

Quality of Handwritten Surgical Operative Notes in Two Taiz Hospitals

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Abstract— Background: Operative notes are essential for patient postoperative care and also important for research and medicolegal purposes. Therefore operative notes should be accurate, comprehensive and legible. This study aims to assess the quality of surgical operation notes in Taiz Hospitals against Royal College of Surgeons of England (RCSEng) guidelines, 2014 to improve our practice, patient care, and training process in surgery. **Methods:** Nineteen parameters based on the RCSEng 'Good Surgical Practice' 2014 guidelines used to assess the surgical operation notes in two tertiary hospitals(public and private) in Taiz city during 2018-2019 retrospectively. 306 surgical operation notes from general surgery and other specialties were randomly selected. The notes were assessed for legibility and compliance to the RCSEng guidelines standards, whether each standard was recorded or not. **Results:** In comparison to RCSEng guidelines standards a significant number of surgical operative notes were incomplete. Overall, 50% compliance was achieved in 7/19 standards concerning the date, diagnosis, name of operating surgeon and assistants' names, name of an anesthetist, incision, operative findings, and the signature. Of the 19 standards set by RCSEng guidelines, the distribution of the maximum score was 14 achieved only in 4 (1.3%) operation notes, the highest percentage of the score was 8 achieved in 34 (11.1%) operation notes. The legibility of operation notes was 78.8%. **Conclusion:** Accurate and complete operative notes are essential in different aspects. The quality of handwritten surgical operation notes written in Taiz Hospitals was poor when compared with a set standard. We recommend the use of procedure proformas for operation notes to improve the quality.

Index Terms— Operation note, general surgery, Quality.

1 INTRODUCTION

SURGICAL operative notes are important documentation that describes the detail of the procedure and operative findings.[1] Operative notes are essential for patient postoperative care and also important for research and medicolegal purposes. Therefore operative notes should be accurate, comprehensive and legible.[2]-[4] Operative notes can be dictated, handwritten or typed through electronic templates or database management systems.[5]-[7]

In Taiz city, despite the increment in the number of surgical procedures in different specialties with the increment in the number of qualified surgeons, there is no sufficient data regarding the assessment of quality and legibility of operative notes which reflect negatively on the care provided to the patient. This study aims to assess the quality of surgical operation notes in two Taiz hospitals in comparison to Royal College of Surgeons of England (RCSEng) 'Good Surgical Practice' 2014 guidelines to improve our practice, patient care, and training process in surgery.

2 MATERIALS & METHODS

A retrospective study was conducted at two hospitals one

is public and the other one is private. Surgical operations are conducted daily from general surgery and other various

specialties e.g. (orthopedics, vascular, urosurgery, ophthalmology, maxillofacial surgery, and gynecology and obstetrics) which we are targeting in our study.

A sample of 306 files collected between 1st January 2018 to 30th December 2019, were randomly selected.

306 operation notes were retrospectively audited by one reviewer according to the RCSEng 'Good Surgical Practice' 2014 guidelines (Table 1).[8]

Each operation note was assessed by a questionnaire created by Google form which was filled out electronically. The questionnaire consists of two parts, the first part includes patient ID, hospital name and either it is public or private, surgeon name and specialty, date of operation and who wrote the operative note. The second part assesses 19 items set by RCSEng 'Good Surgical Practice' 2014 guidelines and legibility.

Each item has two answer options Yes or No. Statistical analysis was performed using SPSS version 24. Statistical analysis for the difference between the two groups was performed using the independent sample t-test. A P-value of <0.05 was considered statistically significant.

Table 1. Standards for Documentation in Operation Notes from the RCSEng Good Surgical Practice Guidelines 2014

Date
Time
Elective or emergency procedure
Names of operating surgeon and assistant
Name of theatre anesthetist
Operative procedure carried out
Incision
Operative diagnosis
Operative findings
Problems or complications
Extra procedure performed and the why it was performed
Details of tissue removed, added or altered
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials
Details of closure technique
Anticipated blood loss
Antibiotic prophylaxis
DVT prophylaxis
Detailed postoperative care instructions
Signature

3 RESULTS

A total of 306 operation reports were analyzed selected randomly from two hospitals; public with 151 (49.3%) operation notes and private with 155 (50.7%) operation notes. The procedures distributed as following 164 (53.6%) general surgery and other specialties including: 67 (21.9%) Orthopedics, 25 (8.2%) Urological, 14 (4.6%) Vascular, 12 (3.9%) Plastic, 6 (2.0%) Ophthalmic, 6 (2.0%) Maxillofacial, 5 (1.6%) Gynecology and Obstetrics, and 7 (2.3%) Neurosurgery. Overall, there were 156 (51%) emergency and 150 (49%) elective operations.

Of the 19 standards set by RCSEng ‘Good Surgical Practice’ guidelines, the distribution of the maximum score was 14 achieved only in 4 (1.3%) operation notes, the highest percentage of the score was 8 achieved in 34 (11.1%) operation notes the rest scores were shown in Table 2.

Overall, 50% compliance was achieved in 7/19 standards for date documentation (72.5%), diagnosis (64.4%), name of operating surgeon and assistants’ names (84%), name of anesthetist (72.2%), incision (60.8%), operative findings (59.2%), and the signature that was the only standard attained (91.2%).

This study audit highlighted 12 components with poor compliance: the time or length of the operation (8.5%), the operative procedure carried out (42.8%), any problems or complications (3.6%), any extra procedure performed and the reason why it was performed (7.8%), details of tissue removed, added or altered (22.9%), identification of any prosthesis used including the serial numbers of prostheses

and other implanted materials (8.5%), details of closure technique (28.4%), postoperative care instructions (32.7%),

Table 2. Distribution Of Operation Notes Score

Total score 19	n	%
1	15	4.9
2	9	2.9
3	21	6.9
4	28	9.2
5	32	10.5
6	33	10.8
7	33	10.8
8	34	11.1
9	31	10.1
10	25	8.2
11	19	6.2
12	18	5.9
13	4	1.3
14	4	1.3
Total	306	100

anticipated blood loss (2.9%), antibiotic prophylaxis (31.4%), DVT prophylaxis (2.6%), and surgery type either elective or emergency (0%). (Table. 3)

Legibility of operation notes was 78.8% and notably, 56.6% of operative notes have been written by consultants.

The two surgical categories, general surgery and other surgical specialties were analyzed and compared in both hospitals and in each hospital separately, it was found that General surgery notes were more complete in comparison to other surgical specialties with a higher score of 7-14 /19

Table 3. Overall Compliance With RCSEng Guidelines

Compliance	n	%
Date	222	72.5
Time	26	8.5
Elective or emergency procedure	0	0
Names of operating surgeon and assistant	257	84
Name of theatre anesthetist	221	72.2
Operative procedure carried out	131	42.8
Incision	186	60.8
Operative diagnosis	197	64.4
Operative findings	181	59.2
Problems/complications	11	3.6
Extra procedure performed and the why it was performed	24	7.8
Details of tissue removed, added or altered	70	22.9
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	26	8.5
Details of closure technique	87	28.4
Anticipated blood loss	9	2.9
Antibiotic prophylaxis	96	31.4
DVT prophylaxis	8	2.6
Detailed postoperative care instructions	100	32.7
Signature	279	91.2

Table.4 Compliance of General Surgery and other Surgical Specialties

Compliance		GS	Other specialty	Total	P value
Date	n	129	93	222	0.011
	%	42.2	30.4	72.5	
Time	n	18	8	26	0.104
	%	5.9	2.6	8.5	
Elective or emergency procedure	n	0	0	0	
	%	0	0	0	
Names of the operating surgeon and assistant	n	143	114	257	0.118
	%	46.7	37.3	84.0	
Name of the theatre anaesthetist	n	130	91	221	0.003
	%	42.5	29.7	72.2	
The operative procedure carried out	n	71	60	131	0.908
	%	23.2	19.6	42.8	
Incision	n	113	73	186	0.002
	%	36.9	23.9	60.8	
Operative diagnosis	n	113	84	197	0.094
	%	36.9	27.5	64.4	
Operative findings	n	116	65	181	0.000
	%	37.9	21.2	59.2	
Any problems/complications	n	10	1	11	0.012
	%	3.3	0.3	3.6	
Any extra procedure performed and the reason why it was performed	n	15	9	24	0.401
	%	4.9	2.9	7.8	
Details of tissue removed, added or altered	n	44	26	70	0.101
	%	14.4	8.5	22.9	
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	n	10	16	26	0.149
	%	3.3	5.2	8.5	
Details of closure technique	n	50	37	87	0.446
	%	16.3	12.1	28.4	
Anticipated blood loss	n	5	4	9	1.000
	%	1.6	1.3	2.9	
Antibiotic prophylaxis (where applicable)	n	54	42	96	0.540
	%	17.6	13.7	31.4	
DVT prophylaxis (where applicable)	n	2	6	8	0.151
	%	0.7	2.0	2.6	
Detailed postoperative care instructions	n	66	34	100	0.003
	%	21.6	11.1	32.7	
Signature	n	153	126	279	0.225
	%	50.0	41.2	91.2	
Total	n	164	142	306	
	%	53.6	46.4	100	

standards in general surgery than 1-6/19 standards in other surgical specialties. Regarding the comparisons between the two surgical categories as shown in table 4, 5 & 6, the compliance to the guidelines was better in general surgery regarding date and time of surgery, details of tissue removed in public hospital whereas in a private hospital the GS notes were more complete in anaesthetist's name, incision, detailed post-operative instructions. In both hospitals, operative findings were documented better in GS notes than in other specialties. Additionally, the recording of any problems/complications was better in GS in the general comparison between GS and other surgical specialty operation notes. The RCSEng guideline parameters that documented poorly in both categories notes were operative

diagnosis, any extra procedure performed, identification of any prosthesis used, details of closure technique, anticipated blood loss, antibiotic prophylaxis, DVT prophylaxis, and surgery type elective or emergency.

The relation between hospital type (public or private) and the compliance to RCSEng guidelines has been studied showed better compliance in a private hospital which were statistically significant (P<0.05)

in the date of surgery, name of theatre anaesthetist, the operative procedure carried out, incision, operative diagnosis, operative findings, details of tissue removed, added or altered, antibiotic prophylaxis, detailed postoperative care instructions and signature. (Table. 7)

The 19 standards have been studied against the surgery

Table. 5 Compliance of GS and other Surgical specialties

Total score 19	GS	Other specialty	Total
1	4	11	15
2	4	5	9
3	10	11	21
4	12	16	28
5	16	16	32
6	13	20	33
7	21	12	33
8	22	12	34
9	14	17	31
10	14	11	25
11	13	6	19
12	14	4	18
13	4	0	4
14	3	1	4
Total	164	142	306

type whether it is elective or emergent and showed no difference in compliance except in time (p. value 0.007), antibiotic prophylaxis (p.value 0.014) and operative diagnosis (0.045) in favor of the emergent operation (Table. 8).

4 DISCUSSION

Operation report is an important pillar in patient postoperative care. For this reason it must be accurate, legible and complete according to the RCSEng ‘Good Surgical Practice’ 2014 guidelines.

However, the handwritten surgical operation notes in Taiz Hospitals are relatively legible and the parameters of the RCSEng guidelines that are essential for patient safety were well documented and include the date, name of the surgeon, name of an anesthetist, diagnosis, operation findings, incision and signature. They are incomplete with only 7of 19 standards having more than 50% compliance.

Regarding the results related to any extra procedures performed and complications encountered should be interpreted with caution because the author could not be sure whether it had been omitted or did not occur.

Additionally, there are standards from the Royal College of Surgeons guidelines that are often discussed (but not documented) or documented elsewhere. Time and estimated

Table 6 .Compliance of GS vs other Specialty in Private and Public Hospital

Hospital	Private				Public			
	GS	Other specialty	Total	P value	GS	Other specialty	Total	P value
Total No.	82	62	124		82	74		
Date	n 70	54	9	0.390	58	40	98	0.046
Time	n 3	6	124	0.301	15	2	17	0.002
Elective or emergency procedure	n 0	0	0		0	0	0	
Names of the operating surgeon and assistant	n 71	53	119	0.196	72	61	133	0.347
Name of the theatre anesthetist	n 71	48	74	0.025	59	43	102	0.092
The operative procedure carried out	n 37	37	99	0.325	33	24	57	0.324
Incision	n 61	38	111	0.024	51	36	87	0.107
Operative diagnosis	n 61	50	107	1.000	52	34	86	0.036
Operative findings	n 67	40	4	0.002	48	26	74	0.004
Any problems/complications	n 4	0	16	0.127	6	1	7	0.120
Any extra procedure performed and the reason	n 8	8	44	0.793	7	1	8	0.066
Details of tissue removed, added or altered	n 25	19	13	0.857	19	7	26	0.030
Identification of any prosthesis used	n 4	9	42	0.085	6	7	13	00.774
Details of closure technique	n 26	16	4	0.280	23	22	45	0.861
Anticipated blood loss	n 1			0.329	4	1	5	0.370
Antibiotic prophylaxis	n 27	27	4	0.399	27	15	42	0.103

DVT prophylaxis	n	1	3	71	0.329	1	3	4	0.346
Detailed postoperative care instructions	n	47	24	146	0.009	19	10	29	0.150
Signature	n	81	65	150	0.329	71	62	133	0.657
Total	n	82	68			82	74	156	

blood loss are documented in the intraoperative anesthetic charts by the anesthetist but not in the operation note. Antibiotic and DVT Prophylaxis are documented in the preoperative order sheet but not in operation notes, and prosthesis or implant used is documented elsewhere in theatre documentation by non-scrubbed staff as and when these are used. Nevertheless, it would be good practice to have these documentations in one place for easy access.

Closure technique and postoperative care instructions were written in most of the operation notes but not in detail.

Regarding the comparison between General surgery and other specialties, General surgery notes are more complete. This is maybe due to the presence of surgical training and postgraduate teaching programs in General surgery in the hospitals where the study was conducted.

Additionally, private hospital operative notes are more compliant to the RCSEng ‘Good Surgical Practice’ 2014

guidelines than Public hospital operative notes. This may reflect the presence of a strict documentation system and highly qualified surgeon private hospital.

Compliance not affected by Surgery type either elective or emergent except in time (p. value 0.007), antibiotic prophylaxis (p.value 0.014) and operative diagnosis (0.045) in favor of the emergent operation.

Johari et al. also showed significant improvement in documentation of surgical operation notes after teaching the residents how to write operation notes.[9] One of the studies has recommended the use of procedure-specific proformas for common general surgical procedures to improve quality.[2]

The author agrees with another study that has shown improvement in the quality of operation note by the introduction of operation note that addresses the 19 standards from the RCSEng ‘Good Surgical Practice’ 2014 guidelines which will guide the surgeon or the trainee to write them and the author recommends its application.[6]

Table 7. Compliance of Public and Private Hospitals

		Public	Private	Total	P value
Date	n	96	126	222	0.000
	%	31.4	41.2	72.5	
Time	n	17	9	26	0.150
	%	5.6	2.9	8.5	
Elective or emergency procedure	n	0	0	0	
	%	0	0	0	
Names of operating surgeon and assistant	n	131	126	257	0.642
	%	42.8	41.2	84	
Name of theatre anesthetist	n	100	121	221	0.005
	%	32.7	39.5	72.2	
Operative procedure carried out	n	56	75	131	0.005
	%	18.3	24.5	42.8	
Incision	n	85	101	186	0.047
	%	27.8	33.0	60.8	
Operative diagnosis	n	84	113	197	0.000
	%	27.5	36.9	64.4	
Operative findings	n	72	109	181	0.000
	%	23.5	35.6	59.2	
Problems/complications	n	7	4	11	0.541
	%	2.3	1.3	3.6	
Extra procedure performed and the reason why it was performed	n	8	16	24	0.092
	%	2.6	5.2	7.8	
Details of tissue removed, added or altered	n	25	45	70	0.006
	%	8.2	14.7	22.9	
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	n	13	13	26	1.000
	%	4.2	4.2	8.5	

Details of closure technique	n	44	43	87	1.000
	%	14.4	14.1	28.4	
Anticipated blood loss	n	5	4	9	1.000
	%	1.6	1.3	2.9	
Antibiotic prophylaxis	n	40	56	96	0.049
	%	13.1	18.3	31.4	
DVT prophylaxis	n	3	5	8	0.500
	%	1.0	1.6	2.6	
Detailed postoperative care instructions	n	29	71	100	0.000
	%	9.5	23.2	32.7	
Signature	n	132	147	279	0.001
	%	43.1	48.0	91.2	
Total	n	154	152	306	
	%	50.3	49.7	100	

Table.8 Compliance of Emergency and Elective Surgery

Compliance		Emergent	Elective	Total	P value
Date	n	116	106	222	0.522
	%	37.9	34.6	72.5	
Time	n	20	6	26	0.007
	%	6.5	2.0	8.5	
Elective or emergency procedure	n	0	0	0	
	%	0	0	0	
Names of operating surgeon and assistant	n	131	126	257	1
	%	42.8	41.2	84	
Name of theatre anesthetist	n	109	112	221	0.373
	%	35.6	36.6	72.2	
Operative procedure carried out	n	69	62	131	0.645
	%	22.5	20.3	42.8	
Incision	n	89	97	186	0.198
	%	29.1	31.7	60.8	
Operative diagnosis	n	109	88	197	0.045
	%	35.6	28.8	64.4	
Operative findings	n	97	84	181	0.296
	%	31.7	27.5	59.2	
Problems/complications	n	7	4	11	0.542
	%	2.3	1.3	3.6	
Extra procedure performed and the reason why it was performed	n	15	9	24	0.290
	%	4.9	2.9	7.8	
Details of tissue removed, added or altered	n	40	30	70	0.277
	%	13.1	9.8	22.9	
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	n	14	12	26	0.839
	%	4.6	3.9	8.5	
Details of closure technique	n	40	47	87	0.311
	%	13.1	15.4	28.4	
Anticipated blood loss	n	6	3	9	0.502
	%	2.0	1.0	2.9	
Antibiotic prophylaxis	n	59	37	96	0.014
	%	19.3	12.1	31.4	
DVT prophylaxis	n	3	5	8	0.495
	%	1.0	1.6	2.6	
Detailed postoperative care instructions	n	48	52	100	0.542
	%	15.7	17.0	32.7	
Signature	n	143	136	279	0.841
	%	46.7	44.4	91.2	
Total	n	156	150	306	
	%	51	49	100	

5 CONCLUSIONS

Accurate and complete operative notes are essential in different aspects. The quality of handwritten surgical operation notes written in Taiz Hospitals is deficient when compared with a set standard. We recommend using procedure proformas for operation notes among surgical trainees routinely.

6. REFERENCES

- [1] S. H. Abbas, S. Singh, R. Sundran, K. Akbari, J. Gilmour, and M. Puttick, "A thorough note: Does a procedure-specific operation note proforma for laparoscopic appendectomy improve compliance with the Royal College of Surgeons of England Guidelines?," *Int. J. Surg. Open*, vol. 2, pp. 1–5, 2016.
- [2] H. Parwaiz, R. Perera, J. Creamer, H. Macdonald, and M. Ian Hunter, "Improving documentation in surgical operation notes," *Br. J. Hosp. Med.*, vol. 78, no. 2, pp. 104–107, 2017.
- [3] T. C. Nzenza *et al.*, "a noteworthy issue," pp. 2015–2018, 2017.
- [4] A. Rogers, M. Bunting, and A. Atherstone, "The quality of operative notes at a general surgery unit," vol. 98, no. 9, pp. 726–728, 2008.
- [5] S. Dumitra, S. M. Wong, S. Meterissian, R. Featherstone, J. Barkun, and P. Fata, "The operative dictation: A review of how this skill is taught and assessed in surgical residency programs," *J. Surg. Educ.*, vol. 72, no. 2, pp. 321–329, 2015.
- [6] L. S. G. L. Wauben, W. M. U. Van Grevenstein, R. H. M. Goossens, F. H. Van Der Meulen, and J. F. Lange, "Operative notes do not reflect reality in laparoscopic cholecystectomy," *Br. J. Surg.*, vol. 98, no. 10, pp. 1431–1436, 2011.
- [7] D. Borchert, R. Harshen, M. Kemps, and M. Lavelle, "Operative Notes Teaching: Re-Discovery Of An Effective Teaching Tool In Surgical Training," *Internet J. Surg.*, vol. 8, no. 1, pp. 2–7, 2012.
- [8] T. R. C. of S. of England, "good surgical practice RCS," in *Good Surgical Practice*, 2014, pp. 9–19.
- [9] A. Johari, N. H. Zaidi, R. F. Bokhari, and A. Altaf, "Original Article Effectiveness of teaching operation notes to surgical residents," vol. 1, no. 1, 2013.