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Effectiveness of shift handover guidelines on handing over practices and work related concerns among staff nurses in adult intensive care units

[1] Disha Duhan, [2] Sembian N, [3] Vinay Kumari
[1] RN.RM. M.Sc(N) MMCON
[2, 3] Associate Professor, Department of Nursing RN.RN.RM. M.Sc (N) MMCON

Abstract
Introduction: Patient handover is the transfer of information about and responsibility for a patient between healthcare professionals and settings. Three primary things are transferred during every handover: information, authority and responsibility. Despite the importance of shift handover there is no standard handover protocol in our health care settings.
Methods: In this, one group pretest-posttest quasi-experimental study was conducted at Maharishi Markandeshwar Hospital Mullana Ambala Haryana 2014. We recruited a total enumerative sample of 30 Neuro, Surgical and Respiratory ICU nurses. The shift handover checklist was used for data collection. Content validity and Inter rater reliability was 0.86 respectively. We employed SPSS 20.0 software, Paired-t test and ANOVA test for data analysis.
Results: Study findings revealed that the nurses practice mean score on the shift handover checklist increased significantly from 22.27 (5.09) to 79.33 (6.21) (p<0.001).
Conclusion: Using a standard handover checklist for shift handover communicates better information and improves nurse's safe practice in areas of basic nursing care.

Keywords: Effectiveness, Shift Handover Guidelines, Shift Handover practices, Work related concerns, Staff Nurses

1. Introduction

Hand-over communication relates to the process of passing patient-specific information from one caregiver to another, from one team of caregivers to the next, or from caregivers to the patient and family for the purpose of ensuring patient care continuity and safety. [1]

Patient handover is the transfer of information about and responsibility for a patient between healthcare professionals and settings. Three primary things are transferred during every handover: information, authority and responsibility. [2]

Evidence shows that ineffective shift handover increases the risk of medication error and sentinel events, delays the course of treatment, decreases patient satisfaction, and prolongs the length of hospital stay. The results of a study on pregnant women showed a significant correlation between the number of shift handovers and unplanned cesarean deliveries. Hansten found that a low-quality change-of-shift report can lead to a one- to two-hour delay in the delivery of nursing care. On the other hand, Reader *et al*. reported that ineffective intra-shift and inter-shift verbal and written communications are responsible for respectively 57% and 37% of all the healthcare errors [3].

Consequently, effective communication of the patients' clinical information is a key factor in the delivery of a safe and high-quality care. Effective information communication is so much important that in 2005. The American Committee of Safety referred to the standardization of information communication process in health care system as the second national goal of safety. This goal emphasized the communication of up-to-date and credible information that minimally disrupts the shift handover process. To achieve this goal, numerous shift handover formats such as **'**I PASS THE BATON' (Introduction, Patient, Assessment, Situation, Safety, Background, Action, Timing, Ownership, Next), 'SHARQ' (Situation, History, Assessment, Recommendations, Questions), '5 Ps' (Patients, Precaution, Plan, Problems, Purpose), and 'SBAR' (Situation, Background, Assessment, Recommendation) were developed and used worldwide. These formats improved the quality of inter-shift information communication in different hospital units worldwide. [4]

A study was conducted to check the status of medication errors in The National Capital of India and to produce appropriate recommendations on the prevention of medication errors as applicable in the Indian context as one of the means of improving patients' safety in the inpatient settings of the Indian health system. Prospective research design was used. Sample selected was 500 patient charts of inpatient department and OPD, 20 doctors, 30 staff nurses and 45 pharmacists. The risk factors concluded in the study due to which medication errors occur were overload of work, communication among staff, improper handover, lack of patient participation. The instrument used was review of patient charts using trigger tool. Data collection was done by self-administered questionnaire. A total of 340 prescriptions were recorded in the charts reviewed with 37(10.9%) signals and 28(8.2%) confirmed Adverse Drug Events. [5]

The studies conducted by the Joint Commission International revealed that poor information communication is the main risk factor for 65% and the contextual risk factor for 90% of sentinel events. Information communication happens repeatedly among healthcare providers. One of the instances of information communication in healthcare settings is during the nursing shift handovers. Effective handover facilitates the continuity of care and enhances patient safety. [6]

2. Methodology

The objectives of the study were to compare before and after practices and work related concerns of staff nurses regarding shift handover and to determine the association of level of shift handover practices with selected variables and to determine the acceptability of shift handover guidelines among staff nurses.

In the present study, independent variable was shift handover guidelines and the dependent variable was handover practices and work related concerns. Demographic variables under study were it comprised of 6 items ie: age, gender, professional qualification, total experience in present hospital, total experience in present department.

Research approach adopted for the study was quantitative research approach using quasi-experimental one group pretest-posttest design with multiple institution of treatment. The study was conducted at MMIMS&R Hospital, Mullana, Ambala, Haryana. The data was collected from 30 staff nurses of Surgical ICU, Neuro ICU and Respiratory ICU of MMIMS&R. The data was collected from 30 staff nurses selected by total enumerative sampling technique by power analysis. The tools developed and used for data collection were shift handover checklist, work related concern rating scale and semantic differential scale for acceptability. Shift handover guidelines were administered thrice. Pilot study was conducted on 5 staff nurses of surgical ward -B. The data obtained were analyzed using descriptive and inferential statistics. Statistical package for social sciences, SPSS 20.0 was employed for data management and analysis. Range mean median and standard deviation of practice score. Repeated measures ANOVA for showing comparison of pre and post practices of staff nurses

3. Results

All of the staff nurses were females. Majority of staff nurses (70%) were in their age group 20-25 years. All of the staff nurses had professional qualification for GNM. Majority of staff nurses had total working experience, experience in present hospital and department ie (86.7%).

Table 1: Frequency and Percentage Distribution of Staff nurses according to Sample Characteristics

N=30

S.no	Sample Characteristics	F (%)
1	**Age (in years)**	
1.1	20-25	21(70.0)
1.2	26-30	9(30.0)
2	**Gender**	
2.1	Female	30(100.0)
3	**Professional qualification**	
3.1	GNM	30(100.0)
4	**Duration of total service experience (in years)**	
4.1	0-1	26 (86.7)
4.2	2-3	4 (13.3)
5	**Duration of service in present hospital (in years)**	
5.1	0-1	26 (86.7)
5.2	2-3	4 (13.3)
6	**Duration of service in present department (in years)**	
6.1	0-1	26 (86.7)
6.2	2-3	4 (13.3)

The range of pretest practice score and posttest practice score was (14-36) and (71-91). Median was 22.50 and 80.0.

The results of paired-samples t test revealed that secondary to the study intervention, staff nurses mean practice score on the observation shift handover practice checklist increased significantly from 22.27(5.0) to 79.33(6.21) (p<0.001). In other words, compared to the before intervention mean score of practices, the nurses after intervention practice score had increased by 57.06%.

Table 2: Range, Mean, Median and Standard Deviation of pre and post implementation practice score of staff nurses regarding shift handover

N=30

Practice score	Range (%)	Median (%)	Mean (%)	S.D. (%)
Pre implementation	14-36	22.5	22.27	5.09
1st post implementation	54-76	65	65.57	4.68
2nd post implementation	69-87	79	78.93	4.89
3rd post implementation	71-91	80	79.33	6.21

Maximum Score =100 Minimum Scores=0

Range, Mean and Median of practice score are presented in percentages.

Table 3: Mean, Mean Difference, Standard Deviation of Difference, Standard Error of Mean Difference and 't' value of pre and Post-practice score of staff nurses regarding shift handover

N=30

Practice score	Mean	$Mean_D$	SD_D	SE_{MD}	't'	p value
Pre implementation	22.27	43.30	7.07	1.29	33.53	0.001***
1st Post implementation	65.57					
Pre implementation	22.27	56.66	7.90	1.44	39.25	0.001***
2nd Post implementation	78.93					
Pre implementation	22.27	57.06	8.51	1.55	36.71	0.001***
3rd Post implementation	79.33					

''t' (29) =2.05; *significant (p≤0.05) *** significant (p≤0.001)

The calculated t value of the seven areas was found to be statistically significant at 0.05 level which represents shift handover guidelines were effective in improving shift handover practices of staff nurses in areas of general handover of ward, patient identification, present clinical status of the patient, post op orders, nursing care, plan up progress and documentation. The highest significant gain was seen in the areas of general ward handover (100%), documentation (100%), nursing care (98.33%) and plan up for progress (98.33%). Repeated measures ANOVA was applied to check the significance of mean difference among pretest and post test scores. The calculated F value shows there is a significant difference among practice scores in pretest and posttest.

Post hoc test was applied to further isolate the mean difference between practice scores. There was a significant difference in 1st and 2nd post test scores and 1st and 3rd post test scores (p=0.0001). But there was no significant difference among 2nd and 3rd mean practice scores of staff nurses regarding shift handover guidelines.

Table: 4 Repeated measures ANOVA's test showing Mean, Standard error of pretest and posttest practice scores of staff nurses regarding the implementation of shift handover guidelines

Area	Mean	Std. Error	F	df_1/df_2
Practice score				
Pre implementation	22.31	0.9355	716.13	
1st Post implementation	65.63	0.8423		2.181/84.349
2nd Post implementation	78.92	0.8867		
3rd Post implementation	79.34	1.1196		

F (2.181/84.349) = 716.13

Post hoc test showing difference between mean pretest and mean post test scores of staff nurses

Pre test	Practice scores	Mean D SE	p value
Posttest 1	- 43.32	0.203	0.001***
Posttest 2	- 56.61	0.312	0.001***
Posttest 3	- 57.03	0.285	0.001***
Posttest 1			
Posttest 2	-13.29	0.235	0.001***
Posttest 3	-13.71	0.350	0.001***
Posttest 2			
Posttest 3	-0.427	1.119	0.312^{NS}

*** Significant ($p \leq 0.001$) NS-Not Significant ($p > 0.05$)

Majority of staff nurses (80%) had moderate and (20%) had low work related concerns for shift handover in pretest whereas in posttest all staff nurses (100%0 had low work related concern regarding shift handover

Table 5: Frequency and Percentage Distribution of Staff Nurses in terms of Level of Work Related Concerns

N=30

Category	scores	Pre implementation	3rd post implementation
Very High Concern	(64-80)	0(0%)	0(0%)
High concern	(48-63)	0(0%)	0(0%)
Moderate concern	(32-47)	24(80%)	0(0%)
Low Concern	(16-31)	6(20%)	30(100%)

The results of paired-samples t test revealed that secondary to the study intervention, staff nurses work related concern regarding shift handover self-reporting rating scale reduced significantly from 35.80 to 21.83 with a mean difference of 13.96 ($p < 0.001$). Work related concerns were reduced in all three aspects of shift handover that is nursing aspect, patient aspect and institutional aspect.

Table 6: Mean, Mean difference, Standard Deviation of Difference, Standard error of mean difference and't' value of pre and post work related problems score of staff nurses regarding shift handover guidelines

N=30

Work related problem score						
	Mean	$Mean_D$	SD_D	SE_{MD}	't' value	p value
Pre Guidelines	35.80	13.967	5.980	1.092	12.793	0.001***
Post Guidelines	21.83					

't'(29)=2.05; *** significant ($p \leq 0.001$)

Maximum number of staff nurses (80%) accepted guidelines Moderately, followed by (20%) high acceptability.

Table 7: Frequency and percentage distribution of staff nurses satisfaction regarding shift handover guidelines on the basis of semantic differential scale

N=30

ACCEPTABILITY		
Category	Range of score	f(%)
Low acceptability	(5-10)	0(0)
Moderate acceptability	(11-20)	24(80.0)
High acceptability	(21-25)	6(20.0)

Minimum score=5 Maximum score=25

4. Discussion

Error of commissions are more prevalent in healthcare settings; however, errors of omission in ICUs are potentially more detrimental. In ICUs, many decisions are momentous and if not made timely, may result in serious injuries. Kumar *et al*. found that during the first six hours of septic shock-induced hypotension, every one hour delay in the initiation of antimicrobial therapy decreases the survival rate by 7.6%. [7]

As, in ICUs, nurses bear most of the responsibilities for patient care, they are the chief agents for both initiating and detecting life-threatening events. Accordingly, documentation and early report of abnormal laboratory findings is an effective strategy for the prevention of healthcare errors and promotion of patient safety. The present study was aimed to evaluate the effectiveness of shift handover guidelines in terms of practices of staff nurses and its impact on work related concerns at MMIMS&R Hospital, Mullana, Ambala, and Haryana. The findings of study reveals that mean post implementation score (79.33) was higher than mean pre implementation score (22.57). Similar findings were reported by Javad. Seyed(2013) that the staff nurses mean score on the safe practice evaluation checklist increased significantly from(11.6) to (17). [10]

Another study done by Nicholas and Andrew(2008) found that post using standardized performas for overall data handed over mean percentage increased from 72.9% to 93.4%. [11]

The findings of study reveals that mean post implementation score (79.33) was higher than mean pre implementation score (22.57). Similar findings were reported in an observational study conducted which describes the use of a standardized handover card within a prospective randomized controlled trial amongst interns at a Mayo Clinic in the US that significant improvement in the quality of handover amongst the active arm as compared to the control. Over 92 days, there were a total of 1385 patient care episodes. Poor handover was reported on 5.8% in the intervention group, compared with 14.9% in the control group, with a p value of 0.16. 80% of the interns reported that the standardized card helped them stay organized during handover. [12]

Another study was conducted by Arora (2005) the result of the study were 26 interns caring for 82 patients were interviewed after receiving handover from another intern. 25 discrete incidents, all the result of communication failures during the preceding patient handover, and 21 worst events were described. Inter-rater agreement for categorization was high (k 0.78–1.00). Omitted content (such as medications, active problems, pending tests) or failure-prone communication processes (such as lack of face-to-face discussion) emerged as major categories of failed communication. Similar to study findings which revealed (106.5%) staff nurses had burden due to pending work followed by (95%) delay in patient care that was reduced to (70%) and (67.5%). [13]

Singh et at 2007I examine types and causes of medical errors involving trainee clinicians. From 240 cases 70% involved errors from team-work breakdowns. Lack of supervision and handoff problems were the most prevalent types of teamwork problems, and both were disproportionately more common among errors that involved trainees than those that did not (respectively, 54% vs 7% [*P*<.001] and 20% vs 12% [*P*=.0091]. Similar to the study findings that suggest communication failure between staff was identified (98.75% vs 52.5%) [14].

Gendeep *et al.* (2007) conducted an experimental study in which simulated handover scenario was constructed after five handover cycles, only 2.5% of patient information was retained using the verbal-only handover method, 85.5% was retained when using the using the verbal with note taking method and 99% was retained when a printed handout containing all patient information was used. After 5 handover cycles, the amount of information retained using the printed sheet was significantly more than when using note-taking ($P<0.05$) or verbal only methods ($P<0.001$) Verbal handover with note taking is shown to be an effective method of handover in our study,. Nearly all information is retained by the printed handout method but this relies on the handout being regularly updated. Similar to study findings were calculated 't' value for seven areas was found to be statistically significant at 0.05 level the mean post implementation score for seven areas were 100%, 88.89%, 69.57%, 94.17%, 98.33%, 98.33% and 100%. [15]

5. Conclusion

It is highly important to have better practice and to provide effective care to the patients admitted in intensive care units. Shift Handover is a regular process that happens three times a day. As a matter of fact it is important to have guidelines, which are based on current best practice recommendations, can be developed and reviewed and guidelines can be developed to improve staff nurses shift handover practices

Staff nurses should use standardized, valid, reliable shift handover checklist for shift handover technique. Clinical practice of staff nurses regarding shift handover should be assesed regularly and feedback should be provided. Reinforcement should be given.

Nursing students are the future staff nurses who will provide direct patient care, there is always a need to acquire and update existing body of knowledge in order to enhance competency in dealing with patient demand and quality care.

Nursing students should learn demonstration, role play can be given to nursing students to increase their understanding and retention for important aspects of shift handover

5. Recommendations

Based on experience gained during the study and the results obtained, the following recommendations are made.

1. The study can be replicated on large sample of staff nurses in different settings for making broad generalization.
2. A longitudinal study can be conducted to assess the effectiveness of shift handover guidelines on handing over practices and work related concerns among staff nurses.
3. A similar study can be conducted on staff nurses of surgical wards.
4. A study can be conducted in which the duration of the intervention can be increased.

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