

Effect of Nursing Handoff Educational Bundle on Nurse Interns' Handoff knowledge and Communication Competence

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Abstract

Background: With the growing complexity of health care, the ability to communicate becomes essential within the health team members. Nurses interns' may lacked experiences with important communication skills and are fearful of making mistakes which may affect patient safety. One way to improve handoff communication skill among nurses interns' is through education. **Aim:** This study aimed to assess the effect of nursing handoff educational bundle on nurse interns' knowledge and communication competence. **Research design:** A quasi experimental one group pre- posttest design used to conduct this study. **Setting:** The study was conducted at Kafr El-Sheikh University Hospital .**Subjects:** Included(95)nurse interns" enrolled in internship training year. **Tools:** the data for this study were collected through two tools, namely handoff knowledge questionnaire and handoff communication competence observational checklist. **Results :** About one third (30.5%) of nurse interns had satisfactory knowledge regarding nursing handoff before the intervention .This increased to (91.6%) post intervention and slightly declined to (87.4%) in follow up phase. There were a highly statistically significant improvement in all handoff communication competence dimensions in post and follow up phases ($P < 0.001$) as compared to pre intervention phase. **Conclusion:** The implementation of nursing handoff educational bundle was effective in improving nurse intern's handoff knowledge and communication competence. **Recommendation:** Nurse interns' handoff knowledge should be periodically refreshed through workshops and seminars in their training settings .

Key words: Bundle, communication competence, Nursing handoff, , Nurse interns,.

Introduction

Today's healthcare system is characterized by increasing fragmentation across multiple settings and providers. continuity of care was one of the top concerns of patients regarding hospital care. These concerns are validated by recent accounts of information loss and communication failures between primary care physicians, hospital-based physicians, specialists, nurses and others in routine patient care activities, highlighting the complexity of maintaining continuity of care across a specialized landscape of physician providers. Ironically, changes in scheduling and staffing of health professionals designed to improve patient safety also result in increased discontinuity of care and miscommunication between healthcare providers (*Spencer & Punia, 2021*).

According to (*Fuchshuber & Greif, 2022*) stated that communication in healthcare setting is a vital link in delivering comprehensive patient care. As immediate and vital caregivers, nurses need to be proficient in communication skills and be able to effectively

communicate with patients and other health team members.

Communication can positively impact the perception and experiences of patients and members of the health care team. Communication among the team members foster better coordination, promote excellence, diminish medical errors and improve long term outcomes for patients and the organization. *National Patient Safety Goals (2018)* proposed by *The Joint Commission (2014)* highlights the importance of communication among the caregivers. Breakdown in communication was the root cause of sentinel events reported to the Joint Commission in the United States of America.

The main aim of nursing handoff is to transfer accurate, relevant, and current clinical information about the patient which is necessary for continuity of care. Ideally, the aim of the handoff process is to achieve effective, safe, and high quality communication when the responsibility for the patient's care is transferred from one nurse to another. Unfortunately, it is becoming increasingly

apparent that any defect in communication system, in hospitals, compromises the patient safety. Furthermore, Incomplete, confusing, unclear, misunderstood, and unstandardized, communication is ineffective and dangerous. Ineffective handoff communication may lead to serious consequences such as incorrect patient treatment, delays in diagnosis and treatment, unnecessary tests and procedures, prolonged hospitalization, patient suffering and malpractice claims (*Ernst et al., 2018*)

The change of shift report is critical process in which one nurse provide critical clinical information to the next incoming nurse, during this process, critical information about the patient condition and treatment plan must be accurately communicated, patient safety and continuity of care are also dependent on communication of patient status during handoff .hand off, handover, sign off and inter shift report, nurse- to -nurse change of shift handoff occur when nurses share related information about their patient to allow continuity of patient care (*El-Guindy et al., 2022*).

handoff can defined as “the exchange between health professionals of information about a patient accompanying either a transfer of control over, or of responsibility for the patient (*Burgess et al., 2020*).

Handoff is a complex process which is passing on the authority, responsibility, and accountability in order to ensure the continuity of care and not just merely passing on specific information. The effectiveness of handoff invariably depends on the communication between the sender and receiver. In a complex health care settings, handoff occurs numerous times. The frequency of these handoffs increases the chance of losing a critical piece of information during the transition. In fact, poor quality and incomplete handoffs play a role in 80% of preventable adverse events (*Kumar, 2018*).

Nursing is a profession that has its own defining characteristics. A profession, generally speaking, is characterized by the use of standardized knowledge that has three components: action that is taken based on underlying basic knowledge or discipline, practical knowledge to solve every day's problems, and the knowledge based on skills

and attitudes to serve the clients. The characteristics of the nursing profession include a strong commitment, a long-term and regular education, a special body of knowledge, skills, ethics, and values, an autonomous power for standard service and the existence of professional associations (*Hurley et al., 2022*).

Nurse interns should learn theoretical and scientific information, develop specific psychomotor and technical skills and gain competence about communication, cultural competence, professional values and ethical behavior to face the complexity of the real clinical environment (*Toprak et al., 2022*).

According to (*Banerjee, 2017*) the five general competencies and skills for nursing education are decision making, leadership, administration and management, continuing education, and communication .Communication stands out among these competences because nurses' practice is centered on the interpersonal relationship with patients, the nursing team and the multi professional team, both to perform care activities and to manage care and health services

Shift handover is a common tradition among nurses; however, standard and effective handover and information communication skills are not taught formally during nursing academic education; rather, nurses learn such skills during their daily practice and from more experienced nurses. Moreover from the previous researcher's experiences as responsible for supervision of student interns during internship year, it was observed that many handoff communication problems were caused by nurse's interns in different shifts. In addition there is comparably limited literature describing the effects of handoff education on nursing student handoff communication skills. So it is hoped that these handoff educational sessions will enhance and improve nurse' s interns' handoff knowledge, and communication competence. (*Ghazy & El Shahat, 2021*).

Significance of the study:

During the supervision of nurse interns training, the researcher observed that nurse's interns rarely know about handoff communication and its importance ,Student nurse's interns may lacked experiences with important communication skills and are fearful of making mistakes which may affect patient

safety. One way to improve handoff communication skill among nurse's interns is through education. Nurse intern's must be prepared for and learn the process of effective communication that promotes patient safety.

The knowledge and skill to carry out a handoff report may be briefly addressed in the classroom or simulation laboratory setting but is mastered from the observation of mentors and peers. Moreover students interns are exposed to multiple clinical sites and witness variability in handoff practices among different institutions. Following graduation, new nurses rarely receive formalized handoff education. Instead, they often learn this important safety skill by modeling equally unskilled peers. So the present study will be conducted to assess the effect of nursing handoff educational bundle on nurse interns' knowledge sharing

Aim Of The Study

This study aimed to:

- The aim of present study is to assess the effect of nursing handoff educational bundle on nurse interns' knowledge and communication competence.

Research Hypotheses

The nursing handoff educational bundle will improve nurse interns' knowledge and communication competence

SUBJECTS AND METHODS

A- Research design:

A quasi experimental one group pre-posttest design was used to conduct this study .

B- Setting:

The study was conducted at Kafr Elsheikh University Hospital which affiliated to kafr Elsheikh University.

C- Subject:

The subjects for the study consisted of nurse interns enrolled in internship training year in different units at the above mentioned setting during the academic year 2021/2022.

The sample size

Was calculated to detect an improvement in the scores of nurse interns' knowledge sharing scores from a baseline 3.34/5.00 (Yoo, 2019) with a moderate effect size (0.50) based on Hulley et al (2013), using a 1.15 standard deviation at 95% level of confidence and 80% power. The required sample size is 85 nurse interns (Chow et al.,

2008). This was increased to 95 to compensate for an expected dropout rate of around 10%.

Sampling technique

Stratified random sampling was used in this study

D-Tools of data collection

Tool (1): Handoff Knowledge Questionnaire: This tool was developed by *Seada and Bayoumy,(2017)* and modified by the researcher .It consisted of two parts as the following:

Part 1:Personal Data Sheet

It included the following data: age, sex, year of graduation, type of education before joining the faculty ,previous handoff knowledge, working shift , current clinical practice unit and previous training experiences years.

Part II: handoff Knowledge Questionnaire

It is aimed to assess nurse interns' knowledge about handoff. It consisted of (20) Multiple-choice questions, covering the following: Handoff definition and related concepts , importance and benefits of handoff , methods and structure of handoff , and Handoff communication tools .Those multiple choice questions distributed as five MCQ for each area.

Scoring System for handoff knowledge questionnaire: for each question (score one) was used for correct answer and (zero) for incorrect answer. The scoring levels were arranged as follow 60%and more was considered satisfactory knowledge. Less than 60%is for unsatisfactory knowledge

Tool (2): Handoff Communication Competence Observational checklist

This tool was developed by Cegala, Coleman, & Turner(1998) and modified by *Seada, and Bayoumy,(2017)*.It aimed to assess hand-off communication competence of nurse's interns at the patient bedside as a one-way report from the outgoing to the oncoming nurse interns. Its total items were (37items) under the following subscales: information giving (10 items), facilitating information seeking (5 items), information verifying (5 items), Role of oncoming nurse (5items) , socio-emotional communication (8items) and written handoff communication (4 items)

Scoring System of handoff communication competence observational checklist: Responses of participants were measured as follows:(1) for done and (zero) for not done. The total score is 37,the score of 22.1 (59.9%) or below indicated poor competence, the score from 22.2-27.3 (60-74%) indicated moderate competence and finally score of 27.7 and more (75% and more) indicated high competence. It was utilized during different periods of assessment

Administrative design:

Prior study conduction , an approval was obtained from the dean of faculty of nursing , Ain Shams University . The researcher was met with the dean of Faculty of Nursing Kafr Elshaikh University and the nursing director of Kafr El Elshaikh university hospital. The purpose of the study and its procedure was explained to them to gain their approval..

Ethical consideration:

The ethical research considerations in this study include the following:

1. A written initial approval was obtained from the research ethical committee at the faculty of nursing, Ain Shams University.
2. Individual oral consent was obtained from each participating nurse interns after explaining the nature and benefits of the study.
3. The researcher cleared the objectives and aim of the study to participating nurse interns.
4. The researcher maintained anonymity and confidentiality of participating nurse interns.
5. Participating nurse interns were allowed to choose to participate or not in the study, and given the right to withdraw at any time from the study without giving reasons.

Operational design

The operational design includes preparatory phase, pilot study, and field work.

Preparatory phase:

The researcher conducted a comprehensive review of current and past national and international related literature concerning the subjects of the study, using textbooks, articles, journals, and websites. This review was helpful to the researcher in designing of the educational bundle, and to be more

acquainted with various aspects of the study topics.

Tool Reliability and Validity

Handoff communication competence observational checklist was tested for its reliability, the measure demonstrated good internal consistency ($\alpha = .95$). The tools contents were developed and tested for its content validity through five expertise from nursing administration department.

Pilot study:

A pilot study was carried out on 10% of nurse interns that constituted 9 nurse interns of the main study subjects .It was done to examine clarity, feasibility and applicability of the tools and their relevance to study and also to estimate time needed for filling them in. Since there weren't any changes made in the tools, the pilot study subjects were included in the main study sample

Field work:

The actual field work of the study started from the beginning of January and ended on July 2022. It included preliminary assessment, planning, implementation, evaluation and follow up phases .

Assessment stage: This phase is aimed at identifying the training needs which include pretest of nurse intern's knowledge and competences using data collection tools. The data was collected through one month . In this stage the researcher distributed the handoff knowledge questionnaire sheet.

The participant filled the questionnaire and they completed sheets in the same day at 20-30 minutes. **Planning stage:** Based on the analysis of the data obtained from the assessment phase and pertinent literature the researcher developed the handoff educational bundle the investigator pointed out the required handoff knowledge and designing of the hand out for the handoff bundle was done. The schedule was set , time of implementation was discussed and the place to carry out the program was booked,. The audiovisual aids and teaching methods were selected . This phase took one month started from beginning of February to the beginning of march

Implementation stage: The educational bundle was implemented to the nurse interns who are trained at Kafr Elshikh University hospital . The educational bundle was

implemented in small group sessions . It was more focused on practical and hand- on training along with a theoretical background for the clinical competencies The training methods involved group discussion, problem based education, case studies , scenarios , role play and work in small groups. The total program was 28 hours (four weeks, two hours/day) offered in four days weekly. The program was extended for 2 month; started from the beginning of March to the end of April 2022. Each session conducted through two hours; one hours for theory and one hours for practice and started at 12.00 am to 2:00 pm. The time and date of sessions were flexible according to nurses interns scheduling and time of care provided. The researcher divided the nurse interns into four groups (three groups consisted of twenty five nurse interne and one group consisted of twenty).

Evaluation stage: This stage performed after implementing the educational bundle immediately using the same data collection tools used in the assessment phase for measuring knowledge and two weeks later for measuring handoff communication competence.

Follow-up stage: This stage performed after three months from implementation of the educational bundle using the same evaluation tools used in the assessment phase The handoff communication competence was done three times after implementation of educational bundle in different shifts and taking the mean of them .

Statistical design

- The collected data were coded and entered into the statistical package for the social science (SPSS Version 20) statistical software package . Data were collected ,coded and Entered into a computer , after that it were reviewed for coding and entering errors .Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means \pm standard deviations for quantitative variables. Qualitative variables were compared using chi-square test, while Paired t-test was used to compare between two means in the same studied group pre and post intervention & between two means post intervention and during follow up phase. paired t- test was used for

comparison between two variables with continuous data . correlation co-efficient test was used to test for correlation between two variables with continuous data.

- The reliability (internal consistency)of the knowledge questionnaire ..Correlation Coefficient (r) test was used to test the closeness of association between two variables. Also, In order to identify the independent predictors of knowledge and competency, multiple linear regression analysis was used and analysis of variance for the full regression models was done .So, the p-value was considered significant as the following: Probability (P-value)
- P-value <0.05 was considered significant.
- P-value <0.001 was considered as highly significant.
- P-value >0.05 was considered insignificant

Results

Part (I): Socio-Demographic Characteristics of Studied subject:

Table (1) The study sample consisted of(95)nurse interns whose age ranged between 22 to 24years as shown in Table 1. 73.7% of them were female, the majority of them (73.7%) had secondary school., nearly more than half (64.2%) of them had no previous work experiences and the majority of them(78.9%) had information about clinical hand off communication

Table (2): Illustrated that there were highly statistically significant improvement in nurse interns knowledge regarding all handoff items in the post and follow up phases ($p < 0.001$), as compared to the pre intervention phase.

Table 3: showed that there were a highly statistically significant improvement in the post and follow up phases ($P < 0.001$) as compared to pre intervention phase in all handoff communication competence dimensions

Figure 1: showed that only (30.5%) of nurse interns had satisfactory knowledge regarding nursing handoff before the intervention . This increased to (91.6%) post intervention and slightly declined to (87.4%) in the following up phase

Figure 3 :Illustrated that only (8.4%) of nurse interns had high competence before the intervention. This increased to (92.6%) post intervention and slightly declined to (68.4%) in the following up phase

Table (1): Personal characteristics of the nurse interns in the study sample (n=95)

Personal date of nurse interns	N	%
Age (Years)		
22 - <23	22	23.2
23 - <24	55	57.9
24 - <25	18	18.9
Mean ±SD	22.9 ±0.6	
Gender		
Male	25	26.3
Female	70	73.7
Educational Level		
Secondary	70	73.7
Technical institute	25	26.3
Did you have previous work experiences during study years?		
Yes	34	35.8
No	61	64.2
Do you have information about clinical handoff communication		
Yes	75	78.9
No	20	21.1

Table (2): Nurse interns' knowledge about nursing handoff throughout the intervention phases (n=95)

Satisfactory knowledge of nursing handoff (60%)	Pre		Post		Follow-Up		X2 (P – Value) (Pre & Post)	X2 (P – Value) (Pre & Follow-up)
	N	%	N	%	N	%		
Handoff definition and related concepts	41	43.2	88	92.6	82	86.3	53.337 (<0.001**)	38.756 (<0.001**)
Importance and benefits of handoff	11	11.6	84	88.4	82	86.3	112.189 (<0.001**)	106.173 (<0.001**)
Methods and structure of handoff	41	43.2	87	91.6	83	87.4	50.660 (<0.001**)	40.953 (<0.001**)
Handoff communication tools	22	23.2	90	94.7	84	88.4	100.567 (<0.001**)	82.026 (<0.001**)

(*) Statistically significant at $p < 0.05$ (**) High Significant at $P < 0.01$

Table (3): Nurse interns' Handoff Communication Competence dimensions throughout the intervention phases (N=95)

handoff Communication Competence Dimensions	Pre-Intervention			Post-Intervention			Follow-Up			X2 (P – Value) (Pre & Post)	X2 (P – Value) (Pre & Follow)
	Po or %	Moder ate %	Hig h %	Po or %	Moder ate %	Hig h %	Po or %	Moder ate %	Hig h %		
	Information giving	73.7	21.1	5.3	0.0	8.4	91.6	9.5	25.3		
Information seeking	71.6	17.9	10.5	0.0	7.4	92.6	2.1	26.3	71.6	134.248 (<0.001 **)	106.880 (<0.001 **)
Information verifying	70.5	21.1	8.4	1.1	9.5	89.5	0.0	30.5	69.5	131.983 (<0.001 **)	114.112 (<0.001 **)
Role of oncoming nurse	70.5	16.8	12.6	0.0	6.3	93.7	11.6	24.2	64.2	130.248 (<0.001 **)	74.351 (<0.001 **)
Socio emotional Communication	74.7	18.9	6.3	1.1	5.3	93.7	10.5	25.3	64.2	147.919 (<0.001 **)	91.944 (<0.001 **)
Written handoff	80.0	11.6	8.4	0.0	6.3	93.7	1.1	28.4	70.5	145.109 (<0.001 **)	126.202 (<0.001 **)

(*) Statistically significant at p<0.05 (**) High Significant at P < 0.001

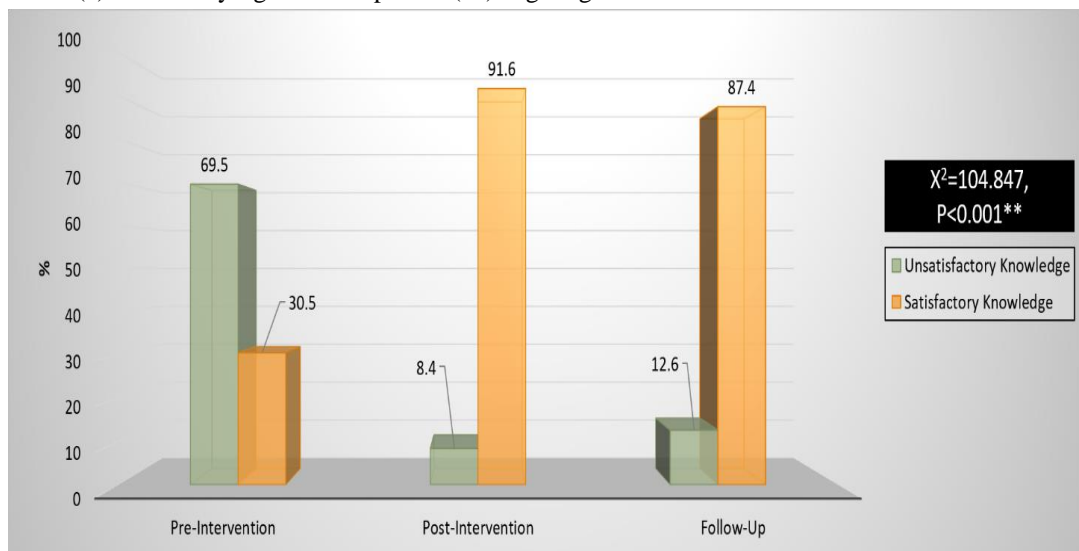


Figure 1. Total Nurse interns knowledge of nursing handoff throughout the intervention phases

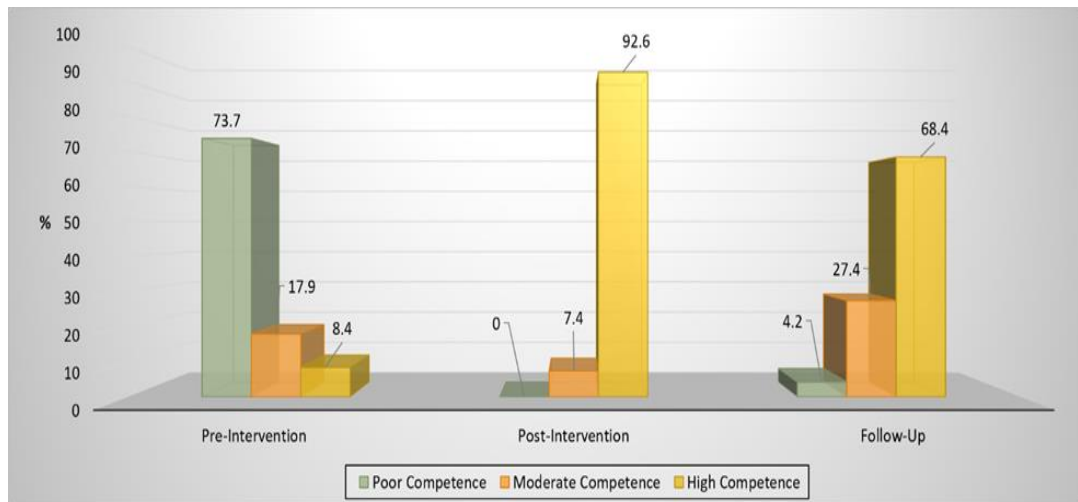


Figure 2. Total score of Nurse Interns Handoff Communication Competence throughout the intervention phases (n=95)

Discussion

The majority of the nurse interns had deficient handoff knowledge at the pre intervention phase. Thus, only one third of the study subjects were having satisfactory knowledge, such knowledge deficiency might be explained by the lack of sufficient information about nursing handoff communication in the curricula of nursing education, especially at their undergraduate level and the majority of them had no previous work experience during study years. This finding was similar to *Ghonem & El-Husany, (2023)* in a study about SBAR shift report training program and its effect on nurses' knowledge and practice in Egypt demonstrated that nurses' had low awareness of handoff shift reporting at pre training phase.

In this respect, *Avallone & Weideman, (2015)* in United States studied the evaluation of a nursing handoff educational bundle to improve nursing student handoff communications and reported that there was a significant training effect which was seen in the intervention group mean in both handoff provider and handoff recipient change scores at post-test, compared to the comparison group

From the investigators' point of view, engaging nurses interns in handoff educational program had a positive impact on increasing their knowledge as they became aware about essential concepts of nursing handoff, methods and structures, in addition they gain knowledge about

importance of proper handoff for them and for their patients and their healthcare settings. Moreover they became knowledgeable about socio-emotional communication as a core concept in interpersonal communication

Concerning the nurse interns handoff communication competencies, the study results revealed very low nurse interns handoff competencies at the pre intervention phase, thus the majority of them had poor competence especially in information giving, socio emotional communication and written handoff communication dimension which are essential competences that any nurse should master

In this respect *Seada & Bayoumy, (2017)* in a study in Cairo university measured the effectiveness of handoff educational program on nurses interns' knowledge, and communication competence which revealed that there was a statistical significant differences in nurses interns mean scores regarding most of dimensions of handoff communication competencies three months post program relative to pre and immediately post program period. In addition there was a marked improvement in their levels of total handoff communication competences three months post program as all of them scored high competencies. This result is consistent with *Elhanafy & Hammour, (2014)* in a study about the effect of educational sessions about effectiveness of handoff system for nurses on their knowledge and practice, they reported a statistical

significant difference at pre and post educational session regards the overall quality of handoffs received described as excellent or good.

Conclusion

The study results conduce to the conclusion that the nurse interns in the study setting have deficient knowledge about nursing handoff and poor level of handoff communication competencies. The implementation of nursing handoff educational bundle is very effective, although to a less extent, in improving nurse interns' handoff knowledge and competencies.

Recommendations

The result of this study projected the following recommendations:

- Nurse interns in the study setting and in similar ones need intensive training on nursing handoff to improve their related knowledge and competencies.
- Nurse interns handoff knowledge should be periodically refreshed through workshops and seminars in their training settings

References

- Avallone, M. A. & Weideman, Y. L. (2015).* A scoping review of communication tools applicable to patients and their primary care providers after discharge from hospital. *Patient Education and Counseling*, 104(7), 1681-1703.
- Banerjee, S.C., Manna, R., Coyle, N., Penn, S., Gallegos, T.E., Zaider, T., et al. (2017).* The implementation and evaluation of a communication skills training program for oncology nurses. *Translate Behavmed.*; 7(3):615-23. (cited)
- Burgess, A., van Diggele, C., Roberts, C., & Mellis, C. (2020).* Teaching clinical handover with ISBAR. *BMC medical education*, 20(2), 1-8.
- El-Guindy, H., Morsy El-Shahate, M., & Ahmed Abd Allah Mohamed, N. (2022).* Effectiveness of Educational Program on Nurses' Knowledge and Performance Regarding Shift Change Handoff and Its Effect on Continuity of Patient Care. *International Egyptian Journal of Nursing Sciences and Research*, 3(1), 192-205
- Elhanafy, E.Y., & Hammour, Z.E. (2014).* Effect of educational sessions about effectiveness of handoff system for nurses on their knowledge and practice. *The Egyptian Journal of Community Medicine*, 301(1923), 1-14.
- Ernst, K.M., McComb, S.A., & Ley, C. (2018).* Nurse-to-nurse shift handoffs on medical-surgical units: A process within the flow of nursing care. *Journal of Clinical Nursing*, 27(5-6), e1189-e1201
- Fuchshuber, P., & Greif, W. (2022).* Creating effective communication and teamwork for patient safety. In *The SAGES Manual of Quality, Outcomes and Patient Safety* (pp. 443-460). Cham: Springer International Publishing
- Ghonem, N. M. E. S., & El-Husany, W. A. (2023).* SBAR Shift Report Training Program and its Effect on Nurses' Knowledge and Practice and Their Perception of Shift Handoff Communication. *SAGE Open Nursing*, Volume 9: 1-10 journals.sagepub.com/home/son
- Ghazy, A. W., & El Shahat, H. (2021).* Effectiveness of internship program as perceived by intern nurses and its relation to their professional role at technical nursing institutes. *Port Said Scientific Journal of Nursing*, 8(1), 255-274
- Hurley, J., Lakeman, R., Linsley, P., Ramsay, M., & Mckenna-Lawson, S. (2022).* Utilizing the mental health nursing workforce: A scoping review of mental health nursing clinical roles and identities. *International Journal of Mental Health Nursing*, 31(4), 796-822
- Kumar, C. D., & Williams, D. A. (2018).* A Look Back. *Journal of Emergency Nursing*, 44(5), 512-513
- Seada, A, & Bayoumy, S. (2017):* Effectiveness of Handoff Educational Program on Nurses Interns' Knowledge, and Communication Competence, *American Journal of Nursing Science*, 6(6): 467-477
- Spencer, R. A., & Punia, H. S. (2021).* A scoping review of communication tools applicable to patients and their primary care providers after discharge from hospital. *Patient Education and Counseling*, 104(7), 1681-1703
- The Joint Commission (2014)* on Accreditation of Healthcare Organizations National Patient Safety Goals: critical access hospital and hospital national patient safety goals. Comprehensive Accreditation Manual for Hospitals.
- Toprak, F. U., Uysal, N., & Yilmaz, A. A. (2022).* Effect of Internship Program on the Caring Nurse-Patient Interaction. *International Journal of Caring Sciences*, 15(2), 1013