

## Effect of Evidence-Based Nursing Training Program on Head Nurses' Knowledge, Practice, and Attitudes

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### Abstract

**Background:** Evidence-based practice (EBP) serves as the basis for clinical decision making by healthcare providers by ensuring that minimum standards of sustainability, appropriateness and safety have been established and can be reproduced with a high level of confidence so that consistent outcomes can be obtained. **Aim:** Examining the effect of evidence based nursing training program on head nurses' knowledge, practice and attitudes toward evidence based nursing. **Subjects and Methods:** A quasi-experimental research design was conducted with a convenient sample of 30 head nurses at Beni-Suef university hospital. Data was collected using a developed evidence based nursing practice (EBNP) questionnaire. **Results:** The overall mean scores of head nurses knowledge, practice and attitudes toward evidence based practice in post and follow-up tests were higher than pretest. These improvements were statistically significant for knowledge (F: 781.95,  $P$ : 0.000), practice (F: 132.70,  $P$ : 0.000) and attitudes (F: 107.92,  $P$ : 0.000). **Conclusion:** Statistically significant improvements in head nurses' knowledge practice and attitudes toward evidence based nursing practice after implementing the training program. **Recommendation:** Continuous staff development regarding the process of evidence based practice and overcoming the barriers for implementing EBP perceived by head nurses.

**Keywords:** Evidence-based practice, attitudes, knowledge, head nurses, training program.

### Introduction

In today's healthcare environment, practicing nurses are in high demand to use current evidence in making clinical decisions relative to patient care. This can be best accomplished through thoughtful incorporation of the current research in the care of the patient along with nurses' expertise, patient preferences or values, and local context (Melnyk, Gallagher-Ford, Long, & Fineout Overholt, 2014). Evidence-based practice (EBP) is defined as a problem-solving approach in making clinical decisions within the healthcare organization and is attributed to improved clinical outcomes (e.g., decreased rates of hospital infections, falls, and pressure ulcers), functional outcomes (e.g., increased performance of daily activities), quality of life outcomes (e.g., enhanced physical and mental health), and economic outcomes e.g., reduced healthcare costs



(Dang & Dearholt, 2017). Additionally, EBP enhances patients' access to healthcare information regarding the best treatment and provides opportunities for highly personalized, quality, and safe nursing care (Melnyk & Gallagher-Ford, 2015).

Evidence based practice informs and supports clinical, administrative and educational decision-making through combining research findings, organizational experiences (including quality improvement), clinical expertise, expert opinion, and patient preferences altogether to ensure that clinical decisions are based on all available evidence so that efficacy and effectiveness of interventions can be obtained. Although there is an explosion of scientific evidence available to guide clinical practice, the implementation of evidence-based care by health professionals is typically not the norm in many healthcare systems worldwide (Rojjanasrirat and Rice, 2017).

On a daily basis, nurse practitioners, nurses, physicians, pharmacists, and other healthcare professionals seek answers to numerous clinical questions. An evidence-based approach to care allows healthcare providers to access the best evidence to answer these pressing clinical questions in a timely fashion and to translate that evidence into clinical practice to improve patient care and outcomes. Without current best evidence, practice is rapidly outdated, often to the detriment of patients ((Menlyk, 2018). Using research evidence decreases the need for trial and error which may be time consuming and may be counterproductive. In any case, time is not spent on practices that may be ineffective or unnecessarily time intensive. Consumers are well informed about their options for healthcare and often resist the traditional paternalistic approach to health interventions. The public expects that care will be based on scientific evidence and believes that care processes should routinely lead to high quality outcomes that are physically and mentally desirable (Houser and Oman, 2011).

### **Significance of the Study**

Despite the multitude of positive outcomes associated with EBP and the strong desire of clinicians to be the recipient of evidence-based care, an alarming number of healthcare providers do not consistently implement EBP or follow evidence-based clinical practice guidelines. Findings from a survey to assess nurses' readiness to engage in EBP conducted by the Nursing Informatics Expert Panel of the American Academy of Nursing with a nationwide sample of 1,097 randomly selected registered nurses indicated that (a) almost half were not familiar with the term evidence-based practice, (b) more than half reported that they did not believe their colleagues use research findings in practice, (c) only 27% of the respondents had been taught how to use electronic databases, (d) most did not search information databases (e.g., Medline and CINAHL) to gather practice information, and (e) those who did search these resources did not believe they had adequate searching skills (Melnyk., Ford., & Overholt, 2014 &, Kelly, Turner, Speroni, 2013).

AbuRuz et al (2017), conducted a study about knowledge, attitude and practice of evidence based nursing practice recommended ongoing education for nurses and minimizing barriers to promote the use of evidence based nursing practice. Mohsen, Safaan and Okby (2016), conducted a study entitled nurses' perception and barriers for adoption of evidence based practice in primary care: bridging the gap, recommended education and training of evidence based nursing.



In Egypt, Mahmoud (2013) conducted a study about bachelor nurses' perception of the barriers and facilitators for implementing evidence based nursing practice recommended improving nursing attitude through increasing the awareness regarding evidence based nursing practice. The study also asserted that integration of research findings in to practice is now a necessity as it provides the best scientific evidenced for practice, which help to improve the quality of patient care and outcomes. So, it is important for nurses to become familiar with the available evidence and its application to daily patient care. Therefore, this study had a significant importance as it examined the effect of evidence based nursing training program on head nurses' knowledge practice and attitude toward evidence based nursing.

### **Aim of the Study**

The current study aimed at examining the effect of evidence based nursing training program on head nurses' knowledge, practice and attitudes toward evidence based nursing .

### **Research Hypotheses**

Based on the literature review and theoretical framework, the following hypotheses were developed to guide the research study:

H1: There is a difference in head nurses knowledge scores of evidence based nursing after the program implementation compared to before.

H2: There is a difference in head nurses practice scores of evidence based nursing after the program implementation compared to before.

H3: There is a difference in head nurses attitudes toward evidence based nursing scores after the program implementation compared to before.

### **Research Design**

Quasi-experimental design with one group pretest-posttests was used to achieve the aim of the current study.

### **Theoretical Framework**

Rogers's theory of Diffusion of Innovations was used as a theoretical framework for the study. Diffusion is seen by Rogers as the process by which an innovation is communicated over time through a social system, and the main elements of diffusion theory are innovation, communication channels, time and the social system. As applied to EBP, research findings or evidence represent the innovation, the report or presentation of the research findings are the communication and the healthcare setting represents the social system. The innovation- decision process involves knowledge, persuasion, decision, implementation and confirmation. The characteristics of an innovation influence how that innovation is perceived and ultimately adopted or rejected (Rogers 2003).



## Setting

The study was carried out at a Beni-Suef university hospital. It is a free service hospital for all departments with a wide range of ambulatory care services such as outpatient, pharmacy, emergency, X-ray, physiotherapy and paramedical services such as dietary, laundry, and maintenance. It consists of (36) units. Its bed capacity (497 beds). It provides care for patient with different specialties like Medicine (General, Rheumatoid, and Neurology), Surgery (General, Neuro-Spine, Cardio-Thoracic, Plastic, Orthopaedic, Nephrology, Ophthalmology, Andrology, Obesetitric and Gynecology), Cardiology, Oncology, Critical Care, Tropical and Chest .

## Sample

A convenient sample of 30 head nurses was included in the study. The inclusion criteria were head nurses (male/female) of all hospital units who had at least two years' experience in the nursing field. Head nurses who do not meet these criteria were excluded.

## Data Collection Tool

Evidence based nursing practice (EBNP) questionnaire was developed by the investigator based on revision of the work of Kee-Hsin Chen, Pei-Chuan Tzeng, Tzu-Hsuan Chen, Ken. Kuo, Hsueh-Erh Liu, and Chieh-feng Chen (2014) and Upton and Upton (2006) and on extensive review of related literature. It consists of five dimensions; the first dimension: includes personal characteristics (e.g code, age, marital status, etc.). The second dimension: includes questions about evidence based knowledge (25 items). The third dimension: includes questions about practices of evidence based nursing (9 items). The fourth dimension: includes questions about attitudes toward evidence-based nursing (11 items). The fifth dimension: includes questions about barriers of implementing evidence based nursing practice (16 items total).

### Scoring system of the tools:

For knowledge dimension: The dimension is composed of 25 items; each item is scored either zero for incorrect answer or one for correct answer. Total score of the dimension was computed and the level of the knowledge for head nurses was described as: Excellent: 85%-100%, Very good: 70% < 85%, Good: 55%- < 70%, Fair: 50%- < 55%, and Poor: < 50. For practice dimension: The dimension is composed of nine items. It is five point likert scale ranging from (1) for never to (5) for frequently. High scores mean good practice of EBP while low scores mean poor practices of EBP. Total score of the dimension was computed and the level of the practice for head nurses was described as: Low (<35%), Moderate (35-50%) and High (>50%). For attitude dimension: It is composed of 11 items. It is three point likert scale; ranging (1) for disagree and (3) for agree. High score means positive attitude toward EBP while low scores means negative attitude toward EBP. Total score of the dimension was computed and the level of attitude for head nurses will be described as: Negative (<80%) and Positive ( $\geq$ 80%) For barrier dimension: It is composed of 13 items. It is three point likert scale; ranging (1) for disagree and (3) for agree. High score means



high agreement with the barriers toward EBP while low scores mean low agreement with the barriers toward EBP.

### **Pilot Study**

A pilot study was conducted on 10% of head nurses in the studied hospital to assess the clarity, objectivity, applicability, and adequacy, determine possible problems in the instrument and to determine time consumed in answering the tool .

### **Validity and Reliability**

Validity of the data collection tools was tested by five experts; one from faculty of nursing at Beni-Suef University and the others from faculty of nursing at Cairo University who assessed the content, clarity, applicability, and adequacy of the tools. Then, reliability of the tools was tested using cronbach's alpha coefficient which was (0.827) which is a good score for reliability.

### **Ethical Consideration**

An official permission was obtained from the ethical research committee of the faculty of nursing, Cairo University. Each head nurse was informed about the purpose of the study and its importance. The investigator also emphasized that participation in the study is entirely voluntary and possibility to withdraw at any time without explanation of the cause. Confidentiality was assured through coding of the data. An informed written consent was obtained from the head nurses who met the criteria of selection and accepted to be included in the study.

### **Data Collection Procedure**

Official permissions from the medical and nursing manager of Beni-Suef university hospital were obtained. All head nurses were invited to participate in the study. The purpose and nature of the study was explained to each participant individually and a written informed consent was obtained. The investigator informed them that participation is voluntary and the possibility of withdrawing at any time. Confidentiality of the information was assured. Based on theoretical framework, the study was conducted in the following phases :

**Assessment Phase :( Knowledge Phase):** In this phase, the investigator developed study tools based on the literature review, tools validation, pilot study, reliability were done. Then the investigator prepared a list of head nurses number and their distribution in the selected setting who fulfilled the inclusion criteria. Prior implementation of the program, the investigator assessed head nurses knowledge, practice, attitudes and barriers toward implementing evidence based nursing practice using self-administered questionnaires. Based on the result of the assessment, the program was designed

**Planning Phase (Persuasion and Decision Evaluation):** The results obtained from the initial assessment were analyzed, and then educational needs were delineated accordingly. The training program was designed by the investigator. The program aims at improving head nurses' knowledge, practice and attitudes toward evidence based nursing. To fulfill this aim, the program covered the following topics:



Session 1: origin, definition, types and importance of evidence based nursing practice.

Session 2: evidence based practice process.

Session 3: asking searchable answerable clinical questions.

Session 4: finding relevant evidence to answer clinical questions.

Session 5: critical appraisal of evidence.

Session 6: implementing evidence in the clinical setting.

Session 7: models for implementing evidence based practice in the clinical setting.

Session 8: overcoming barriers implementing evidence based practice in the clinical setting .

**Implementation phase:** After designing the program, the investigator implemented it for head nurses. The investigator coordinated the training sessions' schedules with nursing director and head nurses and the suitable schedules were developed according to units' activities to ensure their attendance and not interrupt the organization of work. The training sessions were conducted in the hospital training class.

**Evaluation and Follow Up phase (Confirmation and Adoption):** To evaluate the impact of the program, the same previous evidence based nursing practice questionnaires were utilized immediately after finishing the program and three months later to assess the sustainability of the training program.

### Statistical Design

The collected data were coded and entered into statistical package for social sciences (SPSS 22.0). Data were presented using descriptive statistics in the form of frequencies and percentages for categorical variables. Means and standard deviations were used for continuous variables. ANOVA and chi-square tests were used for testing the differences between scores of pre and posttests.



## Results

Table (1): description of the personal data of study sample (n=30)

| Item  | No. | %    |
|---|-----|------|
| <b>Gender:</b>                                  |     |      |
| ▪ Male  | 2   | 6.7  |
| ▪ Female  | 28  | 93.3 |
| <b>Age:</b>                                     |     |      |
| ▪ Less than 20 yrs.                             | 0   | 0.00 |
| ▪ 20<25 yrs.                                    | 8   | 26.7 |
| ▪ 25<30 yrs.                                    | 13  | 43.3 |
| ▪ 30<35 yrs.                                    | 6   | 20   |
| ▪ 35<40 yrs.                                    | 3   | 10   |
| <b>Marital Status:</b>                          |     |      |
| ▪ Single  | 12  | 40   |
| ▪ Married                                       | 18  | 60   |
| <b>Educational Level</b>                        |     |      |
| ▪ Master's Degree in nursing                    | 11  | 36.7 |
| ▪ Bachelor's Degree in nursing                  | 17  | 56.7 |
| ▪ Associate technical diploma in nursing        | 2   | 6.6  |
| <b>Years of experience within the hospital:</b> |     |      |
| ▪ 2<5yrs.                                       | 10  | 33.3 |
| ▪ 5<8yrs.                                       | 8   | 26.6 |
| ▪ 8 yrs. and more                               | 12  | 40.1 |
| <b>Participation in nursing research:</b>       |     |      |
| ▪ Yes   | 10  | 33.3 |
| ▪ No  | 20  | 66.7 |

Table 1 summarized the findings related to the participant's personal data. The majority of head nurses (93.3%) were female. More than half of them (60%) were married. About half of head nurses (43.3%) were aged between twenty five and thirty year. More than half of them (56.7%) had Bachelor's Degrees in nursing and more than one quarter (36.7%) had Master's Degree in nursing. The majority of head nurses (40.1%) had experience of 8 years and more in nursing. More than two thirds of head nurses (66.7%) not participated in nursing research.



**Table (2) Comparison between the overall mean scores of head nurses' knowledge about evidence-based practice ( $n=30$ ).**

| Time      | Knowledge  | F-value    | <i>p</i> -value |
|-----------|------------|------------|-----------------|
|           | Mean±SD    | df (2, 58) |                 |
| Pretest   | 8.26±2.14  | 781.95     | 0.000           |
| Posttest  | 16.70±2.50 |            |                 |
| Follow-Up | 19.76±2.09 |            |                 |

Table 2 displayed comparisons between the overall mean scores of head nurses' knowledge about evidence based nursing practice. The overall mean score of pretest was (8.26) while the mean score of posttest and follow-up was (16.70) and (19.76) respectively. The mean scores of both posttest and follow-up were higher than pretest. Using repeated measures ANOVA test determined that there was a significant statistical difference between the measurements (F: 781.95 and *p*-value: 0.000). Using bonferroni test for post hoc, displayed a significant statistical difference across the three measurements. The follow-up's mean score of head nurses' knowledge was higher than both pre and posttests.

**Table (3) Comparison between the overall mean scores of head nurses' practice of evidence-based nursing ( $n=30$ ).**

| Time      | Practice   | F-value    | <i>p</i> -value |
|-----------|------------|------------|-----------------|
|           | Mean±SD    | df (2, 58) |                 |
| Pretest   | 18.93±7.76 | 132.70     | 0.000           |
| Posttest  | 25.76±6.12 |            |                 |
| Follow-Up | 31.86±5.36 |            |                 |

Table 3 illustrated the comparison between head nurses' overall mean scores of practice across the three measurements: pre, post and follow-up. The overall mean score of pretest was (18.93) while the mean score of posttest and follow-up was (25.76) and (31.86) respectively. The mean scores of both posttest and follow-up were higher than pretest. Using repeated measures ANOVA test, there was a significant statistical difference between the measurements (F: 132.70 and *p*-value: 0.000). Using bonferroni test for post hoc, displayed a significant statistical difference across the three measurements. The follow-up's mean score of head nurses' practices was higher than both pre and posttests.





**Table (4) Comparison between the overall mean scores of head nurses' attitude toward evidence-based nursing practice ( $n=30$ ).**

| Time      | Attitudes  | F-value<br>df (2, 58) | p-value |
|-----------|------------|-----------------------|---------|
|           | Mean±SD    |                       |         |
| Pretest   | 24.33±3.25 | 107.92                | 0.000   |
| Posttest  | 29.26±2.57 |                       |         |
| Follow-Up | 30.93±1.83 |                       |         |

Table 4 summarized the comparison between head nurses' overall mean scores of attitudes toward evidence-based practice across the three measurements: pre, post and follow-up. The overall mean score of pretest was (24.33) while the mean score of posttest and follow-up was (29.26) and (30.93) respectively. The mean scores of both posttest and follow-up were higher than pretest. Using repeated measures ANOVA test, there was a significant statistical difference between the measurements (F: 107.92 and  $p$ -value: 0.000). Using bonferroni test for post hoc, displayed a significant statistical difference across the three measurements. The follow-up's mean score of head nurses' attitudes toward evidence-based practice was higher than both pre and posttests.

**Table (5) Mean scores of head nurses perception of the organizational barriers of implementing evidence based practice ( $n=30$ )**

| Barriers to implement Evidence-Based Nursing |  |                        |
|--|--|------------------------|
| Organizational level:                        |  | Mean ± SD              |
| 1  | Insufficient human resources in the hospital                                 | 2.80±0.48              |
| 2  | Access to research evidence is poor (or no computers, or data bases access). | 2.80±0.40              |
| 3  | No adequate resources for implementation                                     | 2.76±0.56              |
| 4  | Research reports/articles are not readily available.                         | 2.73±0.58              |
| 5  | Heavy workload in the hospital   | 2.50±0.73              |
| 6  | The hospital has no disseminating research center.                           | 2.50±0.73              |
| 7  | Nurse managers are not supportive to implementing EBNP.                      | 2.43±0.77              |
| 8  | Resistance from hospital administration to change nursing practices.         | 2.40±0.85              |
|  | Overall mean score (mean score percentage).                                  | 20.93±3.17<br>(87.20%) |



Table 5 displayed the mean scores of head nurses perception of the organizational barriers of implementing evidence based nursing practice. The overall mean score was (20.93) with mean percentage (87.20%). The highest mean score was for both insufficient human resources and poor access to research evidence (2.80) while the lowest mean score was for resistance of hospital administration to change nursing practice (2.40).

**Table (6) Mean scores of head nurses perception of the individual barriers of implementing evidence based practice (n=30)**

| Individual level:                           |   | Mean ± SD              |
|---|---|------------------------|
| 1   | I do not have time to read research.                              | 2.60±0.62              |
| 2   | I am lacking knowledge of the research.                           | 2.53±0.68              |
| 3   | I am lacking knowledge of the process and evidence based nursing. | 2.63±0.66              |
| 4   | I do not have autonomy to change practice                         | 2.36±0.85              |
| 5   | I am lacking proficiency in English language.                     | 2.20±0.84              |
| 6   | I am lacking the ability to deal with computer                    | 2.36±0.76              |
| 7   | I hold on to traditional ways of practice.                        | 2.53±0.57              |
| 8   | I don't care about new ways of practice.                          | 1.70±0.87              |
| Overall mean score (mean score percentage). |   | 18.91±5.24<br>(78.79%) |

Table 6 illustrated the mean scores of head nurses perception of the individual barriers of implementing evidence based practice. The overall mean score was (18.91) with mean percentage (78.79%). The highest mean score was for lacking knowledge of the process of evidence based nursing (2.63) while the lowest mean score was for not caring about new ways of practice (1.70).

### Discussion

EBP informs and supports clinical, administrative and educational decision-making through combining research findings, organizational experiences (including quality improvement), clinical expertise, expert opinion, and patient preferences altogether to ensure that clinical decisions are based on all available evidence so that efficacy and effectiveness of interventions can be obtained. Although there is an explosion of scientific evidence available to guide clinical practice, the implementation of evidence-based care by health professionals is typically not the norm in many healthcare systems worldwide (Davidson et al., 2013). Therefore, the current study aimed at examining the effect of evidence based nursing training program on head nurses' knowledge, practice and attitudes toward evidence based nursing .



According to this study finding, *for knowledge*, the overall mean scores of both posttest and follow-up were higher than pretest. There was a significant statistical improvement across the measurements. The low scores of pretests could be due to lack of head nurses knowledge about EBP. This improvement could be due to the impact of the training program conducted by the investigator. The findings of the study were in agreement with Eldeeb and Bakeer (2016) who found that there were statistical significant improvements in their participant' knowledge of evidence based practice in the posttest in comparison to pretest. Similarly, Ramos-Morcillo et al., (2015) reported statistical significant difference in their participant' knowledge of evidence based practice across measurements. Also Mena-Tudela et al., (2018) found significant differences among the three measurements between the baseline and the intermediate measurements and between the baseline and the final measurements but not between the intermediate and the final measurements. Rojjanasrirat and Rice (2017) reported that participants' overall mean scores of evidence based practice knowledge were not significantly improved after taking the EBP course.

*For practice level*, half of head nurses had low practice levels in the pretest while more than half of them had moderate practice levels in the posttest and the majority of them had high practice levels in follow-up. This low score in pretest would be due to lack of resources to access evidences and increased work load. While this improvement could be due to the impact of the training program conducted by the investigator. There were significant statistical differences across the levels of head nurses' practice through the three measurements. The findings of the study were in agreement Ramos-Morcillo et al., (2015) who reported statistical significant difference in their participants' level of practice of evidence based practice across measurements. Also Mena-Tudela et al., (2018) found significant differences in participants' practice level among the three measurements between the baseline and the intermediate measurements and between the baseline and the final measurements. Rojjanasrirat and Rice (2017) reported that participants' mean scores of evidence based practice levels were significantly improved after taking the EBP course.

*For attitudes level*, more than two thirds of head nurses had negative attitudes levels toward evidence-based practice in the pretest while more than three quarters of them had positive attitudes levels in the posttest and the majority of them had positive attitudes levels in follow-up. The negative attitudes in pretests could be due to lack of knowledge about EBP. This improvement in attitudes could be due to the impact of the training program conducted by the investigator. There were significant statistical differences across the levels of head nurses' attitudes toward evidence-based practice through the three measurements. The findings of the study were in agreement with Eldeeb and Bakeer (2016) who found that there were statistical significant improvements in their participant' attitude toward evidence based practice in the posttest in comparison to pretest.

Similarly, Ramos-Morcillo et al., (2015) reported statistical significant difference in their participants' attitude toward evidence based practice across measurements. Also Mena-Tudela et al., (2018) found significant differences in participants' attitude levels among the three measurements between the baseline and the intermediate measurements and between the baseline and the final measurements. Rojjanasrirat and Rice (2017) reported that participants' mean scores of attitudes



toward evidence based practice were not significantly improved after taking the EBP course.

### Recommendations

The study recommended the manager of Beni-Sueif university hospital to incorporate the application of evidence based nursing practice into hospital routine by:

- Establishing evidence based nursing practice policies and guidelines for implementation.
- Overcoming the barriers for implementing evidence based nursing practice perceived by head nurses.
- Continuous staff development regarding the process of evidence based practice.

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