

RELATIONSHIP BETWEEN NURSING HANDOFF QUALITY AND CONTINUITY OF CARE IN INTENSIVE CARE UNIT

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ABSTRACT

Patient handoff between nurses at shift change has been a crucial process in clinical nursing practice, allowing nurses to exchange necessary patient information to ensure continuity of care and promote patient safety. The aim of the current study was to assess the relation between nursing handoff quality and the continuity of care, in intensive care unit at private Hospital. Descriptive correlational design was utilized to achieve the aim of the study. Data were collected from July to November 2015. The researcher developed the following two tools to collect the data, Nurses handoff checklist & continuity of care checklist. Convenience sample of all available (21) nursing staff. Results revealed that, the majority of observed practices of all handoff procedure were very inadequate, while less than half of them demonstrated adequate practices in all continuity of care. Regarding relationship between quality of nursing handoff and continuity of care, there was negative insignificant correlation between total nursing handoff practice and total continuity of care ($p=0.28$). The study recommended that, the hospital should be: utilize standardized handoff tool prefer to be fully integrated with current hospital electronic health record to ensure completeness and integrity of documentation; set strict policy and procedure to control nurses' negligence to handoff; institute regular training about documentation including handoff; strict monitoring staff compliance to standardized handoff after training.

KEYWORDS: Handoff, Nursing, Continuity of Care

INTRODUCTION

In critical systems such as healthcare institutions, work must continue 24 hours a day, all year round. A team of nurses is needed to offer around-the-clock patient care and this process requires transfer of patient care responsibilities. This process known as a "handoff", takes place among a team of nurses at least two or three times a day [1]. The joint commission on accreditation of health care organization (JCAHO) defines handoff as "contemporaneous, interactive process of passing patient –specific information from one caregiver to another for the purpose of ensuring the continuity and safety of patient care" [2]. One of the most common handoffs occurring in health care settings is the report provided between nurses at the change of shift and it is the primary method of sharing patient critical information between shifts and ensuring continuity of care from shift to shift.

Nursing handoffs at the bedside should be an interactive process, providing opportunities for input and questions from oncoming and outgoing as well as for obtaining the patient's viewpoint [3]. Within the Intensive Care Unit (ICU) each patient is handed-off every 12 h by each discipline (e.g., nursing, medicine, respiratory therapy). The dynamic and fast-paced environment of the ICU demands efficiency during handoff that may compromise information exchange. Clinicians within the ICU share a great deal of common ground pertaining to specialized knowledge, yet the care for each

patient demands a robust and immediate knowledge of critical and highly complex data [4]. Furthermore, Ineffective nursing handoff may lead to incorrect patient treatment, delays in diagnosis and treatment, unnecessary tests and treatments, increase the length of stay, patient complaints and malpractice claims [5 ; 6].

Continuity of care is concerned with the quality of care over time. Without care, it is unlikely to be clinically effective, safe, personalized and efficient. During the course of an acute illness, patients move from one nurse to another, one doctor to another and one level of care to another. These transfers of care should occur smoothly and seamlessly without errors or omissions. This is called continuity of care, and unfortunately, it is one of the weakest aspects in our delivery of healthcare. Loss of continuity of care can sometimes result in harmful, duplication and even fatal consequences. Consequently nurses play an important role in obtaining and sharing relevant and necessary information among providers to ensure continuity of care [7].

AIM OF THE STUDY

The aim of the current study was to assess the relation between nursing handoff quality and the continuity of care in intensive care unit.

Research Questions

- What is the quality of current hospital practice related to nursing handoff?
- What is the relation between quality of nursing handoff and continuity of care?

Operational Definition

Continuity of care: For the purpose of this study, Continuity of care includes the elements that will be provided & documented at time by staff nurse's allover 2 shifts (12)/hrs., which consist of (patient assessment, observing of patient's safety, nursing interventions, medication administration, nursing documentation, patient education, recommendations.etc.).

Ethical Consideration

An official permission to conduct the proposed study will be obtained from the ethical committee to carry out the study. Participation in the study is voluntary and based on the subjects' acceptance, the ethical issues considerations include explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it will not be accessed by any other part without taking permission of the participants, participation is with no risk.

MATERIALS AND METHODS

Research Design

Descriptive correlational design was utilized to achieve the aim of the current study.

Setting

This study will be conducted at private international Hospital at Egypt. It has all specialties. The building total area is 20000 meter square, number of building floors is 6 floors, bed capacity is 300 beds, and it includes different categories of staff nurses (baccalaureate, technical and diploma). This Hospital is also a unique center for medical

researches over the Middle East region and has informatics and training department.

Sample

Convenience sample of all available nursing staff working in intensive care unit, number (21) staff nurses

Tools of Data Collection

Data was collected using the following tools:-

1- Observational checklist was used to assess the current hospital's practice related to nursing handoff procedure. It was developed by the researcher through review of related literature on light work of Streeter [8].

This questionnaire was divided into four parts, as the following:

1st Part: Socio demographic data of the participants: The Socio demography questionnaire was designed to gather the characteristics and background of the participants. It Contains (4) items that include participant' gender, age, the level of nursing education, years of nursing experience.

2nd Part: Work related background of the participants: It Contains (5) items that include staff attended training courses related to nursing handoff, staff computer skills, number of assigned patients per shift, formal time for the hand off process and actual time for the hand off process.

3rd Part: Nursing handoff procedure for outgoing nurse: It was used to collect data about the practice of nurses related to handoff for outgoing nurse; this consists (4) dimensions with (40 elements). As follows 1) Preparation of the report (3) items, 2) giving information (29) items, 3) information seeking (3) items and 4) information verifying (4) items.

4th Part: Nursing handoff procedure for incoming nurse: It was used to collect data about the practice of nurses related to handoff for incoming nurse; this consists (3) dimensions with (12 elements). As follows 1) giving information (3) items, 2) information seeking (3) items and 3) information verifying (6) items.

The scoring system was 2 points checklist as follows (0) not done (1) done.

3- Observational checklist used to assess the current nursing care being continued: It was developed by the researcher through review of related literature & on light work of Ahmed [9]. It consists of (9 dimensions with 69 items) as follows. 1) Patient information (11 items), 2) Patient assessment(11 items), 3) Observing of patients' medical devices and safety(9 items), 4) Various nursing interventions dimension done during the shift (16 items), 5) Medication administrated during the shift (4 items), 6) Recording all data collection and patient care (7 items), 7) Patient education before discharge (4 items), 8) Recommendations(4 items) and 9) patients' rights and privacy (3 items).

The scoring system: was 3 points Likert scale as follows not applicable (1) not continues (2) continue (3).

The cutoff point of continuity of care practice evaluation tool was $\geq 70\%$ of the total score.

= 70% \rightarrow Adequate pract < 70% \rightarrow Inadequate practice.

Regarding "Not applicable" point Likert scale in this study means data did not exist regarding an element of nursing care because they were not required for the patient due to patients' diagnosis.

Tool Reliability

Internal consistency and reliability were determined using Cronbach's alpha for nursing handoff observational checklist and continuity of care observational checklist. Internal consistency using Cronbach's alpha was 0.79 for handoff observational checklist and 0.77 for continuity of care observational checklist.

PROCEDURES

Upon receiving the formal approval through formal channels. The researcher visited the intensive care unit at the study setting to explain the purposes and nature of the study and methods of data collection to supervisor and head nurse to obtain their acceptance and obtain staff nurses monthly working schedule for of this unit to design a schedule to observe the handoff procedure and nursing care being continue by staff nurses through different working shifts and days in equally and randomly by rotation. The researcher has observed the staff nurses to assess the actual performance of them during handoff by using performance evaluation checklist (one for outgoing nurse and other for oncoming nurse). Three observations for each staff nurse were done at the beginning of each shift and without informing or giving them any comments about their actual performance. Also the researcher has observed the staff nurses during the patient care provided & documented allover 2 shifts (12)/hrs to assess the continuity of care given using performance evaluation checklist. The observation was done without informing the staff nurses or giving them any comments about their actual performance. Three observations for each staff nurse were done all over 2 shifts (12)/hrs and without informing or giving them any comments about their actual performance. The total observations of staff nurses were as follows (63) observations (21 nurse x 3 observations = 63 observations), each observation was taken within 30 – 35 min. from July 2015 to the beginning of November 2015.

STATISTICAL DESIGN

The data collected from the observations (handoff procedure and continuity of care) were coded and entered into (SPSS), Version 20.0, for analysis. Data were analyzed using the descriptive statistics in the form of Frequency distribution, Percentage, Mean and Standard Deviation. And inferential statistics in the form of one way ANOVA, t-test and correlation. The significance level of all statistical analysis was at < 0.05 (P-value).

RESULTS AND DATA ANALYSIS

Table 1: Percentage Distributions of Study Participants According to their Demographic and Work Related Data (N=21)

Variable	Values	No.	%
- Age	<25	7	33.3
	26-30	9	42.9
	31-40	5	23.8
-Experience	<2	5	23.8
	3-7	10	47.6
	8-12	6	28.6
- Attending training program related to documentation.	Yes	3	14.3
	No	18	85.7
-Gender	Male	8	38.1
	Female	13	61.9

-Level of Education	Technical diploma in nursing	1	4.8
	Associate technical diploma	7	33.3
	Bachelor degree in nursing	13	61.9
-Formal time for handoff	None	21	100.0
Actual time for the hand-off	<15 min	12	57.1
	15 min	9	42.9

Table 2: Distribution of Sample According to Levels of Nursing Handoff Score. (N=21)

Levels of Handoff Score	No.	%
Poor (0-40%)	21	100
Moderate (40-70%)	0	0
Adequate (70-100%)	0	0
Total	21	100

Adequate practice (70+)

Table 3: Distribution of Sample According to Levels of Continuity of Care Score (N=21)

Levels of Continuity of Care Score	No.	%
Poor (0-40%)	0	0
Moderate (40-70%)	12	57.1
Adequate (70-100%)	9	42.9
Total	21	100

Adequate practice (70+)

Table 4: Correlation between Demographic Variables and total Handoff Score

Variable	Values	Mean	SD	F-value	p-value
Age	<25	15.14	2.54	.979	.395
	26-30	16.78	1.20		
	31-40	15.80	3.49		
Experience	<2	16.00	2.12	.000	1.000
	3-7	16.00	2.21		
	8-12	16.00	3.10		
Attending training program	Yes	15.61	2.30	3.981	.061
	No	18.33	0.58		
Gender	Male	16.38	1.51	.319	.579
	Female	15.77	2.77		
- Level of Education	Technical diploma in nursing	16.00	0.00	.073	.930
	Associate technical diploma	16.29	2.63		
	Bachelor degree in nursing	15.85	2.38		
Actual time for the hand off process:	<15 min	16.00	2.04	.000	1.000
	15 min	16.00	2.83		

Note: sample (21 nurse x 3 observations = 63 observations). * donated to statistically significant at $p < 0.05$

Table 5: Correlation between Demographic Variables and Total Continuity of Care Score

Variable	Values	Mean	SD	F	p-value
Age	<25	108.71	14.93	.141	.870
	26-30	107.78	13.28		
	31-40	104.60	12.32		
Experience	<2	104.20	15.25	.982	.394
	3-7	111.50	12.43		
	8-12	103.00	12.26		
Attending training program	Yes	108.94	13.08	2.016	.172
	No	97.67	9.29		
Gender	Male	106.88	10.88	.015	.903
	Female	107.62	14.65		
- Level of Education	Technical diploma in nursing	105.00	0.00	1.293	.299
	Associate technical diploma	113.71	14.35		
	Bachelor degree in nursing	104.08	12.06		
Formal time	None	107.33	13.06		
Actual time for the hand off process:	<15 min	107.33	12.48	.000	1.000
	15 min	107.33	14.56		

Note: sample (21 nurse x 3 observations = 63 observations), * donated to statistically significant at $p < 0.05$

Table 6: Correlation between Nursing Handoff Dimensions and Observed Continuity of Care Dimensions by Study Participants. (N=63)

Dimensions	Patient. Information		Patient Assessment		Observing of Patients' Medical Devices		Nursing Interventions		Medication Administration		Recording		Patient Education		Recommendation		Patients' Rights and Privacy		Total Continuity of Care				
	r	p	r	p	r	p	r	p	R	P	r	P	r	p	r	p	r	p	r	p			
Outgoing Nurse																							
Give Information	-0.14	0.19	-0.12	0.60	0.08	0.73	0.03	0.89	0.09	0.69	0.11	0.59	-0.194	-0.12	0.60	.01*	-	0.23	-	0.63			
Seeking information	-0.07	0.73	-0.23	0.29	-	0.03	0.90	-0.11	0.62	-	0.57	-	0.98	0.05	0.81	-	0.69	-	0.58	0.45			
Total outgoing	-0.39	0.08	0.19	0.40	0.08	0.74	-0.06	0.79	0.06	0.79	0.11	0.96	-0.11	0.63	0.26	0.24	-	0.16	0.1	0.48			
Incoming nurse																							
-Give Information	0.17	0.46	-0.05	0.80	-	0.11	0.63	0.04	0.84	-	0.05	0.85	-	0.24	0.29	.138	0.55	-	0.59	.18	0.44	0.01	0.97
Seeking information	-0.31	0.18	-0.07	0.75	-	0.27	0.23	0.42	0.62	-	0.20	0.38	0.05	0.82	-0.045	.85	0.02	0.94	.35	.13	-	.962	
-Verifying information	-0.05	0.84	0.05	0.83	0.21	0.37	-0.32	0.16	0.48	0.02*	0.00	0.83	-0.28	0.22	-	0.35	-	0.65	-	0.54			
Total incoming	-0.19	0.55	-0.03	0.88	-	0.04	0.87	-0.04	0.88	0.45	0.04*	-	0.59	-0.24	0.30	-	0.18	0.24	0.30	0.16	0.50		
Total handoff procedure	-0.442	0.45*	-0.19	0.39	0.05	0.83	-0.74	0.08	0.27	0.23	0.01	0.69	-0.25	0.28	0.07	0.77	-	0.49	-	0.28			

Note: sample (21 nurse x 3 observations = 63 observations), * donated to statistically significant at $p < 0.05$

Table 4 illustrate that there was significant positive correlation between give information by outgoing nurse and recommendation dimension ($P < 0.01$), also significant positive correlation between total handoff, verifying information by incoming nurse and medication administration during the shift dimensions ($p < 0.04$ & $p < 0.02$) respectively, but there was negative insignificant correlation between observed total handoff procedure dimensions and observed total continuity of care dimensions ($p 0.28$).

DISCUSSIONS

The quality of information exchanged during nursing handoff is very significant in all healthcare settings; however, the significance of effective nursing handoff in the ICUs, is twofold : the 1st, nurses are the chief healthcare providers for this rationale spend a great deal of time and power on the collection, integration, and utilization of patients' data for continuity of caring purposes and the 2nd reason ICU patients usually are not able to participate in their self-care activities and therefore are very vulnerable to the medical errors and continuity of care will be disrupted [10].

The finding of the current study as regards observed elements of handoff procedure between staff nurses revealed that the majority of observed practice of ICU nurses were very inadequate; all over dimension of handoff procedure, in other ward all of them have poor practice regards elements of handoff procedure which includes (preparation of handoff report, giving information, seeking information, verifying information between outgoing and incoming nurses). From the researcher observations this finding could be due to, there were no preparation for handoff procedure between staff nurses at the change of shift and it depends on verbal reports beside the available documentation is rarely used to aid in the verbal handoff and relies only on their memories when giving it. Other reasons might be due to there were no policy in the current study setting that standardizes handoff procedures and what information needs to be communicated during handoff.

This explanation congruent with the findings presented in the studies of [11 ; 12], Which concluded that the problems surrounding poor handoff have been attributed to the lack of consistent structure and content of the nursing handoff report, which they described as “informal, unstructured, and leading nurses to heavily reliant upon their memories” and this was greatly contributes to incomplete information or loss of information across the transitions of care.

Further explanation, during the study time, the researcher surprised by, multiple interruptions and noisy environment by new admissions and physician round during the time of handoff causing multiple distractions, besides complexity of cases like high-acuity patients with a lot of patient information being reported by outgoing nurse to next shift and sharing these essential information quickly leads to incomplete, inaccurate information reported and emergent patient conditions e.g., patients arrests.

This explanation is in line with the findings presented in the study of [13] which summarized that interruptions and background noise contributed to a chaotic atmosphere when trying to give a complete handoff, someone with an overall big picture and sense of the entire unit was lacking and could contribute to errors and mistakes. Hence, the finding of [14] reported that potential threats to nursing handoff quality was environmental factors, such as noise, crowding, high workload health professional fatigue. In addition, issues relating nursing handoff included a lack of structure or procedure.

Other possible reasons might be due to the incoming nurses didn't verifying the details provided to assure she or he has been given a comprehensive, accurate reflection of a patient's current status and needs. This result is incongruent with study of [15], state that information verifying consists of clarifying, repeating, summarizing and forecasting (information that may be given or asked for later, such as whether a callback from a physician is expected). These behaviors are critical to the handoff as a means of limiting the risk of miscommunication by assuring understanding). In addition, The problem of nursing handoff information overload or overly long handoff and limited time for questions [14].

Concerning observed nursing practice as regards continuity of care the study revealed that, only less than half 42.9% of them demonstrated adequate practices in all dimensions related to continuity of care. This could be due to the

majority of staff nurses didn't share the relevant and vital patient information related to patient identifications, diagnosis, background which includes ; past medical, surgical history& allergies to medications or foods during patient handoff at shift change, parallel the outgoing nurses very tired from their long shift ; overwhelmed to handoff their patients quickly and hurry to get home at the same time as the incoming nurse hear the outgoing nurse's report without asking questions and need to get to the patients' bedside. In addition, almost of this information didn't document in nursing records leads to a number of elements of patient care doesn't continue by staff nurses.

This explanation congruent with the findings presented in [16] which revealed that, approximately 20%–30% of information conveyed during nursing handoff at change shift wasn't documented in the medical record. As well as specific items that were missing in handoffs, i.e. reason for admission, clinical condition/active medical problem. Moreover, study of [17] was incongruent with the study finding, which states that, care continuity measures include: availability of patient information, effectiveness of information during transfer of patient using interactive communication at shift change between staff nurses. In addition sharing of pertinent patient information during nursing shift handoff provides for continuity of care, promotion of safety, and the elimination of preventable errors [18]

Moreover, in this respect [19] emphasized that certain aspects of nursing care formulate a threat of disrupting the continuity of nursing care. One of these is medication administration. This is one of the most demanding aspects of nursing care for the correctional nurse due to the amount of medications administered combined with the processes essential to obtain the medications in a timely manner, account for the medications, ensure the medications are accessible for each patient even if transferred within a facility, obtain added medications and document administration of medications and refusal or stopped. It takes strong supervision and diligence to guarantee that each patient is given all medications prescribed by providers.

Regarding relationship between quality of nursing handoff and continuity of care, the present study finding revealed that there was significant positive correlation between observed given information by outgoing nurse dimension and recommendation dimension ($P < 0.01$). This could be related to poor nursing practice regards handoff procedure which the changes in care plan have been done during the shift, didn't reported to next shift and missing to document it in nursing notes. This may in turn create missing crucial and specific care to the patient, care given to the patient during their stay in the hospital become discontinue and compromise patient safety.

This result results supported by group of researchers consist of various clinical staff, for instance midwives, nurses, doctors and allied health professionals. which concluded that, ambiguities and incomplete information of clinical Handoff provides a significant risk for patient safety as it could potentially lead to adverse effects such as failure to provide continuity of care to the patient or administration of the wrong medication [20;21]. Although in congruent with the Accreditation Canada indicates that transfer of information has been shown as a vital piece to improving patient safety between transition points, such as shift change, and that the healthcare team utilizes established means to transfer information timely and accurately. In addition, the qualitative results from the focus group interviews illustrated a positive effect post using an effective nursing handoff supports the standardized transfer of accurate, timely, critical patient information, as well as continuity of care and treatment, resulting in enhanced patient safety[22].

Moreover, there was significant positive correlation between total handoff, verifying information by incoming nurse and medication administration dimension from continuity of care. This could be due to the there were no policy or

standardized tool that clarify what's patient information's exchanged during nursing handoff, where the outgoing nurses didn't verifying the patient information by clarifying, repeating, summarizing it and didn't allow the incoming nurse to ask questions leads to risk of medication errors and discontinuity of patient care.

This explanations supported by The Joint Commission Center for Transforming Healthcare [2] reported problems associated with lack of standardization of nursing handoff that include “delay in treatment, inappropriate treatment, adverse events, omission of care, increased hospital length of stay, preventable readmissions, increased costs and other minor or major patient harm.” In addition, the verbal component of handoff is important to allow questions and clarification of the outgoing nurse to ensure that the incoming nurse has interpreted the patient information in the same way and continuity of care is maintained [23;24]. Hence the use of read back to verify patient information and close the exchange has been recommended as a way of improving the handoff communications [25;26].

Conversely, there was negative insignificant correlation between observed total nursing handoff practice and observed total continuity of nursing care. This result might be due to the hospital exists two different types of documentation system consists of paper formats and electronic medical record and the nurses must be document on each system as hospital administration recommended, hence there wasn't available enough number of computers at ICUs stations. while the nursing staff loaded by caring there patient and multi tasks leads to the majority of them missing to document appropriately the care given in patient's files either paper or electronic consequently they missing exchange critical information during the handoff time. In addition lack of written policies regarding documentation & handoff procedures to guide ICU nurses during work hours leads to discontinuity of care.

This explanation in the same line with the study of [27], which state the problem of recording is compound by the fact that many different documentation systems exist at same time and as care has grown more complex, the ability of those systems to talk to one another has become increasingly problematic. An enormous amount of energy will need to be applied developing expectation` in reporting and recording system within the health care team that focuses on quality.

Moreover, Although, this finding seem to be consistent with study about " time poor NHS nurses forced to ration care" done by carter [28] who concluded that almost of nurses said they were so busy on their last shift and overloaded with tasks, unable to document nursing care and have limited time to complete them. But the finding was contradicted with the study of [29]"concerning the nurses opinion`s about importance of continuity of care" which revealed that all staff nurses agreed that continuity of care leads to improve quality of care and depends on quality of documentation. Further, study of Fealy and Munroe [30] indicated that there was little formal policy regarding the way that clinical handoff should be conducted and little formal training specifically in relation to clinical handoff. Moreover, Sand-Jacklin et al., [31] Concluded that, performing standardized nursing handoff at the patient's bedside is a best practice and insures quality hand-off. It increases patient satisfaction, promotes patient safety, gives patients opportunity to ask questions, correct any misconceptions and be more involved in their care and promotes continuity of care.

CONCLUSIONS AND RECOMMENDATIONS

As regards observed elements of handoff procedure between staff nurses the study revealed that the majority of observed practices of all handoff procedure were very inadequate. Concerning observed nursing practice as regards continuity of care the study revealed that, only less than half 42.9% of them demonstrated adequate practices. Regarding relationship between quality of nursing handoff and continuity of care, the study finding revealed that there was significant

positive correlation between observed given information by outgoing nurse and recommendation dimension ($P < 0.01$). Also, there was significant positive correlation between total handoff, verifying information by incoming nurse and medication administration from continuity of care. While there was negative insignificant correlation between observed total nursing handoff practice and observed total continuity of nursing care.

Recommendations the hospital should be: utilize standardized handoff tool prefer to be fully integrated with current hospital electronic health record to ensure the completeness and the integrity of documentation that would ultimately promote the continuity of care; set strict policy and procedure to control nurses' negligence to handoff; enforce applying the electronic medical record only and withdraw the paper documentations to prevent duplication of documentation consequently prevent errors and promotes continuity of care; institute regular training about documentation including handoff to educate nursing staff; strict monitoring on staff compliance to standardized handoff after training.

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