاثة أشهر) مقارنة بمرحلة ما قبل البرنامج. التوصيات: يجب أن تكون برامج التدريب والتعليم أثناء الخدمة عملية مستمرة لتحديث وزيادة معرفة الممرضين وممارساتهم حول نموذج الممارسة المهنية للتمريض.