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Original Research Article

Status of Handover Practice of Postoperative Patient from Operating Room to Postanaesthesia Care Unit in Muhimbili Orthopedic Institute Operating Theatre Recovery Room

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Abstract: ***Background*:** Postoperative period is a time of significant physiological flux, patient recover from the acute derangements resulting from anaesthesia and surgery. On arrival at PACU, the patient is re-evaluated by the anaesthesia provider gives a handover to the responsible PAC provider. Incomplete handover increase risk of morbidity and mortality to patients. ***Objective*:** Study assessed the handover practice of postoperative patient from operating room to post-anaesthesia care unit in Muhimbili Orthopedic Institute operating theatre recovery room. ***Methodology*:** This was a hospital based cross-sectional observational study which was conducted at Muhimbili Orthopedic Institute Hospital located at Upanga. Handover conducted by Anaesthetic Provider to PACU nurse in the Recovery rooms were Observed and information communicated were marked using SBAR handover checklist. Then anaesthetic providers and PACU nurse were surveyed to know which item in the checklist was relevant to be communicated during handover. Data collected was analyzed using Statistical Package for Social Scientists (SPSS version 23). ***Results*:** 319 PACU handover were observed. 17.5% of the handover were completed and rated as Good, 50.8% were satisfactory and 31.7% poorly completed. Most communicated items were Vital Sign 90.6%, Operation Underwent 86.8% and Type of anaesthesia 85.9% and the least was ASA 24.5%. Items providers thought should be communicated were Name of the patient (0.954), Age and Gender (0.938), Type of Anaesthesia (0.925). Among the Anaesthetic Provider Cadre Physician Providers provided Good and Satisfactory handover compared to Nurse Provider. ***Conclusion*:** Majority of the handover were satisfactorily completed, with Vital Sign, type of anaesthesia and Operation underwent being the most communicated items in checklist.

Keywords: Completeness of PACU handover; Association Anaesthetic Provider to Completeness.

INTRODUCTION

Clinical handover is the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis [5, 11, 13]. WFSA encourage the use of SBAR handover tool so as to help improve communication during handover process. It focuses on Situation, Background, Assessment and Recommendation regarding the patient that is needed to be communicated [9]. Lack of detailed Information during handover of patients may be hazardous to patients with increased risk of drug Overdose, Allergic Reaction, in adequate analgesia. Failure to report a critical information about the patient which may be hazardous and may end up with mortality. Each anesthetic handover increased the risk of any major in hospital morbidity or mortality by 8%, as Loss of critical information during

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handover [15]. Achieving complete handover in PACU is still a challenge worldwide .In Saudi Arabia 42% of the handover were Good, 38% Satisfactory and 20% Bad [24]. Germany, only 31.4% of items considered important were handed over [20]. In Nigeria, Vital Signs 87.1%, Type of Anaesthesia 82.2% and Type of Surgery was 82.2% were the most communicated items during handover. In Canada many items deemed as needed to be handed over by Anaesthesiologist and PACU nurses were not communicated [16]. In Sweden Professional cadres (Anaesthesiology, Nurse anaesthetist, PACU nurse) had different views regarding which information that should be communicated during postoperative handover [28].

Since incomplete handover is still a crisis worldwide and the recently increase in number of medicolegal issues and insurance claims its high time now to review the completeness of handover Postoperative. This work will also serve as a pilot study in the development of formal MOI PACU handover checklist in the near future.

METHODOLOGY

Study Design:

This was a hospital based cross-sectional observational study, Postoperative patient handover conducted by Anaesthetic Provider to PACU nurse in the Recovery rooms were Observed. The SBAR handover checklist was used to mark each information communicated during handover. At the end the anaesthetic providers and PACU nurse were surveyed to get their input on what item in the checklist was relevant to be communicated during handover.

Study Setting:

The study was conducted at Muhimbili Orthopedic Institute Hospital which is a Tertiary teaching hospital, located in Dar es Salaam Tanzania. It provides the primary, secondary and tertiary care of preventive and curative health services in the field of Orthopaedics, Traumatology and Neurosurgery, as well as being role model for efficient hospital management in Tanzania. Currently the Institute has a bed capacity of 150 beds, (Private 30 and general 120). It has a total of 9 operating theatres were 7 are for elective procedures and 2 for emergency procedures. They have a total of 7 beds in the Post Anaesthesia Care Unit which mostly handles both emergency and elective cases. The study period was 8 months, divided into the first 5 months of data collection from July to November 2019 then followed by another 3 months of data analysis, interpretation and report writing from December 2019 to February 2020. Handover in MOI are done between anaesthetist provider and the responsible PACU nurse. A Face-to-face Verbal type of handover is done were issues concerning the patient are communicated and when PACU nurse satisfied with patient condition the patient is accepted and responsible anaesthetic provider is allowed to leave the patient.

Study Participants:

It included observing the postoperative patient handover as it was done between the anaesthesia providers and PACU provider in MOI operating theater recovery room.

Study Variables:

The dependent Variable was completeness of handover between Anaesthetic provider to PACU provider and the independent variables were work experience in PACU, Anaesthesia provider cadre and Urgency of Operation.

Training of Research Assistant:

There was one research assistant involved who is a Nurse Anaesthetist. Research assistant underwent training for 2 days so as to be familiar with the inclusion criteria, exclusion criteria, sampling techniques and 10 pilot handover under the supervision of the principal investigator were done.

Data Management and Analysis:

After data collection, the study tool was screened for completeness. The tools had 16 items that the WFSA had included in the SBAR handover checklist that need to be communicated during handover, demographic parameters of the anaesthetic providers and PACU nurse. Data collected was analyzed using Statistical Package for Social Scientists (SPSS Statistics 23). Using Pearson's Chi-square, a P value < 0.05 was considered statistically significant and Relative Importance Index was used to ascertain which information were perceived relevant to be communicated during handover by anaesthetic providers and PACU nurses.

Ethical Considerations:

Ethical clearance was granted by MUHAS Institutional Review Board (IRB) (Ref. No. DA.287/298/01A/) and the permission to do the study was obtained from The Director of Muhimbili Orthopedic Institute.

Dissemination of the Study Results:

Study results will be distributed to the Department of Anaesthesiology and Critical Care at MUHAS, MUHAS Library and Muhimbili Orthopedic Institute.

RESULTS

Socio-Demographics Characteristic

Majority of the participants were Nurse Anaesthetics about 61.8%. Overall the majority staff 58.8%% participating in handing over of patient had experience ranging between 1 to 5 years and 62.2% of Anaesthetic Providers did not have induction course before they started working in PACU. Overall majority 79.4% of participants were male. Table 1 shows the sociodemographic of participants.

Table 1: Shows the Socio-demographics characteristic

Age (Mean)	**34.4yrs**	**Range 25 - 50yrs**
Sex	**Frequency (n)**	**Percentage (%)**
Male	27	56.3
Female	21	43.7
Total	**48**	**100**
Less than 1 year	3	6.3
1 to 5 years	27	56.3
More than 5 years	18	37.4
Total	**48**	**100**
Cadre		
Registrar	3	6.3
Resident	10	20.8
Nurse Anaesthesist	21	43.8
PACU Nurses	14	29.1
Total	**48**	**100**
Induction Course		
Yes	21	43.8
No	27	56.2
Total	**48**	**100**

Completeness of PACU handover

The completeness was Good in 17.5% of the whole handover conducted were rated Good, while majority of the handover 50.8% were satisfactory completed and 31.7% of the handover were poor completed. Figure 1: Shows the proportion of completeness of the handover.

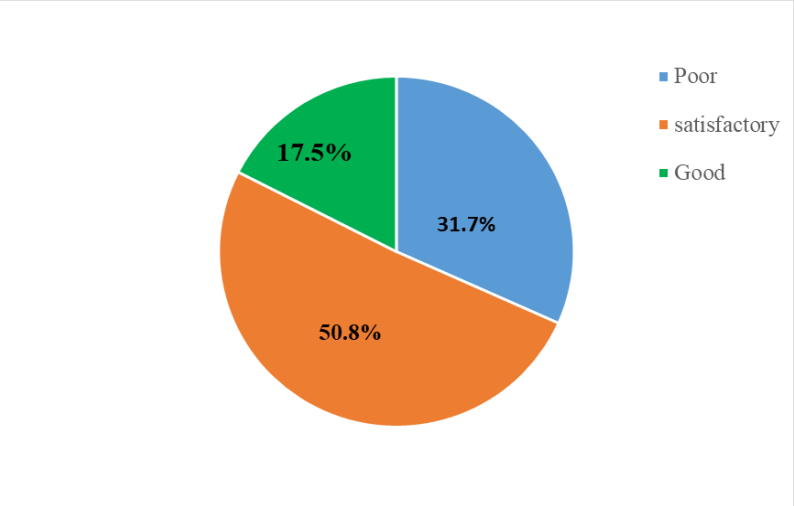

Figure 1: Pie chart showing proportion of Completeness of handover

Proportion of SBAR Items Communicated During Handover

Of all 16 items, Vital Signs (90.6%) was the most communicated item during handover followed by Operation underwent (86.8%). ASA classification (26.3%) item was the least communicated item during handover. Table 4. Shows SBAR checklist items and the proportion of being communicated during handover.

Table 2: Proportion of SBAR Items communicated by Anaesthesia Provider during handover

SBAR Item	**Nurse Anaesthesia**	**Resident**	**Registrar**	**Overall**
Name	75.7%	88.0%	86.4%	79.3%
Age and Gender	60.8%	77.3%	68.2%	65.2%
ASA classification	22.1%	41.3%	18.2%	26.3%
Operation Underwent	88.3%	82.7%	86.4%	86.8%
Type Of Anaeshesia	85.1%	90.7%	81.8%	86.2%
Intraoperative Events	63.5%	64.0%	68.2%	63.9%
Medical and Surgical	34.7%	56.0%	59.1%	41.4%

SBAR Item	Nurse Anaesthesia	Resident	Registrar	Overall
Medication History	47.3%	69.3%	68.2%	53.9%
Allergies	71.2%	81.3%	77.3%	74.0%
Current Airway status	47.7%	54.7%	50.0%	49.5%
Vital Signs	89.2%	93.3%	95.5%	90.6%
Pain	49.1%	60.0%	54.5%	52.0%
Wound	40.1%	56.0%	50.0%	44.5%
Postoperative concerns	44.1%	60.0%	50.0%	48.3%
Recovery Instruction	52.3%	81.3%	72.7%	60.5%
Discharge Criteria	75.7%	82.7%	81.8%	77.7%

Relevant SBAR Items that should be Communicated During Handover

Figure 2: Of the all 16 SBAR Items, Name of the patient (RII=0.954) was ranked the highest Relevant Item that is to be communicated during handover as perceived by Anaesthesia providers and PACU nurses. Followed by Age Gender (RII =0.938), Type of Anaesthesia (RII= 0.925) and Vital Signs (RII=0.921). Surgical wound (RII=0.713) item was ranked the lowest in terms of its relevance to be communicated during handover. Figure 2. Relative Importance Index of SBAR Items as Perceived by Anaesthetic Providers and PACU nurses.

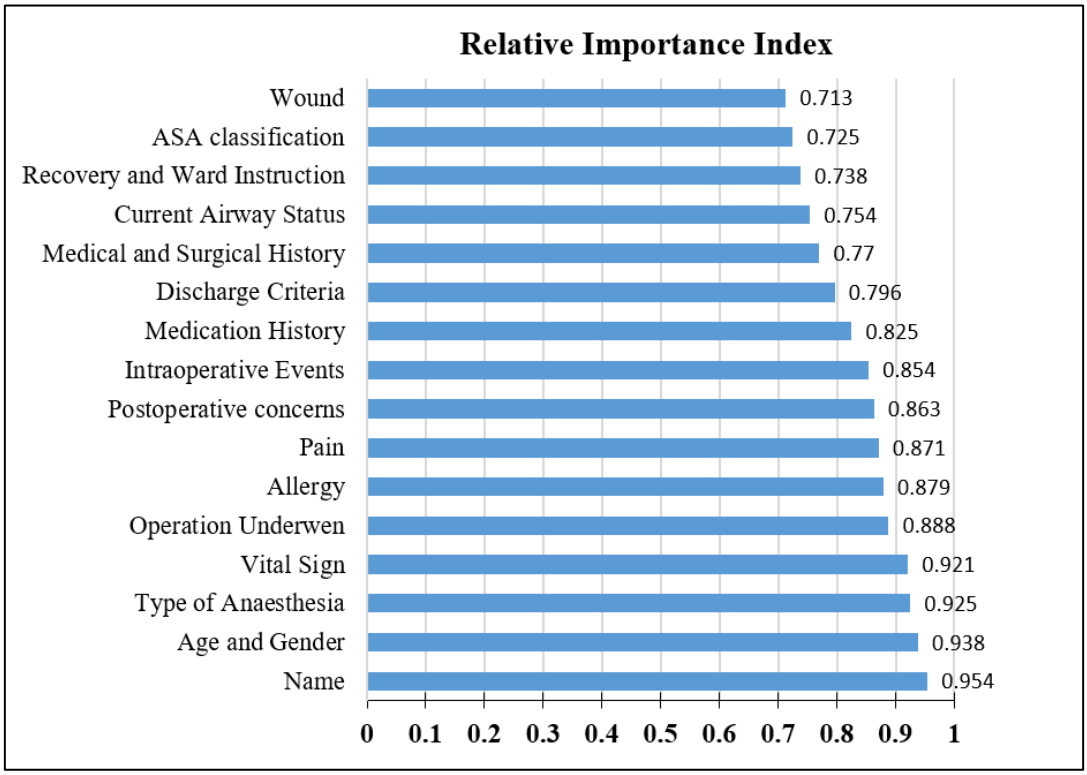

Figure 2. Relative Importance Index of SBAR Items as Perceived by Anaesthetic Providers and PACU nurses

Association of completeness of PACU Handover among Anaesthesia Provider Cadres

Physician Provider cadre had high proportion for Giving Good complete Handover (30.9%), compared to Nurse Providers 11.7%. Also Nurse Providers had the higher proportion of Poor handover 39.6% compared to Physician Providers 13.4%%. P value <0.001, the association of Providing a complete Handover among Anaesthetic Cadres is statistically significant. Table 3 show the association of completeness of PACU handover among the Anaesthesia Provider Cadres.

Table 3: The Association of completeness PACU Handover among Anaesthesia Provider Cadres

Anaesthesia Cadres	Good	Satisfactory	Poor	Total	P-value
Nurse Providers	26 (11.7%)	108(48.6%)	88(39.6%)	222 (100%)	<0.001
Physician Providers	30 (30.9%)	54(55.7%)	13(13.4%)	97 (100%)	
Total	56 (17.5%)	162 (50.8%)	101(31.7%)	319 (100%)	

Association of Completeness of PACU Handover among the Anaesthesia Providers

Resident Doctors had high proportion for Giving Good complete Handover (33.3%), followed by Registrars who had a proportion of 22.7% then Nurse Anaesthetics with the lowest proportion of 11.7%. Nevertheless Nurse Anaesthetics had the highest proportion of Poor handover 40.5% compared to Registrar 22.7% and Resident Doctor who had proportion of 10.7% a. P value <0.001, such association of providing a complete Handover among Anaesthetic providers is statistically significant. Table 4 show the association of completeness of PACU handover among the Anaesthesia Providers.

Table 4: The Association of Completeness PACU Handover among Anaesthesia Providers

Anaesthetic Provider	Good	Satisfactory	Poor	Total	P-value
Nurse Anaesthetics	26(11.7%)	108(48.6%)	88(39.6%)	222 (100%)	<0.001
Resident Doctor	25 (33.3%)	42(56.0%)	8(10.7%)	75 (100%)	
Registrar	5 (22.7%)	12(54.5%)	5(22.7%)	22(100%)	
Total	56(17.6%)	162(50.8%)	101(31.7%)	319 (100%)	

DISCUSSION

Overall handover of post-operative patients in most PACU is mostly inconsistency in our research the degree of completeness of Handover was Good in 17.5%, Satisfactory complete was 50.8% and Poorly complete was 31.7%. In Saudi Arabia they found good quality handover in 42%, Satisfactory in 38% and Bad in 20% of all cases [24]. The difference in our finding from that of Saudi Arabia could be attributing due to the fact that in their research the participants were Consultants Anaesthetist, Senior Registrars and Registrars. Cornelie Salzwedel *et al.,* reported similar results that before the implementation of the checklist, only 31.4% of items, considered important handover items by a group of senior anaesthesiologists and PACU nursing staff, were handed [20].

Also our study has shown that individual SBAR checklist item frequently communicated during handover were Vital signs (90.6%), Operation underwent (86.8%) and Type of Anaesthesia (85.9%) and the least communicated were American Society of Anaesthesia Physical status (ASA) was 24.5%, Past Medical or Surgical History was 32.6% and Surgical wound was 38.9. Similar results were also reported by, Endale Gebreegziabher *et al.,* who identified (Vital signs 87.1%, type of surgery 82.2%% Type of anaesthesia 82.2%) were frequently communicated [25]; Elizabeth L. J *et al.,* also found (Vital signs, Type of surgery 91%, Type of anaesthesia 79%) were communicated [26]

Furthermore this research has revealed ranking of SBAR checklist items according to their relevance of being communicated during handover as perceived by Anaesthetic providers and PACU nurses, Name of the patient had RII of 0.954, Age and Gender RII 0.938, Type of Anaesthesia RII of 0.925, Vital Sign RII of 0.921, Operation Underwent RII of 0.888, Allergy RII of 0.879 and Pain both RII of 0.971 and the least relevant was Surgical Wound with RII of 0.713, ASA classification RII of 0.725. Study done in Canada reported the Feedback from Anaesthesiologists and PACU nurses regarding the necessity of communicating each item during handover they responded as follows Type of Surgery 100%, Type of Anaesthesia 100% Name Of Patient 92%, Age 94%, ASA 44% [16]. Also Courtney Gibney *et al.,* in her research found that the factors ranked most essential by anaesthetic providers were Patient and Airway status. Then followed by Procedure, Allergies and Anesthesia [27].

Also we found that Physician Anaesthetist provided more Good and Satisfactory handover compared to Nurse Anaesthetist with <0.0001 statistical significance. Similar results were identified by Maria Randmaa *et al.,* who investigated different professionals' (nurse anaesthetists, anaesthesiologists, and PACU nurses) descriptions of and reflections on the postoperative handover. Their results showed that there was different in professional views regarding postoperative handover [28]. Not much studies have been conducted to check the statistical difference if the quality of handover between Physician anaesthetist and Nurse anaesthetist. Most studies conducted only tested the statistical difference among the Physician Anaesthesist (Anaesthesiologist, Resident and Fellows) like a research done by Naveed Siddiqui reported that there was No significant difference in the distribution of handovers among the Anaesthesiologist, residents and fellows [16].

Limitations

Results of this research can't be generalized as the exact situation of OR- PACU handover in other hospitals in Tanzania due to the fact that the study is conducted in one tertiary specialized hospital Centre. Hawthorne effect due to observing Anaesthetic providers and PACU nurses.

CONCLUSION

Handover of patient between anaesthetic provider and PACU nurse is incomplete in most times as seen from our study. Anaesthetic providers focus on what they have done on their anaesthesia part and forget communicating all significant patient history preoperatively, intraoperatively and postoperatively concerns and recommendation. Our findings also shows that majority of anaesthetic provider and PACU nurses

perceived that almost all of the SBAR checklist item were relevant and that they require to be communicated during handing over of patients. Though in real practice it's different as we could see the proportion of providing Good handover was less than a fifth of the whole observed handover. Nonetheless it has been shown that there is a significant difference in providing complete handovers among the anaesthetic providers with most good handover being provided by anaesthesia Resident as compared to Registrar and Nurses Anaesthesia.

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