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Research Article

Assessment of the Quality of Computerized Operation Notes at Yekatit 12 Hospital Medical College

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Abstract

Background: Surgeons must maintain accurate, legible, and up-to-date records of patient information for optimal care and safety. However when use of computerized operation notes, posing initial challenges for surgeons until they adapt and the system matures. Addressing these challenges is crucial for improving caregiver practices and overall patient safety.

Objectives: To assess the quality of computerized operation in the department of general surgery.

Methods: A cross-sectional study design was utilized, and data entry and analysis were conducted using SPSS version 25. Chi-square tests were applied to selected parameters assumed to significantly impact patient safety.

Result: The entire computer auto generated elements such as time and date was 100% typed. Whereas some important element of the standard like the name of the anesthetist, scrub and circulating nurse, whether prophylactic antibiotics were given or not and the need for deep vein thrombosis prophylaxis were not typed at all. Overall the quality of operation note is poor and factors contributing to the poor adherence to the standard set by Royal College of surgeons' guideline are the knowledge gap, the poor design of the system compared to the system.

Conclusion: There's a notable gap in the technical aspects of operations regarding standard elements. Urgent refinement of the system and teaching are needed to ensure better patient care continuity and meet operation note writing standards.

Keywords: Operation Notes; Medical Records; RSCE; Poor Quality

Abbreviation

ACS: American College of Surgeon; DVT: Deep Vein Thrombosis; IT: Information Technology; EMR: Electronic Medical Record; MOR: Major Operation Room; OT: Operation Theater; RCS: Royal College of Surgeon; V/S: Vital Sign; Y12HMC: Yekatit 12 Hospital Medical College

Introduction

Operative notes are crucial written records detailing surgical procedures performed on patients. They serve as vital evidence and documentation for patient care, safety, legal matters, audit, research, and medical coding. Legibility and clarity are essential to facilitate postoperative care, avoid confusion, and ensure accuracy in financial transactions and legal protection. These notes play a pivotal role in modern patient care, necessitating proper training and adherence to standard guidelines for effective record-keeping and information flow [1-6].

Assessment of surgical operation notes against Royal College of Surgeons (England) guidelines is vital for compliance improvement. This research aims to evaluate the quality of such notes by resident doctors and senior physicians, ensuring adherence to set standards. The guidelines specify essential components such as procedure details, findings, complications, and postoperative care instructions. Evaluation against these standards aids in striving for optimal documentation quality [2,7-10].

Advancements in technology are rapidly transforming various aspects of surgical practice, underscoring the necessity for standardized operation note-taking to support ongoing clinical care and provide evidence [11-15]. Ensuring standard quality care for patients and safeguarding healthcare professionals through adherence to operative note standards is crucial. Our aim was to assess the hospital's EMR against these standards and recommend its implementation if found compliant.

Method and Materials

Study area and period

The study was conducted in Y12HMC which is an academic institution found in Addis Ababa, Ethiopia under Addis Ababa City Administration. The study was conducted from 1st -30th June, 2023.

Study design

Hospital based cross-sectional descriptive study design with both quantitative and qualitative approach was applied.

Source and Study population

The source population comprised all major elective and emergency operative note procedures in general surgical department during the study period while documented elective and emergency operative note procedures in general surgical department during the study period and who fulfills the inclusion criteria were the study population.

Inclusion and exclusion criteria

All typed and accessible operation note (elective and emergency) for which major procedure is done in general surgical department were included whereas Those operation notes not accessible or missed due to technical problem. Operation note of the person conducting this research to avoid bias excluded from the study.

Study variables

- **Independent variables:** Quality of operation notes measured by completeness of the items of the Efficient and robust synchronization estimation (RCES).
- **Dependent variables:** Academic Level.

All the operation notes documented during the study period.

Data collection tools and procedures

Predesigned questionnaire according to standards prescribed by Royal College of Surgeon of England [16] was used to obtain data from operative notes on the computers. All the written operation notes by practicing physician (resident) and consultant of the department of surgery was audited during the study period. The operation note was graded in a quantitative scale for the compliance and completion of the items stated in the notes was analyzed using the RCS Guidelines. A specifically designed checklist was constructed and assessment was made manually of all the deficiencies as per the standards set. That means Different parameters of writing operation notes were recorded and analyzed. The operation notes was reviewed by principal investigator by directly adopting the parameters from RCS like date and time of surgery, name of surgeon, procedure, operative diagnosis, incision details, signature, closure details, postoperative instructions, complications, prosthesis used, and serial numbers and the likes.

Data analysis procedures

The Operation notes was evaluated critically name, age, sex, operating personnel names, surgeon, assistant surgeon, scrub nurse, date of the operation, duration of operation, pre-operative and post-operative diagnosis, indications, surgical findings, name and details of surgical procedure, position of patient during surgery, skin preparation and solutions used, sutures used and suturing patterns, wound closure, blood loss, drains, implants, tolerance of procedure and complication, and postoperative order referring a publication of the Royal college of Surgeons audit 2014 [17]. The presence of each of the components in the operation note was assigned a count of one while incomplete, absent or wrong entry was assigned 2 counts. Parameters were tabulated and chart was constructed using Microsoft Excel for easy comparison. Data was analyzed using the IBM statistical package for social science version 20.Descriptive analyses were performed on explanatory variables using frequency tables and summary statistics. Chi square and fishers exact test was used to determine association between the academic level and the complete typing of the vital components of the operation notes with statistical significance determined at p value < 0.05.

Result

The socio demographic characteristics

Majority of the operation note (91.5 %) were written by the residents and the remaining 8.5% were typed by consultants. A total of 25 residents and consultants filled the questionnaires, out of which ten were junior residents, nine senior residents and six consultants (Table 1).

Table 1: Shows the socio demographic characteristics of the consultants and residents who recorded the operation notes.

S/N	Socio-demographic	Frequency	Percentage
Sex	Male	19	76
	Female	6	24
Educational status	Junior Resident (1-3 year trainees)	10	40
	Senior Resident (≥4 year trainees)	9	36
	Consultants (Surgeons)	6	24

Completeness of the content of operation note against RCSE 2014 guideline

The entire computer auto generated elements such as time and date of all 106 operation note were (100%) typed. The parameters which have mandatory space (Surgeons name, Assistants name, Type of anesthesia, the diagnosis, the planned operation name, finding, and post op diagnosis) to be filled on the software

are also mentioned completely. Whereas some important element of the standard like the name of the anesthetist, scrub and circulating nurse, whether prophylactic antibiotics were given or not and the need for DVT prophylaxis were not typed at all. Other vital elements of the operation note for example, the position of the patient was mentioned in only 50% of the cases, incision (97%), confirmation of count (31%), hemostasis (31%), estimation of intraoperative blood loss (31%), and transfer condition of the patient to recovery room in only 35.8% of the cases. Majority of the operation notes were typed by residents in (91.5%), followed by consultants (8.5%) (Table 2).

Item/parameter	Done	Not typed	Incomplete	Not applicable	Total %
Date recorded	100%	-	-	-	100%
Time recorded	100%	-	-	-	100%
Whether its Elective/emergency procedure typed	100%	-	-	-	100%
Name of anesthetist	-	100%	-	-	100%
Scrub Nurse name	-	100%	-	-	100%
Circulating Nurse name	-	100%	-	-	100%
Type of Anesthesia	100%	-	-	-	100%
Names of operating surgeon	100%	-	-	--	100%
Names of assistant	100%	-	-	-	100%
Position of patient during operation	47%	53%	-	-	100%
Name of Operative procedure carried out	95.3%	4.7%	-	-	100%
Count confirmation	29.2%	70.8%	-	-	100%
Type of Incision	92%	8%	-	-	100%
Operative diagnosis	100%		-	-	100%
Operative findings	98%	2%	-	-	100%
Problems/complication	46%	1%	53%		100%
Extra procedure performed	41.5%	57.5%	-	1%	100%
If any additional procedure why it was performed	42%	18%	-	40%	100%
Details of tissue removed	75.5%	18.9%	5.7%	-	100%
Prosthesis/Implanted/drains, Materials Serial Number	16%	26.4%	12.3%	45.3%	100%
Details of suture used	2.8%	85.5	6.6%	4.7%	100%
Details of closure technique	1%	3%	95%	1%	100%
Anticipated blood loss	31%	69%	-	-	100%
Hemostasis secured	29.2%	70.8%	-	-	100%
Antibiotic prophylaxis		100%	-	-	100%
DVT prophylaxis		100%	-	-	100%
Detailed post-operative instructions	1.9%	2.8%	95.3%	-	100%
Transfer condition to recovery room	35.8%	64.2%	-	-	100%
Signature	100%	-	-	-	100%
Consultant responsible named	100%	-	-	-	100%

Table 2: Shows Completeness of the content of operation note against RCSE 2014 guideline.

Documentation variation of consultants and residents

Generally consultants are more likely not to type the important items of the RCSE like position of the patient during operation (only 2 out of 9), intraoperative blood lose, hemostasis securing report (only in one note), instrument count report (in 2 report) and transfer condition of the patient from the operation theater (in 4 report) than residents.

Association of the academic level and completeness of operation note

Association was assessed between the academic level and the completeness of the note with items of the standard of RCSE using Chi square test with Pearson chi square and Fishers exact test on selected parameters which was assumed to have impact on patient safety significantly but showed no association with P value

of 0.574, 0.778, 0.117, 0.211 and 0.628 for transfer condition of the patient, intraoperative blood lose report, position of the patient during the surgery, hemostasis securing status and report of instrument correctness respectively.

Discussion

This study showed the benefits of computerized operation note writing, ensuring completeness in crucial components like surgeon and assistant names, anesthesia type, diagnosis, operation details, findings, and postoperative diagnosis, unlike handwritten notes. For example, research at Menilik II Hospital and TASH Hospital demonstrated 90% documentation rates for surgeon names. Additionally, anesthesia type, operative diagnosis, and intraoperative findings were recorded in about 90% of notes at both hospitals. However for the above mentioned parameters computerized operation note writing documentations showed 100% and this indicates that the software prompts mandatory information entry, reducing the likelihood of oversight by surgeons and residents [18,19].

Overreliance on computers without ensuring essential elements in operation notes, such as the names of medical staff, administration of prophylactic antibiotics, and the need for DVT prophylaxis, can lead to critical omissions. If the software lacks specific spaces for these details, it resembles handwritten notes and may bias physicians into thinking that provided templates are sufficient. However, knowing the required elements enables practitioners to include them in the provided space for technical aspects, ensuring comprehensive documentation.

Patient positioning was only documented in 50% of cases, notably lower than the rates reported in studies conducted at Menilik II Hospital and TASH, where it was documented in 90% of cases (Mesale Solomon., *et al*. 2020). This rate is also slightly lower than that reported in a Nigerian study (58%) [20]. Type of Incision was satisfactory typed in (97%) of cases compared to 90% Of the TASH and Menilik II Hospital. And it is far better than the Sudanese study which is recorded in only 63% of cases [9]. Confirmation of count in this study as already mentioned in about 31% of cases which quite lower compared to finding of other studies. Declaration of the count was reported in 81% and 69% of study at Minilik II Hospital and TASH [19].

Mentioning whether hemostasis is achieved is crucial for continued post-operative care but hemostasis securing is typed in only (31%), of the charts in this studies which is below much of the studies done like it is 57% in one of Saudi Arabia's studies [3]. Estimation of intraop blood loss which is important for continuation of patient care, it just mentioned in (31%), of the cases which is again at alarming low rate of documentations compared to the Nigerian study (56%) [3], but better than Saudi's finding (17.6%) [2], and finally transfer condition of the patient to recovery room is typed in only 35.8% of the cases which is quite poor compared to the standard.

The operation notes ideally should be written by the most senior of the team. But can be written by the member of the team given that they are supervised by their seniors [13,21]. In this study it showed that the majority of the operation notes were written by the residents (91.5%), compared to (8.5%) of the consultant. The consultants' involvement in typing operation note in Y12HMC is comparable to the TASH but better than Menilik II hospital I (2%) [19] and their involvement should be encouraged for betterment of continuity of patient care and surgeons performance.

From this limited sample, it appears that consultants are less likely to include key items recommended by the RCSE in their operation notes compared to residents. For instance, details like the patient's position during surgery, intraoperative blood loss, hemostasis securing report, instrument count report, and postoperative transfer condition were less frequently documented by consultants than by residents. The reasons behind this trend are unclear but could be attributed to a lack of knowledge or forgetfulness.

Conclusion

In the study various parameters of RCSE such as anesthesia type, surgeon's name, and intra-operative findings are completely documented. However, it lacks essential information like the anesthesia provider's name, team nurse, and details on prophylactic antibiotics and DVT prophylaxis. Technical aspects, including patient positioning and suture descriptions are also insufficient, along with the absence of complication reports, prosthesis details, and intra-operative blood loss estimation.

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