Effect of Management Intervention Program on Intensive Care Unit Staff Nurses' Shift Change Process at El Menshawy Hospital

Lamiaa Ashour Ibrahim Souma[1] Foauda Mohammed Shaaban[2] Walaa Mostafa Eid[3]

[1] Nursing Specialist Elmenshawy Hospital, Egypt
[2] Professor, Nursing Service Administration, Faculty of Nursing Tanta University, Egypt
[3]Assist. Professor Nursing Service Administration, Faculty of Nursing Tanta University, Egypt

Abstract

Background: Shift change is a nursing care process, and communication core element in this process especially during the transfer of information. Steps of shift change process include identification, situation, background, assessment and recommendation play an important role in transferring responsibility and accountability in patient care from outgoing shifts to incoming shifts. Unfortunately shift change shift change education still nonexistent or inadequate. **Objective:** The aim of study was to determine effect of intervention management program on ICUs staff nurses' shift change process at El Menshawy Hospital. **Method: Design** Quasi-experimental research design was used **Setting** The study was conducted in all intensive care units (ICUs) of El Menshawy General Hospital. **Subject:** consisted of all (n=164) nurses working in ICUs. **Tools:** Two tools were used for collecting data (1) Structure Knowledge Questionnaire (2) Staff Nurses Perception about Shift Change Process Performance. **Results:** staff nurses 95.1% had poor level of knowledge and 72.0% of staff nurses had low level of perception about shift change process performance. Post management intervention program staff nurses 70 %, 83.5% showed overall knowledge and high level of perception about performance of shift change respectively. There was statistically significant positive correlation between staff nurse total knowledge and perception of all dimensions of shift change process preprogram and post program at (p=0.001). Except task management dimensions showed no significant correlation. **Conclusion:** Staff nurses required to communicate accurate and concise information, which can be easily understood by both the outgoing nurse and the incoming to ensure the continuity and safety of patient care. **Recommendation:** Staff nurses need restrict supervision and motivation by head nurses for performing shift change process.

Key words: ICU nurses, shift change process, nurse shift change knowledge communication and nurse change performance.

Introduction

Shift change is a fundamental routine clinical practice for the effective transfer of patient care plan between health professionals. Nursing shift change represents one of the most important transition points for responsibility and accountability in patient care among nurses When a patient was 'handed over' by an outgoing nurse to an incoming nurse between shifts, communication about the patient's condition was important to ensure

appropriate continuity of care [1]. Failure to understand a patient's condition, put the patient at risk. In particular failure of dire events, delayed treatment might caused by nurses' failure to share all relevant clinical information of the patient accurately and timely. Often shift change consists of a range of vital information like the patient's diagnosis and treatment plan [2].

Clinical nursing shift change process was a routine yet pivotal, high-risk communicative event require cooperative teamwork, prioritization of activities and good work atmosphere. Nurses' formal shift-end shift change s occurred at least three times a day, excluding the in-between breaks or patient transfer [3]. Shift change communication protocols are designed to help nursing staff to structure their shift change communication and present patients' information in a logical and coherent manner, with the aim of reducing the possibility of miscommunication or misunderstanding between the nursing professionals. Bedside, shift change provides an important opportunity for development of communication between nurses and patients and also their relatives [4].

Patients in critical care are severely ill and require support for vital functions. These patients are often sedated and their communication impaired. They can be vulnerable because of their inability to protect their integrity and autonomy. Patients are transferred to critical care units from various other care settings such as the resuscitation room, surgery or other wards. When a patient is transferred between hospital settings shift change report is given to staff in the new setting [5]. Effective and accurate communication between nurses during shift change therefore critical in ensuring safe and consistent quality of healthcare. Shift change ensured patient security, increased efficiency, and contributed to the development of team work along with patient centered care. On the other hand, shift change increased work satisfaction, interpersonal relationships, and sense of responsibility while contributing to the acquisition of patient information and the decrease of overtime rates [6].

Intensive and critical care teamwork strive to entail cooperation, coordination and absence of conflict to protect patients' integrity and autonomy while providing care for their medical concerns. They perceived shift change as a unique opportunity to get to know the patient as a person, which is often difficult as many patients are unconscious on admission [7]. Person centered care is an internationally known framework through which a health professional establishes a therapeutic relationship to a person, emphasizing values respect for the person and mutual understanding. Getting to know the person is considered vital to person-centered care, which places patient in context and fulfils that person's best interests [8]

Significance of study

Currently, clinical environments are dynamic and complex, presenting many challenges for effective shift change among health care providers. This demands efficiency during shift change process that compromise information exchange, the care for each patient demands an immediate knowledge of critical and highly complex data. So, present study management intervention program is needed for ICUs incoming and outgoing nurses to improve their knowledge and practice for promoting

safe, effective, comprehensive and high-quality transitions of patients' care information during shift change process [9].

Aim of the study

The study aimed to determine effect of intervention management program on ICUs staff nurses' shift change process at El Menshawy Hospital.

Research hypothesis

After implementation of the intervention management program the knowledge and perception of ICUs staff nurses during shift change process expected to be improved.

Subjects and method

Study design: Quasi-experimental research design

Setting: The study was conducted in all intensive care units at El-Menshawy General Hospital, which affiliated to Ministry of Health and Population. The total hospital capacity contained (300) beds, it divided into outpatient clinics and inpatient units as well as ICUS including Pediatric ICU (5 beds), Cardiac ICU (15 beds), Neonate ICU (27 incubators), Neuro ICU (3 beds), and Medical ICU (17 beds).

Tools of data collection

The data of the study collected using two tools:

Tool 1: Structure Knowledge Questionnaire

This tool was developed by the researcher guided by Ewing (2015) [10], Halm (2013) [11] to assess staff nurses' knowledge about shift change process, it includes two parts:

Part one: characteristics of staff nurses such age, sex, marital status, department, level of education, years of experience and training programs.

Part two: questions about staff nurses' knowledge of shift change process included (30) questions divided into multiple choice (15) and true and false (15).

- Concept and dimensions of shift change (No1-5, 16-20)
- Steps of shift change (No 6-10, 21-25)
- Skills required for incoming and outgoing staff nurses during shift change (No 11-15, 26-30)

Scoring System

Staff nurses' answers were scored by correct answer (1) and incorrect answer (0)

Levels of staff nurses knowledge

-Good level of knowledge > 75%
-Fair level of knowledge 60-75%
-Poor level of knowledge < 60%

Tool 2: Staff nurses' perception about shift performance of change process (Appendix 2)

The tool developed by the researcher guided by Manser and Foster (2011) [12] and related recent literature. This tool used to assess staff nurses' perception on shift change process.

It divided into six subscales and include 56 items as follows:

1. Communication includes 4 subscales as follow:
   - Quality and quantity of information subscale items (No 1- 16)
   - Interaction and support subscale items (No 17- 20)
   - Efficiency subscale items (No 21- 22)
   - Patient involvement subscale items (No 23-33)
2. Teamwork subscale items (No 34-36)
3. Situation awareness subscale items (No 37- 42)
4. Task management subscale items (No 43-46)
5. Accountability and responsibility subscale items (No 47- 49)

6. Circumstances of shift change subscale items (No 50- 56)

Scoring System

Staff nurses' perception of performance rated by scoring of always done=2, sometimes done=1 and never done=0

Levels of staff nurses' perception of performance on shift change

- High perception level > 75%
- Moderate perception level 60 – 75%
- Low perception level < 60%

Method

1-Official permission to conduct the study was obtained from Faculty of Nursing University authority responsible to El Menshawy General Hospital administration permission to conduct the study and get approval and assistance to collect data from staff nurses.

2- Ethical considerations: the study aim was explained to staff nurses to gain their cooperation, verbal consent for their participation in the study was obtained and they had the right to withdrawal. They were informed that their information was kept confidential.

3- Tool 1,2 was developed by researcher and translated and presented to a jury from the area of specialty to check tool content validity. They were seven assistant professors from Faculty of nursing, Tanta university (four from nursing service administration department, two from medical department and one from psychiatric nursing department).

4-The jury responses were represented in relevance score ranging from 1- 4 Strongly relevant=4, relevant=3, little relevant=2 and not relevant=1.Necessary modifications were done included clarification, omission of some questions and adding others and clarifying words. The content validity for tool 1 was tested using Chi-Square test and for tool 2 was tested using Wilcoxon signed rank test

5- Reliability of tool 1 and 2 tested using Cronbach Alpha Coefficient test and its values 0.886 and 0.774 respectively.

6- A pilot study was carried out on 10% (N=17) nurses and they were excluded from the study subjects. It conducted to test the tools for its clarity, feasibility, applicability, relevance of the questions, and to determine the needed time to complete the questionnaire. A pilot study was carried out after the experts' opinion and before starting the actual data collection. According feedback from pilot study, some questions were rearranged by the researcher to be easily understood. The estimated time needed to complete the questionnaire items from nurses was 20-30 minutes for every tool.

7- Data collection phase

- Staff nurses’ knowledge about shift change process questions was used before and after implementation of the program by tool 1
- Staff nurses’ perception about shift change process was used before and after implementation of the program using tool 2

The data were collected from staff nurses by the researcher. The researcher met the ICU staff nurses in small groups at their work settings and distributed tool (1). The subjects recorded the answers in the presence of the researcher to clarify and ascertain all questions were answered. The data was collected over period of six months started from august 2020 and ended January 2021.ICU staff nurses were divided in 10 groups, 16 nurses for each group. The program time was 3 hours (3 sessions 1 hour for each session). The program was conducted for staff nurses at

their ICU at El Menshawy General Hospital. The program was designed based on review of relevant literature review.

Statistical analysis

Statistical presentation and analysis of the study was conducted, using the mean, standard deviation, Chi-Square test, Wilcoxon signed ranks test and Correlation coefficient. The values of the first and second observations in the same individual. correlation can be significant $p < 0.05$.

Results

Figure (1): Shows levels of staff nurses' overall knowledge about shift change process pre- and post-program. Preprogram majority of staff nurses had poor level of knowledge for shift change process but post program the majority were at good level.

Figure (2): Shows levels of staff nurses' knowledge about steps of shift change process pre- and post-program. Preprogram majority of staff nurses had poor level of knowledge about steps of shift change process but post program the majority were at good level.

Figure (3): Show levels of staff nurses' overall perception about shift change process pre- and post-program. Preprogram majority of staff nurses had low level of total perception about shift change process but post program the majority were at high level.

Figure (4): Show levels of staff nurses communication about shift change process. Preprogram majority of staff nurses had low level of communication about shift change process but post program the majority were at high level.

Figure (5): Show levels of staff nurses teamwork about shift change process. Preprogram majority of staff nurses had poor level of communication about shift change process but post program the majority were at good level.

Figure (6): Correlation between staff nurse total knowledge and total perception of performing shift change process. There was statistically significant positive correlation between staff nurse total knowledge and total perception of shift change process preprogram at ($p=0.001$) and post program at ($p=0.001$).

Table (1): Shows staff nurses' characteristics. The age, gender, marital status, education level, years of experience as well as training program were included. The age of staff nurses ranged from <30-≥35 years with mean age 28.80 ± 3.71. Staff nurses 81.7% were female, married 75.0% and 25% single. Bachelor degree nurses were 69.5% and 8.5% had master degree. High percent 71.3% of staff nurses had <10 years of experience in the unit with mean experience 6.27 ± 3.98 years. Majority 89 % of staff nurses not attended program about shift change. Staff nurses 34.1%, 32.3%, 13.4%, 12.2%, 7.9%, working at neonatal ICU, medical ICU, pediatric ICU, cardiac ICU and neuro ICU respectively.

Table (2): Levels of staff nurses' overall knowledge about shift change process dimensions pre- and post-program. The table shows that there was highly statistically significant improvement of staff nurses' level of total knowledge about shift change process post than preprogram at $p<0.001$. Preprogram, range (94.5% - 93.3%) of staff nurses showed poor level of knowledge for concept and dimensions of shift change, skills required for incoming and outgoing staff nurses during shift change and steps of shift change. While, post program range (72.0%

- 63.4%) of staff nurses showed good level of knowledge for all Knowledge dimension of shift change process.

Table (3): Staff nurses' answers about concept of shift changeitems pre- and post-program. Preprogram majority 77.4%, 76.8% and 72.6%, 70.7% of staff nurses showed incorrect answer for items of shift change is written report with objective of relating what occurred to patient, shift change allows nurse's time to observe and listen to patient and Types of shift change include verbal, oral shift change, and written shift change and include documentation. And being routine, daily event performed in morning, afternoon, and night shifts, are characteristic of shift change. Changed post program range 91.5%, 88.4%, 85.4%, 82.3% and 62.8% of staff nurses showed correct answer for that item respectively.

Table (4): Staff nurses' answers about shift change process steps items pre- and post-program. Staff nurses 86.0%, 82.3% and 76.2% give incorrect answers for items of assessment of information during shift change include breathing sound, identification wristbands should contain patient name, hospital number, diagnosis and admission date and outgoing nurse identifies new admitted patient to incoming nurse through patient identification. Beside 63.4% and 50.0% of staff nurses give incorrect answers for items of recommendation is important step of shift change process and during situation incoming nurse check vital signs. While, post program range (92.1% - 81.1%) of staff nurses give correct answers for all items of shift change process steps.

Table (5): Staff nurses' answers about skills required for incoming and outgoing staff nurses' items pre- and post-program. Majority (84.8%, 78.0% and 76.8%) of staff nurses preprogram give incorrect answers for items of situation awareness help nurse to act on needs based on surrounding events, critical thinking is an essential trait helpsnurses to judge and take appropriate decisions when deliver shift change, skills require for nurse to provide correct information during shift change include nursing care plan and responsibility is skill involves both hearing and interpreting what is said. Also 67.1% and 57.3% of staff nurses give incorrect answers for items of incoming and outgoing nurse should prioritize tasks to make nursing care plan for patient and critical thinking is skill to analyze, review and judge different situations. While, post program range (84.8%-76.2%) of staff nurses give correct answers for all items of organizing skills required for incoming and outgoing staff nurses during shift change.

Table (6): Levels of staff nurses overall perception about of performance dimensions of shift change perception pre- and post-program. The table shows that there was highly statistically significant improvement of staff nurses' perception about shift change process post than preprogram. Range (75% -70.1%) of staff nurses preprogram showed low level of perception about situation awareness, communication and circumstances of shift change. Staff nurses 50.6%, 47.0%, 35.4% had low level of perception about task management, accountability and responsibility and teamwork respectively. While, post program range (89.6% - 79.3%) of staff nurses showed good level of perception dimensions except 62.8% and 58.5% for situation awareness and task management respectively.

Table (7): Represents levels of staff nurses' perception of performing communication pre- and post-program. The table shows that there was highly statistically significant improvement of staff nurses communication subscale post than preprogram. Staff nurses 88.4%, 81.1%, 67.7% and 54.9% preprogram showed low level of perception about performing interaction and support, patient involvement, quality and quantity of information and efficiency dimension respectively. While, post program staff nurses 89.6%, 53.0% and 48.8% showed high level of perception about performing quality and quantity of information, interaction and support and patient involvement respectively. Except 64.6% showed moderate level and 25.0% showed high level of perception for efficiency post program.

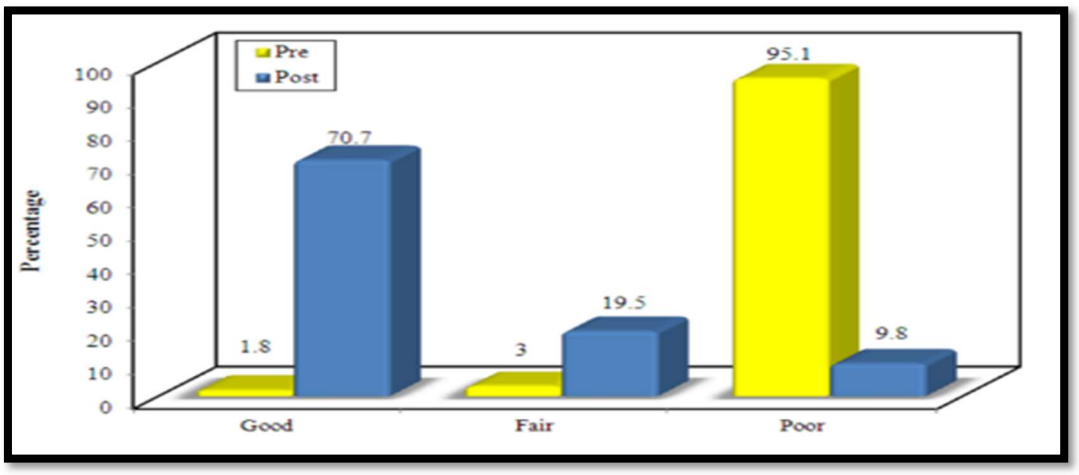

Figure (1): Levels of staff nurses' overall knowledge about shift change process pre- and post-program (N=164)

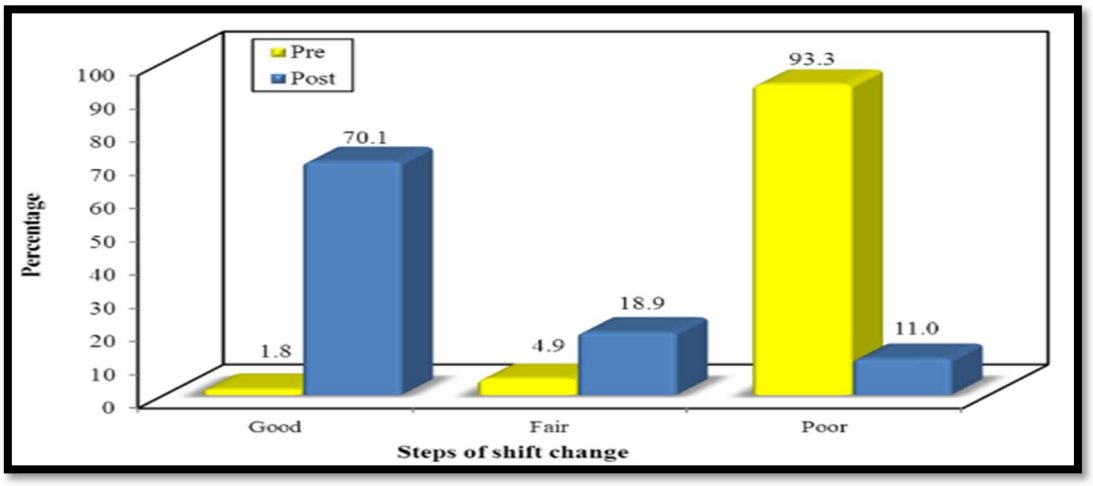

Figure (2): Levels of staff nurses' knowledge about steps of shift change process pre- and post-program (N=164)

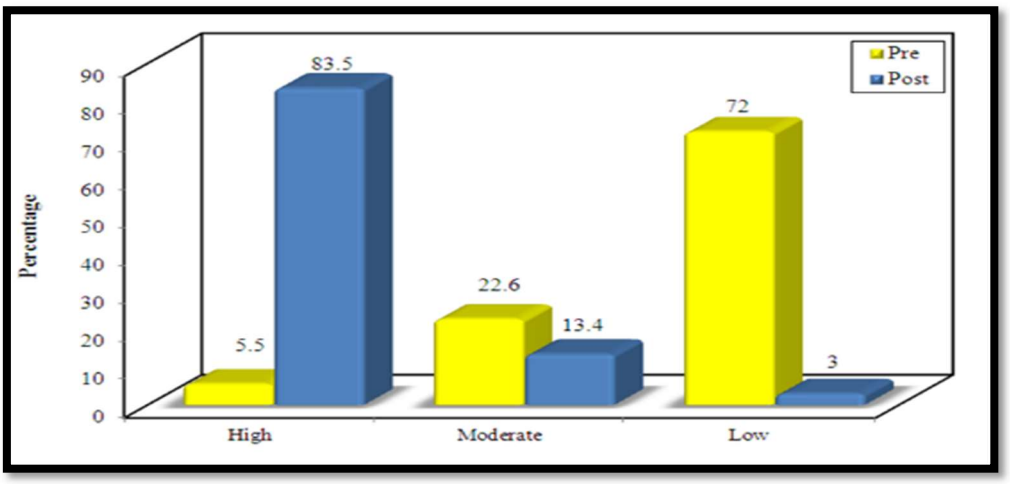

Figure (3): Levels of staff nurses' overall perception about shift change process dimensions pre- and post-program (N=164)

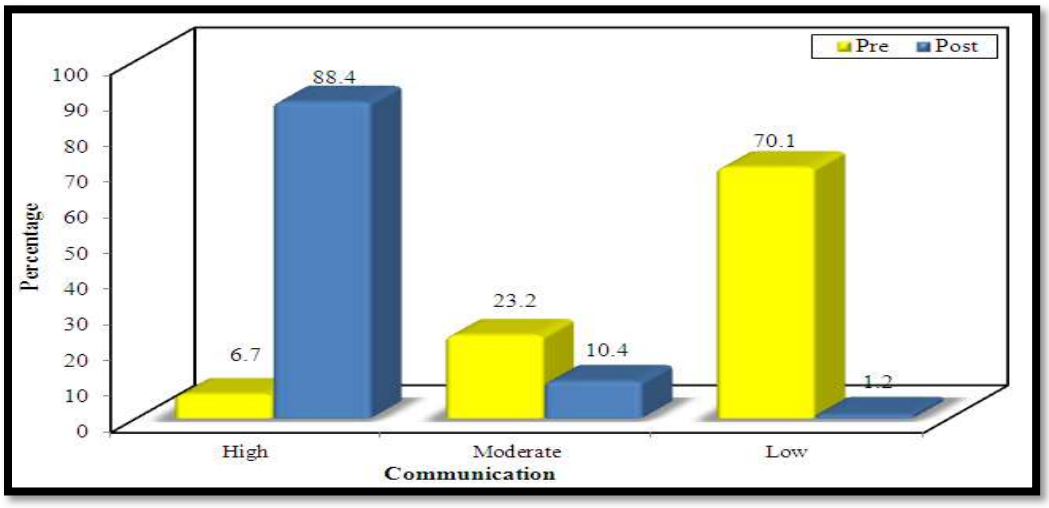

Figure (4): Staff nurses' levels of perception of performing communication about shift change process (N=164)

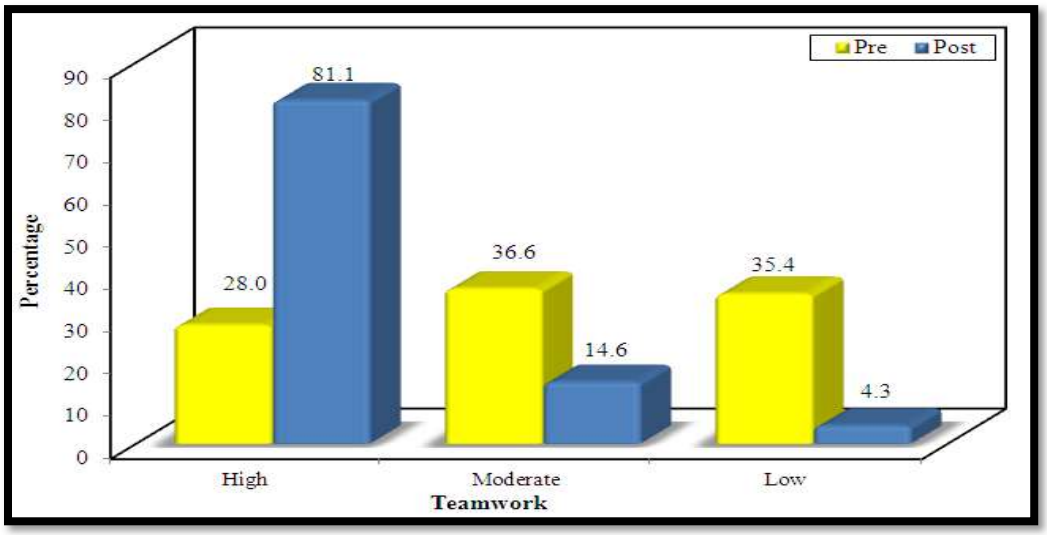

Figure (5): Levels of Teamwork about shift change process (N=164)

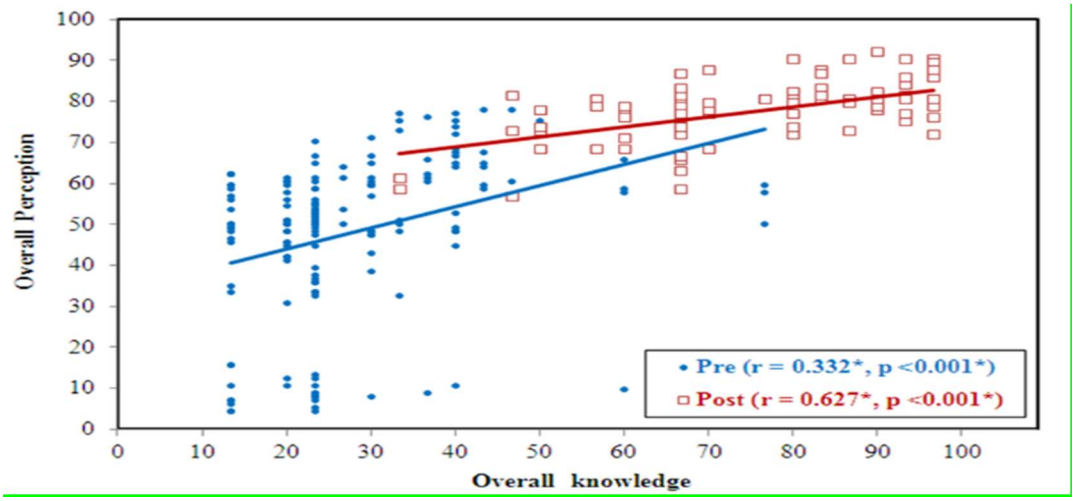

Figure (6): Correlation between staff nurse total knowledge and total perception of shift change process (N=164)

Table (1): Subject's characteristics (n=164)

Variables	(N=164)	%
Age		
<30	98	59.8
30-<35	56	34.1
≥35	10	6.1
Min. – Max.	22.0 – 38.0	
Mean ± SD	28.80 ± 3.71	
Median	28.0	
Gender		
Female	134	81.7
Male	30	18.3
Marital status		
Married	123	75.0
Single	41	25.0
Education level		
Master degree	14	8.5
Bachelor degree	114	69.5
Post gradute degree	12	7.3
Technical degree	24	14.6
Years of experience		
<10	117	71.3
10-<15	39	23.8
≥15	8	4.9
Min. – Max.	1.0 – 17.0	
Mean ± SD	6.27 ± 3.98	
Median	5.0	
Intensive care unit name		
Pediatric ICU	22	13.4
Cardiac ICU	20	12.2
Neonatal ICU	56	34.1
Neuro ICU	13	7.9
Medical ICU	53	32.3
Program attended about shiftchange		
Attend	18	11.0
Not attend	146	89.0

Table (2): Levels of staff nurses' overall knowledge about shift change process dimensions pre- and post-program (N=164)

Levels of staff nurses / Knowledge dimension	Pre						Post						MH (P-value)
	Good		Fair		Poor		Good		Fair		Poor		
	N	%	N	%	N	%	N	%	N	%	N	%	
Concept and dimensions of shift change	6	3.7	3	1.8	155	94.5	118	72.0	28	17.1	18	11.0	11.449 (<0.001**)
Steps of shift change	3	1.8	8	4.9	153	93.3	115	70.1	31	18.9	18	11.0	10.712 (<0.001**)
Skills required for nurses during shift change	3	1.8	6	3.7	155	94.5	104	63.4	41	25.0	19	11.6	10.595 (<0.001**)
Overall knowledge	**3**	**1.8**	**5**	**3.0**	**156**	**95.1**	**116**	**70.7**	**32**	**19.5**	**16**	**9.8**	10.874 (<0.001**)

Table (3): Staff nurses' answers about concept of shift changeitems pre- and post-program (N=164)

Concept of shift change items	Pre				Post			
	Correct answer		ncorrect answer		Correct answer		ncorrect answer	
	N	%	N	%	N	%	N	%
Types of shift change include verbal, oral shift change and written shift change and include documentation.	45	27.4	119	72.6	103	62.8	61	37.2
Being routine, daily event performed in morning, afternoon, and night shifts, are characteristic of shift change.	48	29.3	116	70.7	135	82.3	29	17.7
Shift change is transfer of responsibility and accountability for patient care from outgoing nurse to incoming nurse.	72	43.9	92	56.1	150	91.5	14	8.5
Shift change allows nurse's time to observeand listen to patient.	38	23.2	126	76.8	140	85.4	24	14.6
Shift change is written report with objective ofrelating what occurred to patient.	37	22.6	127	77.4	145	88.4	19	11.6

Table (4): Staff nurses' answers about Shift change process steps items pre- and post-program (N=164)

Steps of shift change process items	Pre				Post			
	Correct answer		Incorrect answer		Correct answer		Incorrect answer	
	N	%	N	%	N	%	N	%
Outgoing nurse identifies new admitted patient to incoming nurse through patient identification.	39	23.8	125	76.2	144	87.8	20	12.2
Assessment of information during shift change include breathing sound.	23	14.0	141	86.0	141	86.0	23	14.0
During situation incoming nurse check vital signs.	82	50.0	82	50.0	134	81.7	30	18.3
Identification wristbands should contain patient name, hospital number, diagnosis and admission date.	29	17.7	135	82.3	151	92.1	13	7.9
Recommendation is important step of shift change process.	60	36.6	104	63.4	133	81.1	31	18.9

Table (5): Staff nurses' answers about skills required for incoming andoutgoing staff nurses' items pre- and post-program (N=164)

Organizing skills required for incomingand outgoing staff nurses' items	Pre				Post			
	Correct answer		Incorrect answer		Correct answer		Incorrect answer	
	N	%	N	%	N	%	N	%
Skills require for nurse to provide correct information during shift change include nursing care plan.	36	22.0	128	78.0	102	62.2	62	37.8
Critical thinking is an essential trait helpsnurses to judge and take appropriate decisions when deliver shift change.	25	15.2	139	84.8	139	84.8	25	15.2
Situation awareness help nurse to act onneeds based on surrounding events.	25	15.2	139	84.8	125	76.2	39	23.8
Incoming and outgoing nurse staff should prioritize tasks to make nursing care plan for patient.	54	32.9	110	67.1	126	76.8	38	23.2
Critical thinking is skill to analyze, reviewand judge different situations.	70	42.7	94	57.3	133	81.1	31	18.9
Responsibility is skill involves both hearingand interpreting what is said.	38	23.2	126	76.8	136	82.9	28	17.1

Table (6): Level of staff nurses' overall perception of performance about shift change process dimensions pre- and post-program (N=164)

Dimensions	Pre						Post						MH (P-value)
	High		Moderate		Low		High		Moderate		Low		
	N	%	N	%	N	%	N	%	N	%	N	%	
Communication	11	6.7	38	23.2	115	70.1	145	88.4	17	10.4	2	1.2	11.529 (<0.001**)
Teamwork	46	28.0	60	36.6	58	35.4	133	81.1	24	14.6	7	4.3	8.430 (<0.001**)
Situation awareness	5	3.0	36	22.0	123	75.0	103	62.8	33	20.1	28	17.1	9.993 (<0.001**)
Task management	7	4.3	74	45.1	83	50.6	96	58.5	61	37.2	7	4.3	9.950 (<0.001**)
Accountability and responsibility	21	12.8	66	40.2	77	47.0	147	89.6	15	9.1	2	1.2	10.698 (<0.001**)
Circumstances of shift change	18	11.0	31	18.9	115	70.1	130	79.3	24	14.6	10	6.1	10.477 (<0.001**)
Overall Perception	**9**	**5.5**	**37**	**22.6**	**118**	**72.0**	**137**	**83.5**	**22**	**13.4**	**5**	**3.0**	11.476 (<0.001**)

p: p value for comparing between pre and post
MH: Marginal Homogeneity Test
**: Statistically significant at p ≤ 0.01

Table (7): Levels of staff nurses' total perception about performing communication dimension pre- and post-program (N=164)

Communication	Pre						Post						MH (P-value)
	High		Moderate		Low		High		Moderate		Low		
	N	%	N	%	N	%	N	%	N	%	N	%	
Quality and quantity of information	16	9.8	37	22.6	111	67.7	147	89.6	15	9.1	2	1.2	<0.001**
Interaction and support	9	5.5	10	6.1	145	88.4	87	53.0	70	42.7	7	4.3	<0.001**
Efficiency	13	7.9	61	37.2	90	54.9	41	25.0	106	64.6	17	10.4	<0.001**
Patient involvement	8	4.9	23	14.0	133	81.1	80	48.8	72	43.9	12	7.3	<0.001**

MH: Marginal Homogeneity Test
p: p value for comparing between pre and post
**: Statistically significant at p ≤ 0.01

Discussion

Preprogram of knowledge and perception

Staff nurses in present study showed preprogram poor level of overall knowledge about shift change process, including concept and dimensions of shift change, steps of shift change and skills required for incoming and outgoing staff nurses during shift change. Although most of present study ICU staff nurses had bachelor, master or post graduate diploma in nursing education, their preprogram assessment revealed inadequate overall knowledge about shift change. Most probably because the majority of them not attend any pervious training or educational program about shift change during their ICU experience (about 10 years).

Really variation in experience levels between different nurses might lead to not understanding, or difficulty in delivering patient information. Lack of nursing experience can lead staff nurse to exclude important information. Contrary to greater experience allows staff nurses to better manage the timing of bedside shift change. Time management allows enough time for bedside shift change to be completed for promoting patient safety. The time management is important because bedside shift change takes a longer amount of time per patient in critical care areas due to increased task uncertainty.

Elhanafy & Hammour, (2017) [13] study about effect of educational sessions about effectiveness of handoff system for nurses on their knowledge and practice, support present study and found inadequate patient information during shift change which carries significant risks for nurses, patient and their organizations. So sufficient and relevant information through educational sessions should be exchanged to ensure patient safety and continuity of care. Moreover, 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. But significant difference in nurses` handoff knowledge discovered between pre and post nurses educational sessions.

Dunn (2017) [14] study about trust wide clinical division policy document clinical handover at nurse shift change also states that a standard shift change implementation is required to ensure the smooth transfer of information, care and management of the security of patients in ICU. Shift change steps are essential so that the shift change process is more effective, efficient, consistent, and ensures smooth delivery of information and safety of patient care. Also **Shahid & Thomas (2018)** [15] study about situation, background, assessment, recommendation communication tool for handoff in health care in the background step**,** found that lack of understanding of shift change steps of process implementation lead some nurses to face confusion when communicating supporting clinical conditions.

Nurse should communicate patient background and problems, including explaining the actions taken for every patient's nursing problem, history of allergy and surgery, installation of invasive devices, administration of drugs and intravenous fluids, as well as the results of identification of the patient's knowledge of their illness. Based on the study the majority of nurses were in the poor level of

knowledge about background information due to failing to mention that patient had an allergy and not reported any installation of invasive devices, administration of drugs and intravenous fluids resulting in suboptimal reporting.

Preprogram three quarter of staff nurses showed low overall perception about shift change process. Specially the dimensions of situation awareness, communication and circumstances of shift change. They showed low quality and quantity of information, low interaction and support as well as low efficiency and patient involvement. Beside those staff nurses were not aware of their role at the beginning of shift change and they ensure that they never feel having positive effect from the process of shift change. Adding to their poor overall knowledge about shift change process. Apparently head nurses' supervision are required to improve those staff nurses' motivation, spirit and for better performance of safe shift change activities. While they need periodical training programs to improve their shift change knowledge and performance.

Manias et al (2017) [16] study multisite survey a cross different health professionals, found that inadequate shift change communication and documentation puts patients at increased risk for adverse events because of delays in treatment or procedures. Also the potential impacts of lack of crucial information during shift change may be felt at number of levels including inadequate and inappropriate care resulting in patient harm, and breach of safety and quality standards. The study recommended for improvement around the use of structured checklists, compliance with standards procedure and access to clarity of information.

Welsh et al (2019) [17] study about barriers and facilitators to nursing handoffs recommendations for redesign found the same result as the current study. Their analysis showed that inadequate information, inconsistence quality and limited opportunity to ask questions. Beside equipment malfunction, insufficient time to generate reports and lack of organization. Researchers also found complexity of patient's conditions, inadequate, disorganized coordination, poor or absent documentation of shift change and limited interruptions shift change communication.

Sitterding & Broome (2020) [18] study about understanding situation awareness in nursing work a hybrid concept analysis, found that student had a low level in the perception, comprehension and projection of situation awareness before receiving the training. In which they didn't have cues that trigger perception; visual, auditory or tactile which create the ability to detect and understand the different distinctions for example regarding patients' safety standards and handling system of the equipment The result of information gained by student nurse while they collect data about their assigned patients hadn't yet been reflected in their practice.

Streeter & Harrington (2021) [124] study about communication behaviors associated with the competent nursing handoff revealed that nurses play an essential role in maintaining patient safety by ensuring patient well-being. The lack of standardization in this organization could result in a lack of successful coordination, leading to adverse effects, compromising patient safety, prescription errors, treatment delays, and inadequate treatment. Therefore, monitoring patients is required

for clinical deterioration, recognizing mistakes and near misses, understanding treatment procedures, and ensuring that the patient receives high-quality care.

Post program

Result of present study post implementation of the management intervention program on shift change process for staff nurses of ICUs of Elmenshawy Hospital revealed significant improvement of staff nurses' knowledge and perception of performance. The staff nurse's improvement could be due to the effectiveness of management intervention. Yet those staff nurses realize the importance of following the steps of shift change process and communication as well as trained on the skills required for incoming and outgoing staff nurses.

Really that management intervention program increased their knowledge and perception 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 shift change the outgoing staff nurse encouraging the incoming one to ask questions and seek information, answering questions of incoming staff 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.

Seada & Bayoumy (2017) [20] study about effectiveness of handoff educational program on nurses' interns' knowledge, and communication competence, who found that there was statistically significant and marked improvement in nurses' levels of shift change knowledge dimensions during different periods of assessment for the majority of handoff knowledge dimensions. This finding matched with **Thaeter et al. (2018)** [21] study about handover training for medical students: a controlled educational trial of a pilot curriculum in Germany who showed that knowledge dramatically altered and improved following the handover teaching and training program, resulting in a decrease in information omission and improved handover quality.

Soliman (2022) [22] study about effect of an educational program about intradepartmental communication among nurses on nurses' empowerment. The study revealed that there was a general improvement in nurses' knowledge, staff nurses surveyed having good knowledge of communication and reporting at the time of the immediate post-educational program assessment. In the same line **Daniel &N-Wilfong (2022)** [23] study about empowering interprofessional teams to perform effective handoffs through online hybrid simulation education, found that participants' knowledge of shift change communication improved after the educational program.

The present study highlighted that the implementation of current management intervention program about shift change process succeeded as mean for improving staff nurses knowledge and perception about performance. The intervention assisted those staff nurses to perform their effective shift change process significantly positively different from program. Therefor Elmenshawy Hospital need to take serious actions to provide support and resources for staff nurses in the form of educational and training intervention opportunities. Such intervention better to

be designed periodically to improve and update their knowledge, perception and performance about shift change process.

Conclusion

Result shows low level of staff nurse's knowledge about shift change process and low level of their perception about performance. This reflects staff nurses demand to educational intervention program about shift change process. Specially they required to have information and performance of dimensions of shift change process including communication, teamwork, situation awareness, task management, accountability and responsibility as well as circumstances of shift change. The present study well designed program improved staff nurses' knowledge and perception about performance of shift change process. Implementation of shift change process program in ICU is important for its positive impact on information exchange. Nurses need to communicate accurate and concise information, which can be easily understood by both the outgoing and the incoming staff nurses to ensure the continuity and safety of patient care.

Recommendations are suggested

1- Staff nurses need restrict supervision and motivation by their head nurse for performing of shift change process.
2- Nurse shift change process should be made part of the training curriculum for nursing students in order to improve their knowledge and performance.
3- There is need for regular updates self-learning knowledge among staff nurses to enable them to acquire special skills that will enhance better communication during shift change process.
4- Staff nurses should follow standard for shift change process in order to improve their performance.
5- Staff nurses should know that proper shift change process consider their tool to transfer responsibility and accountability of patient care.
6- Periodical training educational intervention programs required for staff nurses.
7- Staff nurses required to communicate accurate and concise information to be easily understood by both the outgoing and the incoming staff nurses to ensure the continuity and safety of patient care.
8- Staff nurses required to ensure transfer of adequate information from outgoing to incoming staff nurses through comprehensive and appropriate report content.

Recommended research

9- Research into the benefits of standardized shift change protocols to prevent of nursing errors in various care settings.
10- Future studies with larger sample sizes and several settings are suggested to assess the effectiveness of educational programs on shift change communication skills.

Reference

1. **Vedaa O, Pallesen S, Waage S, Bjorvatn B, Sivertsen B, Erevik E, Svensen E, & Harris A.** Short rest between shift intervals increases the risk of sick leave: a prospective registry study. Occupational and Environmental Medicine 2017:74: 496- 501
2. **Chin G, Warren N, Kornman L,** & **Cameron P.** Transferring responsibility and accountability in maternity care: clinicians defining their boundaries of practice in relation to clinical shift change. BMJ Open. 2018 :2. https://doi.org/10.1136/bmjopen-2011-000734.

3. **Finnigan M, Marshall S,** & **Flanagan B.** ISBAR for clear communication: one hospital's experience spreading the message. Aust Health Rev. 2018:34(4):400–4. https://doi.org/10.1071/AH09823.
4. **Thomas M, Schultz T, Hannaford N,** & **Runciman W.** Failures in transition: learning from incidents relating to clinical shift change in acute care. J Health Qual. 2019:35(3):49–56. https://doi.org/10.1111/j.1945-1474.2011.00189.
5. **Munro D.** Clinical shift change: Clear communication protects all. World of Irish Nursing & Midwifery, 2018 :23(10): 58–59.
6. **Cowan D, Brunero S, Luo X, Bilton D, & Lamont S.** Developing a guideline for structured content and process in mental health nursing shift change. International journal of Mental Health Nursing, 2018 :27(1): 429-39.
7. **Anderson J, Malone L, Shanahan K, & Manning J.** Nursing bedside clinical shift change –an integrated review of issues and tools. Journal of clinical nursing, 2018 :24(56): 662-71.
8. **Adriaenssens J, De Gucht V, & Maes S.** Causes and consequences of occupational stress in emergency nurses, a longitudinal study. Journal of Nursing Management, 2017 :23(3): 346–58.
9. **Collins S.A.** In search of common ground in handoff documentation in an intensive Care Unit. Journal of Biomedical Informatics. 2017 :45(2): 307–15.
10. **Ewing N. R.** Best practice for a standardized and safe registered nurse shift handoff. Published PhD thesis in Nursing College of Nursing University of SouthCarolina(2015).Retrievedfrom http://scholarcommons.sc.edu/etd/3178.
11. **Halm M.** Nursing handoffs: ensuring safe passage for patients. American Journal of Critical Care. 2013 :22(2): 158-62.
12. **Manser T. and Foster S.** Effective handover communication: an overview of research and improvement efforts. Best Practice and Research Clinical Anaesthesiology 2011:25:181–91.
13. **Elhanafy E, & Hammour Z.** Effect of educational sessions about effectiveness of handoff system for nurses on their knowledge and practice. The Egyptian Journal of Community Medicine. Vol. 32, No. 3, July 2022.
14. **Dunn J.** Trust-wide clinical division policy document: clinical handover at nurse shift changes. Mersey Care NHS Foundation Trust, 2017 1–27. Retrieved from http://nww.portal.merseycare.nhs.uk
15. **Shahid S, & Thomas S.** Situation, Background, Assessment, Recommendation (SBAR) communication tool for handoff in health care–a narrative review. Safety in Health, 2018 :4(1): 7.
16. **Manias E, Geddes F, Watson B, Jones D, Della P.** Perspectives of clinical handover processes: a multi-site survey across different health professionals. JClinNurs. 2017:25:8091.https://doi.org/10.1111/jocn.12986.
17. **Welsh C. A, Flanagan M. E, & Ebright P.** Barriers and facilitators to nursing handoffs: Recommendations for redesign. Nursing Outlook, 58, 148-54.doi: 10.1016/j.outlook.2019.10.005
18. **Sitterding M, Broome M, & Everett L.** Understanding Situation Awareness in Nursing Work A Hybrid Concept Analysis. Advances in Nursing Science. 2020: 35(1): 77-92. PMid:22293612 https://doi.org/10.1097/ANS.0b013e3182450158

19. **Streeter AR, Harrington NG, & Lane DR.** Communication Behaviors Associated with the Competent Nursing Handoff. Journal of Applied Communication Research. 2021:43: 294-314.
20. **Seada A. & Bayoumy S.** Effectiveness of Handoff Educational Program on Nurses Interns' Knowledge, and Communication Competence, American Journal of Nursing Science. Vol. 6, No. 6, 2017, pp. 467-77. doi: 10.11648/j.ajns.20170606.14
21. **Thaeter L, Schroder H, Henze L, Butte J, Henn P, Rossaint R, & Sopka S.** Handover training for medical students: A controlled educational trial of a pilot curriculum in Germany 2018
22. **Soliman E.** Effect of an Educational Program about Intradepartmental Communication among Nurses on Nurses' Empowerment, Unpublished Doctorate Thesis, Faculty of Nursing, Benha University. 2022
23. **Daniel L, & N-Wilfong D.** Empowering interprofessional teams to perform effective handoffs through online hybrid simulation education. Crit Care Nurs Q. 2022 :37: 225–29.