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# Effectiveness of Handoff Educational Program on Nurses Interns' Knowledge, and Communication Competence

**Abeer Mohamed Seada, Somaya Ahmed Bayoumy**

Department of Nursing Administration, Faculty of Nursing, Cairo University, Cairo, Egypt

**Email address:**

abeerseada@yahoo.com (A. M. Seada), somaya.aljazzar@gmail.com (S. A. Bayoumy)

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**Abstract:** With the growing complexity of health care, the ability to communicate becomes essential within the health team members. Health care organization has great expectations for new graduate nurses to communicate skillfully while promoting safe patient care. Student nurses interns may lack 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. This study was intended to examine the effectiveness of handoff educational program on nurse's interns' handoff knowledge, and communication competence. Quasi - experimental study design was utilized: The study was conducted in intensive care units which affiliated with Kaser El Ainy hospital where nurses interns were trained. Study sample composed of 30 nurses interns who were undertaking their internship year between 2016-2017. Data were collected through utilizing Handoff knowledge questionnaire that was developed by the researcher and Handoff communication competence observational checklist developed by [1] and modified by the researchers to measure hand-off communication competence of nurses interns during the process of bedside handover. Results revealed that there were statistical significant and marked improvement in nurses interns' levels of handoff knowledge dimensions as well as statistical significant differences in their mean scores of hand- off communication competence during different periods of assessment. The current study provide evidence that handoff educational program enhance nurses interns handoff communication competence. Handoff communication skills should taught formally during nursing academic education concerning the way that information is given, verified as well as all handoff communication competencies during process of patient bedside handoff. Future researches with larger sample sizes and multiple settings are recommended to substantially evaluate the effectiveness of educational program on handoff communication competencies.

**Keywords:** Handoff, Communication Competence, Nurses Interns, Educational Program

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## 1. Introduction

Communication is essential to human interactions, without it, people cannot relate to those around them, make their needs and concerns known, or make sense of what is happening to them [2]. Effective communication among nurses is essential to ensure patient safety and deliver high quality of care [3]. The transfer of essential information and the responsibility for care of the patient from one health care provider to another is an integral component of communication in health care. This critical transfer point is known as a handoff. Handoff contribution to healthcare quality is being increasingly recognized as evidence grows linking communication defects to patient safety lapses. The

Joint Commission, the body that accredits hospitals and other healthcare organizations in the United States, recognized that handoff standardization could improve communication quality; it designated handoff standardization as a national patient safety goal in 2006 [4].

Nurses constitute the largest proportion of the multidisciplinary team, their role being to ensure that consistent care and appropriate treatment are provided to patients for 24 hours a day. Effective communication and coordination, both within the nursing team and between the wider multidisciplinary team, are essential to the fulfillment of this role, and one method of facilitating this is through the deliverance of handover [5]. Nursing communication may occur anytime during the shift working hours. However, the

communication that occurs at shift change between the outgoing nurse (Sender) and incoming nurse (Receiver) is the most common form of communication among nurses, this way of communication is usually called the End of Shift Report [3]. The joint commission on accreditation of health care organization (JCAHO) defines handoff as "Interactive process of exchange patient specific information from one caregiver to another for the purpose of ensuring the continuity and safety of patient care" [6] [7]. Handoffs may also provide a positive form of stress relief and emotional support and promote team building or group cohesion. Ideally, each handoff is a conversation rather than a one way communication. Studies on information transfer consistently show that verbally transmitted information is liable to degradation and loss, so active engagement by the "recipient" is necessary to ensure adequate handoff [8] [9].

Multiple definitions of handoff are used to describe the event that occurs when the care of the patient is in transition between healthcare providers [3]. Patient's care handoffs is described as the exchange of patient's information between healthcare professionals, accompanying either a transfer of control or responsibility [8] [10]. Regardless if its known as handovers, sign-off and inter-shift report, handoffs occur when nurses provide related information about their patients to facilitate continuity of patient care [11] [12]. Moreover, handoff is the transfer of information, and professional responsibility and accountability, between individuals and teams, within the overall system of care, giving of information is often regarded as the basic function of handover [5]. Information transfer is reported to ensure that continuity of care is achieved. Usually, this information is a synthesis of facts and notes collected during the care process from different sources such as health records, team members, changes and remarks on the patient condition over a period of time. Patient handoff between nurses at shift change has been an important process in clinical nursing practice, allowing nurses to report necessary patient information to ensure continuity of care and promote patient safety [13]. This highlights the connection between many important aspects such as patient information exchange as an input leads to better continuity of care and patient safety as desired outcomes.

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 [14]. Unfortunately, it is becoming increasingly apparent that any defect in communication system, in hospitals, compromises the patient safety [15]. Furthermore, Incomplete, confusing, unclear, misunderstood, and unstandardized, communication is ineffective and dangerous [5]. 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 [16].

Many types of patient handoffs are introduced in the literature, including nursing shift changes; reporting of patient's conditions by physicians; reporting by staff leaving the unit for a short time; nursing and physician handoff from the emergency department to inpatient units, other hospitals, and critical patient laboratory results sent to physician offices. Recently many other handoff forms have been developed, such as the bedside report and the tape-recorded handoff [17].

In reviewing the literature related to the patient handoff process, it is important to consider communication competence. By understanding what behaviors influence the quality of the patient handoff, nurses can know how to enhance their competency in handoff communication regardless of how an organization standardizes the interaction. Improving the overall communication competence of nurses could lead to effective handoffs and reduced communication-related patient care errors. Communication competence is a core concept in interpersonal communication research and it can be defined as the knowledge of appropriate communication patterns in a given situation and the ability to use the knowledge. Competent communication includes information exchange which focuses on information seeking, giving and verifying as well as socio-emotional communication. [18] [19].

Information giving or provision is being related to the detail given in response to a direct question or offered without prompt. While information seeking is the ability to ask questions to get a more complete, accurate and current data of a patient's status at change of shift. The information verifying consists of clarifying, repeating, summarizing and anticipating. These behaviors are important to the handoff as a method of reducing the risk of miscommunication by assuring understanding. The socio-emotional communication is another one component of communication competence that focuses on enhancing trust relationship, concern, and warmth [18].

Nursing students should 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 [20]. 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. This inconsistency in hand off preparation for student nurses and new nurses creates a latent safety risk [10]. Though there is recognition that handoff communication skills are essential components of undergraduate nursing education. There is little research regarding the best methods for providing this education on nursing students. The process to learn handoff communication is often unpredictable and dependent on clinical experiences. Safety education, including handoff education, may help build more highly reliable health care

organizations by promoting safer communication skills [10]. So the aim of the present study is to examine the effectiveness of handoff educational program on nurses interns knowledge, and communication competence.

Significance:

An effective handoff supports the exchange of important information and continuity of care and treatment. However, the literature continues to highlight the consequences of ineffective handoffs that can lead to gaps in patient care and breaches in patient safety, including medication errors, wrong-site surgery, patient deaths, delays the course of treatment, patient dissatisfaction, and prolonged hospital stay [21]. Handoff communication is basic for health care providers, the aim of handoff should achieve safe, effective, comprehensive and high quality communication during the transitions of patients' care. Clinical environments are dynamic and complex, presenting many challenges for effective communication among health care providers, patients, and families. The dynamic and fast-paced environment of the intensive care unit demands efficiency during handoff that may compromise information exchange, the care for each patient demands an immediate knowledge of critical and highly complex data [22]. More over ensuring effective communication during shift report is particularly important in high stress environments such as Intensive Care Units [23], more importantly; nurses use the shift report information to make decisions and to build up the patient's care plan.

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. More over 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 [24]. So it is hoped that these handoff educational sessions will enhance and improve nurse's interns' handoff knowledge, and communication competence.

## 2. Methodology

### 2.1. Research Aim & Hypothesis

The current study aimed to examine the effectiveness of handoff educational program on nurse's interns knowledge, and communication competence. This research was designed to test the hypotheses that there is significant difference in the knowledge regarding handoff, and communication competence among nurse's interns before and after the participation in handoff educational program.

### 2.2. Design

Quasi - experimental study design was utilized to examine

the effect of handoff educational program on nurse's interns' handoff knowledge, and communication competence.

### 2.3. Setting

The study program was conducted in all intensive care units with different specialties which affiliated with Kaser El Ainy hospital where nurse's interns were trained.

### 2.4. Sample

Study sample composed of 30 nurses interns who were undertaking their internship in intensive care units during the academic year 2016-2017. According to internship rotation plan, one group of nurses interns who start their training in ICU at the beginning of internship year and who complete the educational program sessions successfully as well as different follow up periods of the program were constitute the study sample.

### 2.5. Tool

The following tools were utilized as follows:

#### 2.5.1. Demographic Data Sheet

Demographic data sheet: was developed by the researchers and it included background characteristics of nurses interns, such as: age, sex, type of education before joining the faculty (secondary school degree or technical institute degree), previous handoff knowledge and previous work experiences during their study years.

#### 2.5.2. Handoff Knowledge Questionnaire

Handoff knowledge questionnaire was developed by the researchers based on the literature review [25] [26] [27] [28], to assess nurse's interns' knowledge about handoff. It consisted of (15) Multiple-choice questions, covering the following: Handoff definition and related concepts (3 items), importance and benefits of handoff (3 items), components of handoff and communication competence (3 items) methods and structure of handoff (3 items), and Handoff communication tools (3 items).

The scoring system for the questionnaire sheet consisted of score (one) for correct answer and (zero) for the wrong answer for Multiple-choice questions. The scoring levels were arranged as follow 60% and more for satisfactory knowledge. Less than 60% is for unsatisfactory knowledge [29]. It was utilized during different periods of assessment (pre-program, immediately after program and 3 months later)

#### 2.5.3. Handoff Communication Competence Observational Checklist

Handoff communication competence observational checklist was developed by [1] and modified by the researchers to measure hand-off communication competence of nurses interns at the patient bedside handover as a one-way report from the outgoing to the incoming nurses interns. It contains the following subscales: information giving (10 items), facilitating information seeking (5 items), information verifying (3 items) and socio-emotional communication (7

items). The scoring system was as follows: 1 for done and zero for not done. The total score is 25, score 14.9 which represents (59.9%) indicates low competence, score from 15-18.5 which represents (60-74%) indicates moderate competence and finally score 18.9 which represents (75% and more) indicates high competence. It was utilized during different periods of assessment (pre-program, immediately after program and 3 months later).

## 2.6. 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. Based on their recommendations the necessary modifications were made.

## 2.7. The Pilot Study

A pilot study was conducted on 10 percent of study sample in order to test the clarity and validity of the study tools content, add or omit questions and assess time needed to respond to each questionnaire. Necessary modifications were done.

## 2.8. Ethical Consideration

Official permissions were obtained from hospital's director and nursing director of the previous selected hospital to conduct the study at the selected units. They were assured that the data is confidential and used only for research purposes. The researchers ensured that the correct procedures were undertaken concerning informed consent, autonomy, anonymity and maintenance of the subjects confidentiality.

## 2.9. Procedure

Prior to implementation of the handoff educational program, an official permission was obtained from the nursing supervisors of the selected units. This was intended to facilitate data collection and to explain study purpose. At the beginning of the internship year, nurse's interns were invited to participate in the program. The researchers explained the study purpose and procedures for the selected sample. Student nurses were further informed that the participation was voluntary and that study findings would be presented group wise and no individual would be recognized.

A knowledge test questionnaire was then handed to nurses interns on their work place to measure their knowledge about handoff and related concept using the developed handoff knowledge questionnaire. Because incoming nurse interns play little role in bedside handoff, observations of the students interns as outgoing in different shifts during patient bedside handoff was conducted to measure their communication competence while they report to incoming students interns through utilizing handoff communication competence observational checklist. So each nurse intern was given the opportunity to be observed as outgoing nurse

through 3 intermittent observation. Arrangement with head nurses of the selected units was done by the researchers to allow outgoing interns to report incoming one. The pre-program data were carried out from 1<sup>st</sup> of October to mid of November 2016.

After collecting pre-program data, the studied sample was divided into two groups according to their shift rotation and the program educational sessions were held twice a week. Each session lasted an hour, and the total educational sessions for the program were 5 sessions. Contents of the program sessions were as follows: Handoff definition and related concepts (1<sup>st</sup> session), importance and benefits of handoff (2<sup>nd</sup> session), components of handoff and communication competence (3<sup>rd</sup> session) methods and structure of handoff (4<sup>th</sup> session) and Handoff communication tools (5<sup>th</sup> session). These sessions were followed by supervision of nurse's interns in their clinical areas covering different work shifts in order to provide each nurse with support, and help them to use new knowledge. Different teaching and learning methods were used during conducting program: lecture, group discussion, demonstration, and work in small groups. The program educational sessions were carried out from 1<sup>st</sup> of December 2016 to 1<sup>st</sup> of January 2017.

To assess the immediate impact of the program on nurses interns handoff knowledge and communication competence, the previous instruments were utilized immediately after the program started from the mid of January 2017 to end of February 2017. In addition to measure nurse's intern's retention of handoff knowledge as well as handoff communication competencies, the previous questionnaires were utilized 3 months after program implementation started from June 2017 to mid of July 2017.

## 2.10. Statistical Design

The collected data was scored, tabulated by using statistical package for the social science (SPSS) program version 20 and analyzed by using the following tests: frequencies and mean and standard deviation were used as measures of central tendency and dispersion respectively for qualitative data Test of significance was performed to test study hypothesis (F test). Comparison between two groups and more was done using Chi-square test. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at  $p < 0.05$  for interpretation of results of tests of significance.

## 3. Results

Table 1. Demographic Characteristics of Study Sample (No 30).

Demographic data		NO	%
Age:			
1	22- less than 24	29	96.7
2	24 and more	1	3.3
Sex:			
1	Male	11	63.7
2	Female	19	36.3
3	Type of education:		

Demographic data		NO	%
1	Secondary school	25	83.3
2	Technical institute	5	16.7
3	Previous Work experience:		
1	yes	13	43.3
2	No	17	56.7

Data in table 1 showed that the majority of studied sample (96.7%) was in age group ranged between 22- less than 24 years, as well as the highest percentage of them (63.7%) were male. Regarding their type of education data in the same table showed that the majority of them (83.3%) were graduated from secondary school. It is clear also that 56.7% of studied sample did not have previous work experiences.

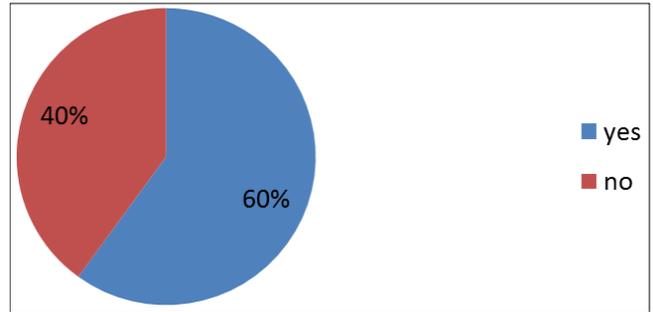


Figure 1. Frequency Distribution of Study Sample regarding Previous Handoff Knowledge (No 30).

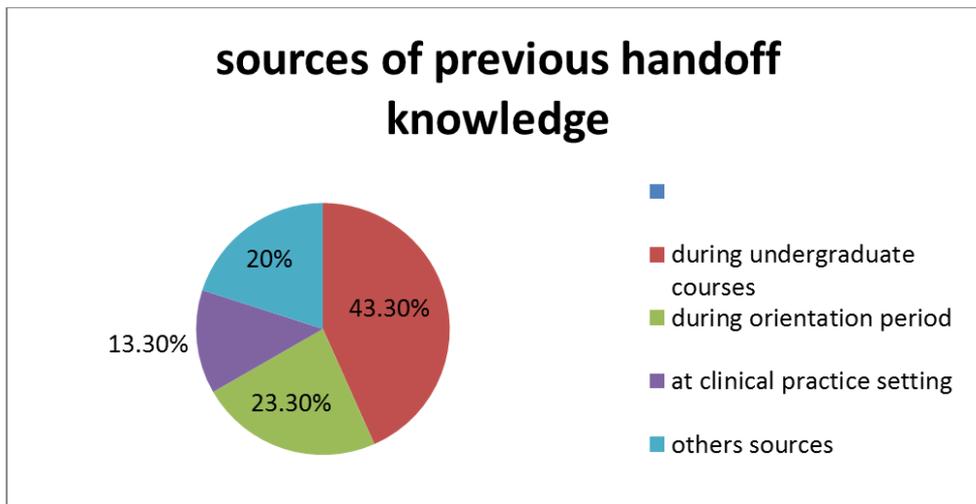


Figure 2. Sources of Previous Handoff knowledge among study sample (no 30).

Data in figure 1 & 2 illustrated that 60% of studied sample had previous handoff knowledge and 43.30% of them gain this knowledge during undergraduate course.

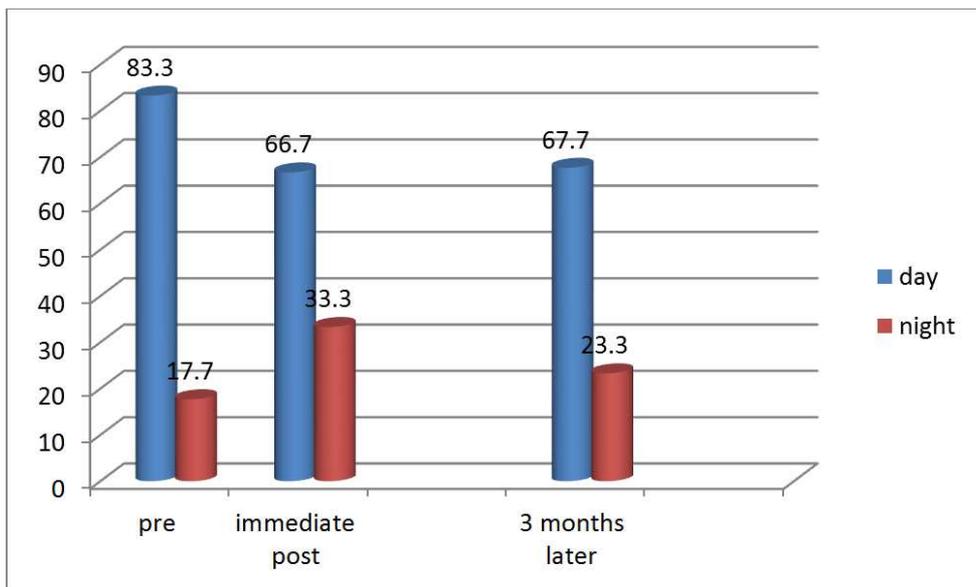


Figure 3. Frequency Distribution of Study Sample regarding work shift as work related variable during different periods of assessment (No 30).

The above figure showed that the highest percentage of nurses interns were working day shift during different periods of assessment.

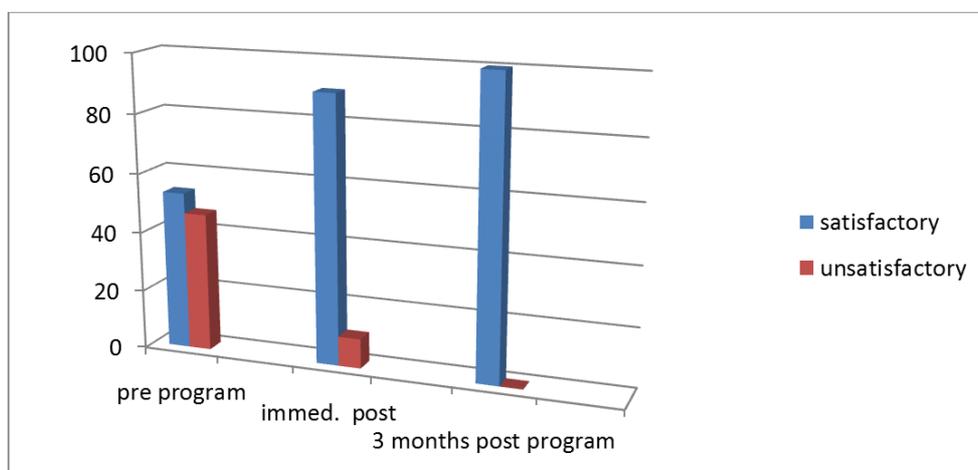
**Table 2.** Comparison of Nurses Interns regarding their Levels of Handoff Knowledge dimensions during Different Periods of Assessment (30).

handoff knowledge dimensions	pre program		post program		3 months post program		chiq square	p value
	NO	%	NO	%	NO	%		
1-Handoff concept:								
1- Satisfactory	18	60%	20	66.66%	28	93.3%	33.216	.000*
2-Unsatisfactory	12	40%	10	33.33%	2	6.6%		
2-Importance and benefits								
1-Satisfactory	26	86.6%	28	93.3%	30	100%	17.64	.000*
2- Unsatisfactory	4	13.3%	2	6.6%	0	0		
3-Components of handoff &communication competence								
1-Satisfactory	15	50%	17	56.6%	28	93.3%	25.35	.000*
2- Unsatisfactory	15	50%	13	43.3%	2	6.6%		
4-Methods and structure of handoff								
1- Satisfactory	21	70%	26	86.6%	30	100%	21.18	.002*
2-Unsatisfactory	9	30%	4	13.3%	0	0		
5-Handoff communication tools								
1- Satisfactory	14	46.6%	30	100%	30	100%	59.09	.000*
2- Unsatisfactory	16	53.3%	0	0	0	0		

Significant at  $p < 0.05$  \*

It was clear from table 2 that there was statistical significant and marked improvement in nurses interns' levels of handoff knowledge dimensions during different periods of assessment. Regarding the dimensions of handoff concept and Components of handoff &communication competence it was seen that the majority of studied sample had satisfactory score 3 months post program compared to preprogram and immediately post program period (93.3%, 60% & 66.66%)

and (93.3%, 50%, & 56.6%) respectively ( $p=.000^*$ ). Also it was clear that 100% of nurses interns scored satisfactory level 3 months post program relative to pre and immediately post program regarding the following three dimensions (importance and benefits, methods and structure of handoff and handoff communication tools) and all differences were statistically significant.

**Figure 4.** Frequency distribution of nurse's interns regarding their total handoff knowledge levels during different periods of assessment.

Data figure 4 showed marked improvement in total handoff knowledge levels among nurses interns during different periods of assessment as 90% of nurses interns had satisfactory score immediately post program with further improvement 3 months post program as 100% scored satisfactory level relative to only 53.33% in pre- program.

**Table 3.** Comparison of Nurses Interns Mean Scores regarding Handoff Communication Competencies dimensions during Different Periods of Assessment.

Handoff Communication Competencies dimensions	pre program		post program		3 months post program		F	P
	Mean	SD	Mean	SD	Mean	SD		
1-Infomatuion giving (10)*	6.7333	2.2273.	7.566	2.726	8.5333	1.3321	5.779	.004*
2-Facilitating information seeking (5)*	3.2000	1.2429	4.100	1.323	4.7333	.58329	14.11	.000*
3-Information verifying (3)*	2.0000	.98261	2.350	1.0541	2.9333	.36515	13.58	.000*
4-Socioemotional communication(7)*	6.1333	1.795	6.133	1.5564	6.5333	.81931	1.841	.165
total scores (25)*	18.066	5.2845	20.15	5.7159	22.733	1.3113	9.069	.000*

(\*) refers to maximum score of dimension

Significant at  $p < 0.05$  \*

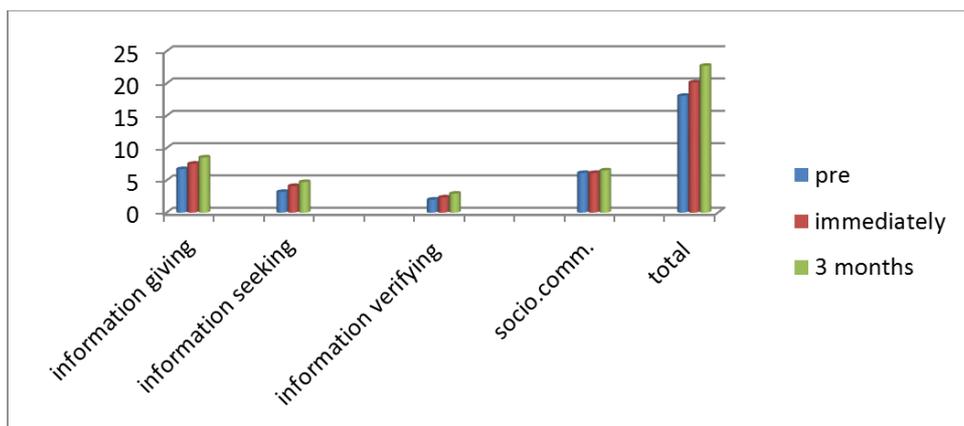


Figure 5. Comparison of Nurses Interns' Mean Scores regarding Handoff Communication Competencies Dimensions during Different Periods of Assessment.

Data in table 3 and figure 5 showed statistical significant differences in nurses interns mean scores regarding most of dimensions of handoff communication competencies 3 months post program relative to pre and immediately post program period except for Socio-emotional communication dimension which was reflected in total mean scores respectively (18.066±5.2845, 20.15±5.7159, 22.733±1.3113) F= 9.069 P=.000\*.

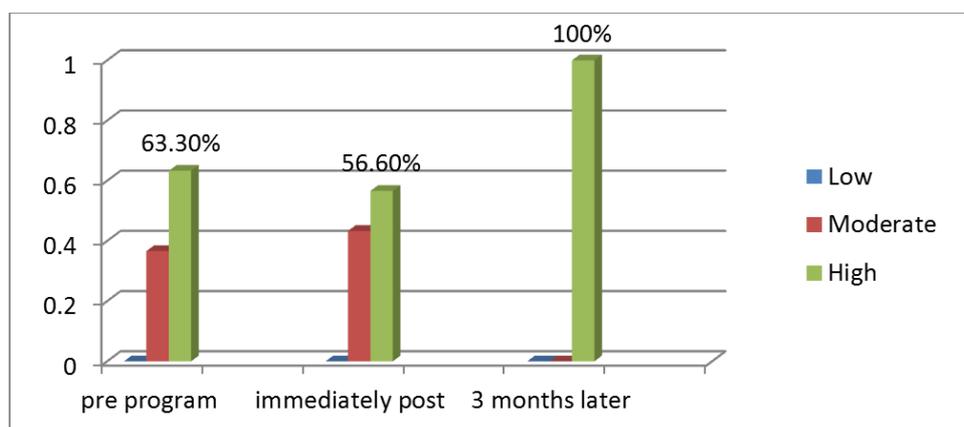


Figure 6. Frequency Distribution of Nurses Interns Regarding Levels of total Handoff Communication Competencies during Different Periods of Assessment.

It is clear from figure 6 that there was a marked improvement in nurse's interns levels of total handoff communication competencies, it was shown that nurses interns had generally high score in the preprogram period (63.3%) and none of them scored low during different periods of assessment. Further improvement was seen 3 months post program as 100% of them scored high competencies

Table 4. Correlation between Nurses Interns' total Handoff Knowledge and Communication Competencies dimensions during Different Periods of Assessment.

Handoff Communication Competencies Dimensions	Total Handoff Knowledge					
	pre program		immediately post program		3 months post program	
	r	p	r	p	r	p
1-Information giving	-.147	.439	.329	0.02*	.302	.105
2-Facilitating information seeking	-.050	.793	.180	.341	.159	.401
3-Information verifying	.105	.579	.173	.362	.000	1.000
4-Socioemotional communication	-.185	.327	.356	0.04*	.189	.318
Total Communication Competencies	-.117	.539	.319	.002*	.260	.166

Significant at p < 0.05 \*

It was clear from table 4 that there was only a statistical significant correlation immediately post program between nurses interns' total handoff Knowledge and total communication competencies (r=.319, p= .002\*). As well as statistical significant correlation between total handoff Knowledge and both Information giving and Socio-emotional communication dimensions (r=.329, p=0.02\*, r=.356, p=0.04\*) respectively. While no any statistical significant correlation was found in pre- program and 3 months post program implementation.

**Table 5.** Differences in Handoff Communication Competencies Mean Scores among Nurses Interns by Work Shift as Work Related Variable post-program (No 30).

handoff communication competencies dimensions	immediately post program				3 months later			
	day shift(20)		night shift(10)		day shift(23)		night shift(7)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1-Information giving(10)	6.35	3.70	7.100	2.72	8.6087	1.30520	8.2857	1.49603
p value	.536				.619			
2-Facilitating information seeking(5)	3.150	1.66	4.100	1.100	3.8522	.64728	5.0000	.00000
p value	.074				.024*			
3-Information verifying(3)	1.700	1.30	1.900	.994	2.9130	.41703	3.0000	.00000
p value	.645				.328			
4-Socioemotional communication(7)	5.60	2.22	6.000	1.49	6.6087	.78272	6.2857	.95119
p value	.563				.435			
total handoff communication competencies	16.800	7.99	19.100	5.04	22.7826	1.31275	22.5714	1.39728
p value	.346				.730			

The above table illustrated that there was no statistical significant differences between night and work shift nurses interns regarding their mean scores of handoff communication competencies dimensions immediately post program, although nurses interns in night shift had highest mean scores compared to those in day shift, it is not proved to be statistically significant. Data in the same table showed a statistical significant differences between day and night shift nurses interns mean score only in information seeking dimension 3 months post program as night shift had highest mean scores compared to those in day shift, ( $p=.024$  \*).

**Table 6.** Relationship between Nurses Interns handoff knowledge and communication competencies and their Demographic variables.

Demographic data	handoff knowledge		handoff competencies	
	Mean	SD	Mean	SD
1-Sex:				
male	8.909	3.144	19.272	2.53
female	8.842	1.803	17.368	6.326
P value	.949		.256	
2-Education:				
secondary school	8.8400	2.44404	17.8800	5.78302
technical	9.0000	1.87083	19.0000	.70711
P value	.987		.855	
3-Previous work experience:				
yes	9.384	2.50	18.230	5.932
no	8.470	2.82	17.941	4.917
P value	.854		.436	
4-Previous handoff knowledge:				
yes	9.1667	2.09341	20.5000	6.147
no	8.4167	2.67848	16.4444	2.110
P value	.988		.020*	

It was clear from table 6 that there was only a statistical significant relationship between handoff communication competencies and nurses interns previous handoff knowledge ( $P=.020$ \*). While no other relationships were found between study variables and other demographic variables.

## 4. Discussion

Dynamic and complex clinical environments present many challenges for effective communication among health care providers. The goal of nursing handoff is to communicate and exchange accurate, relevant and up-to-date clinical information about the patient which is necessary for continuity of care. Clinical handoff is one of the most important issues to consider when ensuring the continuity of patient care and safety. An effective handoff supports the transition of critical information and continuity of care and treatment [17]. The practice of handover between health professionals is an everyday practice, but a potentially risky

aspect of patient care. Miscommunication of information can result in inadequate or unsafe care [5]. A nursing handoff, or handover, is a complex communication process that transfers essential information, responsibility, and accountability for the care of a patient from one nursing professional to another. Handoff education has been identified as a quality and safety education in Nursing (QSEN) pre-licensure competency [30].

The current study results support the research hypotheses which revealed that, there is significant difference in the knowledge regarding handoff, and communication competences among nurses' interns before and after the participation in handoff educational program. Regarding nurse's intern's levels of handoff knowledge dimensions during different periods of assessment, the current study results revealed that there was statistical significant and marked improvement in nurse's interns' levels of handoff knowledge dimensions during different periods of assessment regarding most of handoff knowledge dimensions. As the majority of studied sample had satisfactory score 3 months

post program compared to preprogram and immediately post program period. This result is consistent with [17], who found a significant difference at pre and post educational session regarding nurse's handoff knowledge and they added that, inadequate handoff of patient information carries significant risks for individual clinicians, their organizations and for their patients. So a Sufficient and relevant information through educational sessions should be exchanged to ensure patient safety. More over without handoff education, the nursing students in this study lacked awareness of the importance and benefits of handoff, methods of handoff as well as components of handoff and communication competence [10].

From the investigators' point of view, engaging nurses interns in handoff educational program had a positive impact on increasing their knowledge as they become aware about essential concepts of handoff, methods and structures, in addition they gain knowledge about importance of proper handoff for them and for their patients. Moreover they became knowledgeable about socio-emotional communication as a core concept in interpersonal communication.

Regarding the nurses intern's handoff communication competencies during different periods of assessment the present study revealed that there was a statistical significant differences in nurses interns mean scores regarding most of dimensions of handoff communication competencies 3 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 3 months post program as all of them scored high competencies. From the researchers' point of view this result support the positive effect of the program as the knowledge they gained in the educational program help them to practice handoff communication well. In the same issue [20] found that after implementation of handoff educational sessions the nursing students had a better grasp of the background and rationale for an effective hand-off report. As a result, students began to recognize pertinent critical health information that needed to be communicated to their nurse. Nursing students also conveyed feelings of confidence and empowerment in the performance of hand-off communication. This result is consistent with [17], as they reported a statistical significant difference at pre and post educational session regards the overall quality of handoffs received described as excellent or good. This result is expected after nurses know, what, how and when the right handoff and its effect on quality of patient care applied at educational session.

Moreover when the dimensions of handoff communication competencies were investigated during different periods of assessment, study results showed statistical significant differences in most of related dimensions (information giving, seeking and verifying) 3 months post program relative to pre and immediately post program. In this respect [31] reported that enhanced training and systems for effective and safe handoff are essential in maintain high standards of continuity of care. In addition, [21] Found that nurses scores

increased significantly in handoff after the study intervention in terms of patient safety through updating their caring program, maintaining the continuity of care, and improving the quality of inter-shift information communication. On the same line, [18] stated that nursing handoff is a critical issue in a patient's care that happens two to three times every day. Handoff must facilitates a respectful, concerned, comprehensive and accurate dialogue between nurses rather than a one-way nursing handoff report offers an opportunity for nurses to collaborate, providing different perspectives about patient needs, identifying areas of concern, and perhaps preventing mistakes based on misinformation or inaccurate information.

From the researchers' point of view engaging nurses in handoff educational program increased their competencies regarding explaining treatment needed by the patient, endorsing services needed for the patient, providing relevant historical information about the patients, and answering the other nurse's questions thoroughly. In addition during bedside handoff the outgoing nurse interns encouraging the incoming one to ask questions and seek information, answering questions of incoming nurse related to the patient's needs. As well as reviewing important or complex information to make sure it correctly understood and making sure that all explanations and directions were clearly understood. In this respect [17], reported that nursing handoff is to communicate and exchange accurate, relevant, and up-to-date clinical information about the patient that is necessary for continuity of care. In addition, [32] noted that the handoff involves both a transfer of knowledge as well as authority and responsibility.

Regarding socio-emotional communication as one dimension of communication competence, the current study results revealed increased mean scores of nurse's interns immediately post program and 3 months later. In this respect, [20] stated that collaborative inter professional communication are essential elements of the transfer of crucial patient information and the socio-emotional communication is another one component of communication competence that focuses on fostering warmth, trust, and concern during handoff [18].

Regarding the correlation between nurses' interns total handoff knowledge and communication competencies dimensions during different periods of assessment, results of the current study revealed that there was only a statistical significant correlation immediately post program between nurses interns' total handoff Knowledge and total communication competencies. As well as a statistical significant correlation between total handoff Knowledge and both information giving and socio-emotional communication dimensions. From the researcher's point of view, this result can be explained as, the training program has its immediate positive effect and nurse's intern's starts to apply the knowledge they gained which was reflected on their communication competence, and they recognized pertinent critical health information that needed to be communicated to their peers. In the same issue [30]

concluded that nursing students performed significantly better when providing and receiving handoff after they gain handoff knowledge in training program. Additionally, [33] has described the positive effect of handoff training in handoff receiver skills. Without handoff education, the nursing students lacked awareness of the importance of an active handoff recipient in creating a shared mental model. Consistently with the current research result [34] describes the necessity of both provider and receiver actively participating in the co-construction of the oncoming caregiver's understanding of the patient in order to promote patient safety. In the same issue [30] found that the nursing handoff educational training program improved handoff communication skills in nursing students.

When mean scores of nurses interns regarding hand off communication competencies were investigated in relation to work shift as work related variable, results of the current study revealed that there was a statistical significant differences between day and night shift nurses interns mean score only in information seeking dimension 3 months post program as night shift had highest mean scores compared to those in day shift. This result is contradicted with [35] who found that nurses who worked 8 hours shift report proper handoff quality than those work 12 hours shift. From the researcher point of view multiple work environment in day shift might affect the handoff practice as multiple interruptions, noisy environment and medical round which causing multiple distraction and leads to sharing of information quickly which in turn lead to incomplete and inaccurate report.

Regarding the relationship between nurses intern's handoff knowledge and communication competencies and their demographic variables, the current study revealed that, there was only a statistical significant relationship between handoff communication competencies and nurses intern's previous handoff knowledge while no other relationships were found between study variables and other demographic variables. From the researchers' point of view this could be related to that the highest percentage of studied sample reported that they gain previous handoff knowledge during undergraduate course and in clinical orientation which in turn affect their overall handoff communication competencies. This result is consistent with [36] who conclude that there was no relationship between nurses handoff practice and their demographic variables as age, gender, educational statuses and experiences.

## 5. Conclusion

Results of the current study revealed that there was statistical significant and marked improvement in nurse's interns' levels of handoff knowledge dimensions as well as statistical significant differences in their mean scores of handoff communication competence during different periods of assessment. The current study provide evidence that handoff educational program enhance nurses interns handoff communication competence.

Based on study findings the following were recommended by the researchers:

- a. Handoff communication skills should taught formally during nursing academic education concerning the way that information is given, verified as well as all handoff communication competencies during process of patient bedside handoff.
- b. - Regular and permanent schedule by clinical instructors should be conducted for observing nurses interns during handoff process covering different work shifts in order to provide each nurse with support, and help them to use new knowledge.
- c. -Collaboration between hospital staff and faculty staff to enhance nurse's intern's handoff communication competencies at the beginning of each clinical orientation as well as throughout the internship year.
- d. First line nurse manager must act as a role model for demonstrating effective handoff communication skills for all staff nurses as well as students interns.
- e. -Future researches with larger sample sizes and multiple settings are recommended to substantially evaluate the effectiveness of educational program on handoff communication competencies.
- f. -More studies to investigate the effects of standardized shift handover protocols on nurses' satisfaction and nursing error incidence rate in other caring units is recommended.

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