



Cross-sectional Study

Assessment of postoperative patient handover practice and safety at post anesthesia care unit of Dilla University Referral Hospital, Ethiopia: A cross-sectional study



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ABSTRACT

Introduction: Good handover creates a common understanding of responsibility and patients' status. To proceed with effective handover process, effective communication between healthcare providers plays a vital role. But, it is commonly observed that there is ineffective communication between health care providers and it increases the risk of medical errors and negatively affects the quality of care, patient outcome and satisfaction. In addition, the transfer of care after surgery to the postanesthesia care unit (PACU) presents special challenges to providers on both the delivering and receiving teams.

Methodology: A descriptive cross-sectional study was conducted at post anesthesia care unit of Dilla University Referral Hospital from October 1 to November 30, 2020. To conduct the study, consecutively selected 208 handovers of patients from operation theatre (OT) to PACU were assessed. A checklist was developed based on a combination of criteria adopted from the Australian Medical Association 2006 and British Doctors Committee 2004. It was pilot tested and changes were made before the actual data collection.

Result: Our study found that the postoperative patient handover practice among professionals was poor (below 50%) in the areas of patients' full name, age, medical registration number (MRN), ASA class, allergic history, medical history, baseline vital signs, preoperative diagnosis and surgical procedure performed. Our study also found poor postoperative hand overing regarding the intraoperative blood loss 9.6%, intraoperative clinical incidents 5.3%, recovery condition 7.2%, postoperative analgesia plan 18.8%, and post operative antibiotic plan 8.2%. Whereas, type of anesthesia 81.3%, intraoperative vital signs 80.8%, and intraoperative analgesia used 79.8%, intraoperative fluid management 80.8% were among the indicators with >50% completion rate.

Conclusion and recommendation: Our study found a poor practice of patient handover regarding sociodemographic and preoperative profile, anesthesia, surgery and other necessary information. We believe standardizing this process and providing training will improve the quality of postoperative handovers and the safety of patients during this critical period.

1. Introduction

Patient handover can be defined as the transfer of information, responsibility and accountability for all or some aspects of care of a patient or a group of patients to another person or professional group on a temporary or permanent basis [1,2]. Post operative handover (handoff) involves the transfer of perioperative information from the surgical team to the postoperative care provider [3]. To proceed with effective

handover process, effective communication between healthcare providers plays a vital role. But, it is commonly observed that there is ineffective communication between health care providers and it increases the risk of medical errors and negatively affects the quality of care, patient outcome and satisfaction [4–6].

Good handover creates a common understanding of responsibility and patients status, which means how the patients presented and how the patient will be provided with the consecutive care [1,2,7,8]

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Handover failures are common and can lead to diagnostic and therapeutic delays and precipitate adverse events. The transfer of care after surgery to the postanesthesia care unit (PACU) presents special challenges to providers on both the delivering and receiving teams. Upon arrival at the receiving unit information are transferred by the OR team in an environment that is often chaotic and busy, to a team largely unfamiliar with the patient [9,10]. This includes the transfer of information about preoperative and intraoperative conditions and postoperative management plans [2]. Moreover, anesthetists are expected to handover all the relevant information to the recovery room staff [11].

Health care provider (HCP) handoff is a time when shortcomings in communication can result in patient harm, particularly in the postoperative period, when the patient's physiology is changing rapidly. The Joint Commission has reported that two-thirds of sentinel events result from communication errors and more than 50% of these sentinel events occur during HCP handoff [12]. Jones PM et al. also showed that among adults undergoing major surgery, complete handover of intraoperative anesthesia care compared with no handover was associated with a higher risk of adverse postoperative outcomes [6].

Increases in medical errors have raised great concern regarding patient safety, and health care providers are seeking solutions to reduce risk and increase patient safety with effective clinical handover procedures and practices [10,13]. Furthermore, it is very important to analyse the practices and challenges in the local setting and that solutions are customised to fit the specific context in which the postoperative handovers takes place. It is also important to acknowledge the role of non-technical skills in the work process with respect to patient safety. Thus, the main aim of this study was to assess the postoperative patient handover practice and safety among professionals in Dilla University Referral Hospital. Moreover, this study also aimed to improve the continuity and quality of post-operative patient handover and care.

2. Materials and methods

A descriptive cross-sectional study was conducted at Dilla University referral hospital from October 1 to November 30, 2021. Dilla university referral hospital is located at Dilla town, Gedeo zone, South Nation, Nationalities and Peoples Region, in Southern Ethiopia at a distance of 360 km from Addis Ababa the capital of the country. The hospital has more than 2 million people of catchment area that lives in Dilla town, surrounding zones of southern nation and nationality, sidama and Oromia region. It delivers comprehensive surgical care for admissions from surgical ward, emergency department, gynecology and obstetrics, pediatrics and orthopedics wards with full functioning four operating theatres. The post anesthesia care unit (PACU) of Dilla University has 3 tables with 1 anesthetist and nurse in charge at a time. The unit is located in close proximity to the operation theatre and equipped with standard monitoring devices, oxygen sources and other routinely needed equipments.

Usually, the responsible anesthetist who provided the intraoperative care will transfer and handover the patients for the PACU staffs. All (adult, paediatric, major-minor, and elective-emergency) patients from different specialties (general surgery, orthopedics, obstetrics and gynaecology) underwent operation both under general anesthesia and regional anesthesia who was handovered during the study period was included.

In the study hospital, the postoperative handover is informal, unstructured and inconsistent with often incomplete information transfer. So that, immediately after handover the nurses in the PACU filled the checklists based on the information provided to them either from transferring anesthetists or the operating surgeon. Training was provided for the data collectors and five nurses were involved in the data collection.

To conduct the study, consecutively selected 208 handovers of patients from operation theatre (OT) to PACU were assessed. Patients transferred to intensive care unit or to wards were excluded. A checklist

was developed based on a combination of criteria adopted from the Australian Medical Association 2006 and British Doctors Committee 2004. It was pilot tested and changes were made before the actual data collection. Thirty (30) handover information indicators were developed and checked as "Yes" for complete handover, "No" for incomplete and no handover or "Not applicable". The expected completion rate was 100% for all indicators. Indicators with >90% completion rate were marked as acceptable and completion rate of <50% was considered as areas of critical need improvement. The checklist was divided into 3 main parts: sociodemographic and preoperative information; intraoperative, anesthesia and surgery related information; and miscellaneous information.

The methodology in this study followed the international guidelines for strengthening the Reporting of Cohort Studies in Surgery (STROCSS) 2019 statement [14]. The study was registered at www.researchregistry.com with Unique Identifier Number (UIN): research registry7712.

Ethical approval was obtained from Dilla University institutional review board. The data were collected after getting permission from the Dilla university referral hospital. All relevant ethical principles and data protection policies under the Helsinki declaration were followed. All data were accessed, compiled, and secured by avoiding personal identifications and all the data were accessed for only the authors. The data were checked, coded, entered, and cleaned using IBM SPSS statistics 20.0 software. Descriptive analysis was performed. Narratives and tables were used to present the data and findings were expressed in the form of frequencies and percentages.

3. Result

Information was collected from a total of 208 handovers taking place during the data collection time. This included a wide range of surgical specialties, and both general and regional anesthesia.

3.1. Information related to sociodemographic and preoperative patient status

Our study found that the postoperative patient handover practice of anesthetists was poor in the areas of sociodemographic and preoperative status of the patients. The completion rate of patients' full name, age, medical registration number (MRN), ASA class, allergic history, medical history, baseline vital signs, preoperative diagnosis and surgical procedure performed were 24.5%, 16.8%, 20.7%, 4.3%, 3.8%, 11.5%, 24%, 39% and 76.4%, respectively (Table 1).

Table 1
Components of postoperative handover provided to PACU nurses of Dilla University Referral Hospital. (Frequency and percentage (n (%)), N = 208.

Sociodemographic and preoperative information	Response [n (%)], N = 208		
	Yes	No	NA
Age (in years)	35 (16.8)	173(83.2)	0 (0)
Patient full name	51(24.5)	157(75.5)	0 (0)
Medical registration number (MRN)	43 (20.7)	165(79.3)	0 (0)
Allergic history	8(3.8)	200(96.15)	0 (0)
ASA class	9(4.3)	199 (95.67)	0 (0)
Preoperative diagnosis	81(39)	127(61)	0 (0)
Any medical history	24(11.5)	184(88.5)	0 (0)
Procedure	159 (76.4)	49(23.6)	0 (0)
Baseline vital signs	50(24)	158 (76)	0 (0)

3.2. Information related to intraoperative care, anesthesia and surgery

Regarding the patients' intraoperative care, anesthesia and surgery related information; our study found poor postoperative hand overing practice in the areas like intraoperative blood loss 9.6%, intraoperative clinical incidents 5.3%, recovery condition 7.2%, postoperative analgesia plan 18.8%, post operative antibiotic plan 8.2%, anticipated post operative complications 5.3%. Whereas, type of anesthesia 81.3%, intraoperative vital signs 80.8%, and intraoperative analgesia used 79.8%, intraoperative fluid management 80.8% were among the indicators with nearly good completion rate (Table 2).

3.3. Completion rate of miscellaneous information

The handover practice for other necessary miscellaneous information was also found. For instance any post operative support needed for the patient was transferred only in 15(7.2%) of the patients (Table 3).

4. Discussion

Teamwork is an essential component of achieving high reliability in healthcare and working atmosphere. Poor surgical teamwork behaviour concerning information sharing during intraoperative and handover phases has been shown to be significantly associated with more frequent postoperative complications or death [15]. Postoperative patients are in an "at-risk" state and require constant vigilance and assessment that can only be achieved with effective communication between the anesthesia provider and the PACU nurse. Even with vigilance, however, surgical patients are more vulnerable to handover errors than are patients in

Table 2

Completion rate of postoperative handover practice indicators regarding anesthesia and surgery related Information provided to PACU nurses of Dilla University Referral Hospital. (Frequency and percentage (n (%)), N = 208.

Anesthesia and surgery related information	Response [n (%)], N = 208		
	Yes	No	NA
Type of Anesthesia and medications given	169 (81.3)	39 (18.7)	0(0)
Intraoperative vital signs	168 (80.8)	40(19.2)	0(0)
Intraoperative fluid management (type and amount)	168 (80.8)	40(19.2)	0(0)
Intraoperative analgesic drugs given (name, dose and route)	166 (79.8)	42 (20.2)	0(0)
Intraoperative complication (if any)	11 (5.3)	197 (94.7)	0(0)
Anticipated postoperative complications	11 (5.3)	197 (94.7)	0(0)
Monitoring used	15 (7.2)	193 (92.7)	0(0)
Recovery/extubation condition	15 (7.2)	133 (63.9)	60(28.8)
Postoperative analgesia plan	39 (18.8)	169 (81.2)	0(0)
Postoperative plan for fluid management	18 (8.7)	190 (91.3)	0(0)
Intraoperative blood loss	20(9.6)	188 (90.4)	0(0)
Postoperative antibiotic plan (name, dose, route and time)	17(8.2)	191 (91.8)	0(0)
Deep venous thrombosis (DVT) prophylaxis	8(3.8)	0(0)	200 (96.2)
Post-operative plan for tubes and drains	11(5.3)	0(0)	197 (94.7)
Postoperative plan for NG tube and feeding	13(6.3)	175 (84.1)	20 (9.61)
Postoperative investigative modality	15(7.2)	193 (92.8)	0(0)
Medication plan ordered (if any drug needed or to be continued)	13(6.3)	195 (93.7)	0(0)

Table 3

Completion rate of postoperative handover practice indicators regarding miscellaneous Information provided to PACU nurses of Dilla University Referral Hospital. (Frequency and percentage (n (%)), N = 208.

Miscellaneous information	Response [n (%)], N = 208		
	Yes	No	NA
Any medication for shivering (type, dose and route)	81 (38.9)	127 (61.1)	0 (0)
Any antiemetic agent for Post operative nausea and vomiting	23 (11.1)	185 (88.9)	0 (0)
Any additional postoperative support mentioned (if needed)	15(7.2)	193 (92.8)	0 (0)
Contact person in case of any concerns	14(6.7)	194 (93.3)	0 (0)

other clinical areas because of the combined acuity and transition [16, 17].

The aim of patient handover is to provide a high quality and appropriate clinical information to the coming healthcare professionals to allow for the safe transfer of responsibility for the care of patients. Good handovers are essential in providing the continuity of care, patient safety and error avoidance. This will help to ensure that after handover all members of the team will have the same understanding [2,16,18,19]. Our study in general found poor handover practice regarding socio-demographic and preoperative patient information, anesthesia and surgery related issues, and miscellaneous information. A root cause analysis reported by the Joint Commission suggests that poor communication is a major cause of anesthesia-related sentinel events [20].

The study revealed that none of the indicators of post operative handover had a completion rate of 100%. Our study found that the postoperative patient handover practice of anesthetists was poor in the areas of sociodemographic and preoperative status of the patients. The completion rate of patients' full name, age, medical registration number (MRN), ASA class, allergic history, medical history, baseline vital signs, preoperative diagnosis and surgical procedure performed were 24.5%, 16.8%, 20.7%, 4.3%, 3.8%, 11.5%, 24%, 39% and 76.4%, respectively. In line with our finding, a study in university of Gondar, Ethiopia showed that patient handover practice of anesthetists was poor regarding patient identity 3.2%, preoperative patient condition 0% and type of operation 82.2% [2]. A survey by Jayaswal S et al. showed also showed that the handoff process was inadequate with most of the clinicians giving and receiving poor or incomplete handoff information [20].

The transfer of care after surgery to the PACU involves cross-disciplinary staff with varied experience; the delivering team members with their diverse yet important perspectives of the course of surgery; and the receiving team concurrently stabilizing, assessing, and making care plans for the patient. Moreover, handover failures are common and can lead to diagnostic and therapeutic delays and precipitate adverse events [9].

Regarding the intraoperative care, anesthesia and surgery related information, our study found poor postoperative hand overing practice in the areas like intraoperative blood loss 9.6%, intraoperative clinical incidents 5.3%, recovery condition 7.2% and postoperative analgesia plan 18.8% and post operative antibiotic plan 8.2%. Whereas, type of anesthesia 81.3%, intraoperative vital signs 80.8%, and intraoperative analgesia used 79.8%, intraoperative fluid management 80.8% were among the indicators with nearly good completion rate. In line with our finding a clinical audit among a total of 124 handovers taking place between 30 anaesthetists and 12 nurses in the recovery room of Gondar University referral hospital by Gebremedhn EG et al. also found that the practice of post operative handover was below 90% for type of anesthesia 82.2%, intraoperative vital signs 87.1%, intraoperative analgesia use 62.9%, intraoperative fluid management 59.7%, intraoperative blood loss 8.1%, intraoperative clinical incidents 3.1%, recovery condition 45.1% and postoperative management plan 3.2% [2]. In contrary,

a survey by Jayaswal S et al. among 80 anesthesia staff, residents, and nurse anesthetists found good handover practice regarding name of procedure (100%), relevant medications received by the patient theatre (99%), Intraoperative anaesthetic course and any complications (98%) and Medical history (93%). But the practice of handover was below 90% in areas of antibiotic plan (88%), Patient name (83%), intraoperative surgical course and any complications (75%) and Patient's current condition and vitals (73%) [20]. The reason for the discrepancies could be setup and human resource variation, sample size difference and merged variables. A prospective analysis conducted on total number of 790 handovers with duration of 73 ± 49 s by Milby A et al. in Germany regarding the quality of post-operative patient handover in the post-anesthesia care unit also showed that few items were transferred in most of the cases such as type of surgery (97%), regional anesthesia (94%) and cardiac instability (93%). However, some items were rarely transferred, such as American Society of Anesthesiologists physical status (7%), initiation of post-operative pain management (12%), antibiotic therapy (14%) and fluid management (15%). There was a slight correlation between amount of information transferred and duration of postoperative handovers ($r = 0.5$) [21]. Nagpal K et al. also reported similar finding [22].

A qualitative descriptive study (2017) by Randmaa M and his colleagues involving six focus groups with 23 healthcare professionals involved in postoperative handovers in Sweden showed that there are variations in different professionals' views on the postoperative handover that healthcare interventions are needed to minimise the gap between professionals' perceptions and practices and to achieve a shared understanding of postoperative handover [15]. So that, implementation of a handover protocol has been suggested by experts in order to standardise patient handovers [13,21,22]. Moreover, like our hospital's practice, Nagpal et al. identified that the postoperative handover is informal, unstructured and inconsistent with often incomplete information transfer [23].

5. Limitation

The limitation of this study is it is a single centre study that it is only representative for the study hospital. Nevertheless, it is most likely that studies in other hospitals would lead to similar results. Limited number of articles for discussion of the practice and safety of handover was also other limitation of the study.

6. Conclusion and recommendation

Our study found a poor practice of patient handover regarding sociodemographic and preoperative information, anesthesia and surgery related issues and other necessary information. So that, we believe standardizing this process can improve patient care by ensuring information completeness and accuracy and increasing the efficiency of the patient transfer process. We also recommend providing training regarding postoperative handover, team skills and communication. These recommendations have the potential to improve the quality of postoperative handovers and the safety of patients during this critical period.

Availability of data

All data generated or analyzed during this study were included in this published article.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Ethical approval

Ethical approval: Ethical clearance to conduct the research was obtained from the institutional review board of Dilla University College of health sciences and medicine.

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Author contribution

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Registration of research studies

Trial registry number.

1. Name of the registry: research registry

Unique Identifying number or registration ID: 7712.

2. Hyperlink to your specific registration (must be publicly accessible and will be checked): <https://www.researchregistry.com/browse-the-registry#home/>

Consent

NA.

Guarantor

Ababayehu Zemedkun.

Declaration of competing interest

Declarations of interest: none.

Abbreviations

OT Operation Theatre
PACU Post Anesthesia Care unit

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.103915>.

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