Main Article

A Follow-up Study on One Minute Paper as Feedback for Lecture Classes in Medical Education

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ABSTRACT

Introduction

To make the best use of the feedback, it is very important that the teacher analyses each and every feedback and make necessary changes in their teaching method and style. The "one-minute paper" or OMP is a very short, in-class writing activity, taking one minute or less to complete. The aim of our study is to assess the benefit of changing our teaching styles based on a previous OMP feedback.

Materials and Methods

This study was carried out simultaneously in two different departments (ENT and General Surgery) in our hospital. The first feedback was taken and analysed. Based on the analysis, modifications were made in the teaching-learning process. The second feedback was taken one year later on the same topics but on a different (subsequent) batch. In each subject, the first and second feedbacks were compared and analysed.

Results

We found that there was a significant drop in queries after introducing more videos, teaching by case based approach and focussing more on topics which students found difficult to understand.

Conclusion

OMP is a very quick, simple and efficient method of obtaining student feedback in a large group. Analysing the responses helps in modifying subsequent lectures in a more student friendly way.

Keywords

One Minute Paper Feedback; Follow-up; Large Group Teaching

Teachers can gain valuable insights into their teaching practices and can identify areas for growth and improvement by soliciting feedback from students. Student feedback highlights areas where teachers can excel in their teaching, such as engaging presentation styles, clearing explanations, or using technology effectively. Feedbacks, especially anonymous, can also tell the drawbacks in the teaching method and style. If students consistently express difficulty in understanding a particular concept, the teacher can revise their teaching approach or provide additional resources. To make the best use of the feedback, it is very important that the teacher analyses each and every feedback and make necessary changes in their teaching method and style.

The "one-minute paper" or OMP is a very short, in-class writing activity, taking one minute or less to complete. At the end of the session, the student is asked to answer few questions, which prompts students to reflect on the day's lesson, and provides the instructor with useful feedback. Weaver and Cottrell[1] first developed the one-minute paper. It was popularized by Cross and Angelo in

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late eighties.[2] Quite a few articles[3,4,5,6,7] have been written about this method of feedback and its benefits but there is paucity in literature about follow up studies on this method. We did this study to assess the benefit of changing our teaching styles based on a previous OMP feedback.

Materials and Methods

This quasi – experimental study was carried out simultaneously in two different departments (ENT and General Surgery) in our hospital. Ethical clearance was taken from the Institutional Ethics committee. The topic for ENT was "Epistaxis and it's management" And for General Surgery it was "Burns". In ENT, the first feedback was taken in the year 2022 on a batch of 82 students. In General Surgery, the first feedback was taken in the year 2022 on a batch of 78 students. It was a one hour lecture. The contents were aligned with the specific learning objectives decided for that topic. To avoid instructor variability, the same faculty took classes in both the years.

At the end of the session, the one-minute feedback paper was provided to the students as a sheet of paper with three questions printed on it. The students were told to write their answers in words, phrases and short sentences. The feedback taken was anonymous. The students were told not to write their name on the feedback papers. They were explained about this study and were given the option of not participating in the study if they so desired. Filling up the feedback form was considered as consent for participation. Three questions were asked: (1) What are the five most important things you learnt today? (2) What are the things you did not understand? and (3) What are your suggestions for changes in teaching-learning method? The first question focused on what was being learned, second question was related to any difficulty in understanding of the lecture and the third question focused on the kind of changes the students wanted. The responses were analysed and necessary changes were made in the content of the lecture to overcome the shortcomings detected.

The second feedback was taken one year later on the same topics but on a different (subsequent) batch. In ENT, it was in the year 2023 on a batch of 79 students. In General Surgery, it was in the year 2023 on a batch of 73 students. The topic was the same but the teaching methods and contents were modified based on the previous OMP feedback. At the end of the lecture, feedbacks were again taken according to the OMP method. In each subject the first and second feedbacks were compared and analysed.

Results

In the ENT department it is found that the answers to question number 1 show a small degree of difference among the responses (Table I). Maximum number of responses are centred on anatomy of nasal cavity with importance of piriform aperture, aetiology and management of epistaxis.

The answers to question number 2 for both the groups are

Table 1: Responses for the learning aspect
What are the five most important things you learnt today?

SL NO	RESPONSE	2022 (n = 82)	2023 (n = 79)
1	Anatomy of nasal cavity and septum in relation to epistaxis, Little's area and Woodruff's area and their importance	70 % (57)	62% (49)
2	Aetiology of Epistaxis, severity assessment	52 % (43)	41% (32)
3	Pyriform aperture to classify anterior and posterior epistaxis	42 % (34)	25% (20)
4	Probe test to asceses nasal mass	42% (34)	30% (24)
5	Diagnostic nasal endoscopy	5% (4)	2% (2)
6	Anterior and posterior rhinoscopy	11% (9)	13% (10)
7	Management by nasal packing especially posterior packing	78% (64)	97% (77)
8	Juvenile nasopharyngeal angiofibroma	28% (23)	20% (16)

summarized in Table II. It shows that the doubts are significantly less in students of 2023 batch compared to 2022 batch for all the responses.

Table II: Responses for the questions which remained unclear at the end of lecture
What are the things you did not understand ?

SL NO	RESPONSE	2022 (n=82)	2023 (n=79)
1	Endoscopic anatomy of nasal cavity	24% (20)	5% (4)
2	Posterior epistaxis Diagnosis	4% (3)	0% (0)
3	Probe test	32% (26)	5% (4)
4	Posterior nasal Packing	18% (15)	2% (2)
5	Cauterization	4% (3)	0% (0)
6	Shortness of breath following Nasal packing	5% (4)	0% (0)
7	Trauma inside nasal cavity during nasal packing	4% (3)	0% (0)
8	No unclear part	40% (33)	50% (40)

It is found that doubts for endoscopic nasal anatomy (p value=0.0052 i.e., $p < 0.05$), probe test (p value=0.000035 i.e., $p < 0.05$) and posterior nasal packing (p value=0.0093 i.e., $p < 0.05$) are reduced in significant way over the year due to modification of teaching-learning method based on feedbacks obtained through OMP in previous year. Figure-1 shows the improvements (%) of doubts for each response of table-2 among students of 2023 batch than student of 2022 batch.

The answers to question number 3 for both the groups are summarized in Table 3. Students are satisfied with inclusion of more case base discussions and more number of small videos. It helps to clear their concepts.

Table III: Responses for the call for suggestions for improvement
What are your suggestions for change?

SL NO	RESPONSE	2022 (N=82)	2023 (N=79)
1	Demonstration on patients or model	8% (7)	15% (12)
2	More videos inclusion	19% (16)	0% (0)
3	More case discussion	2% (2)	0% (0)
4	Instrument demonstration	8% (7)	0% (0)
5	No suggestions	70% (57)	83% (66)

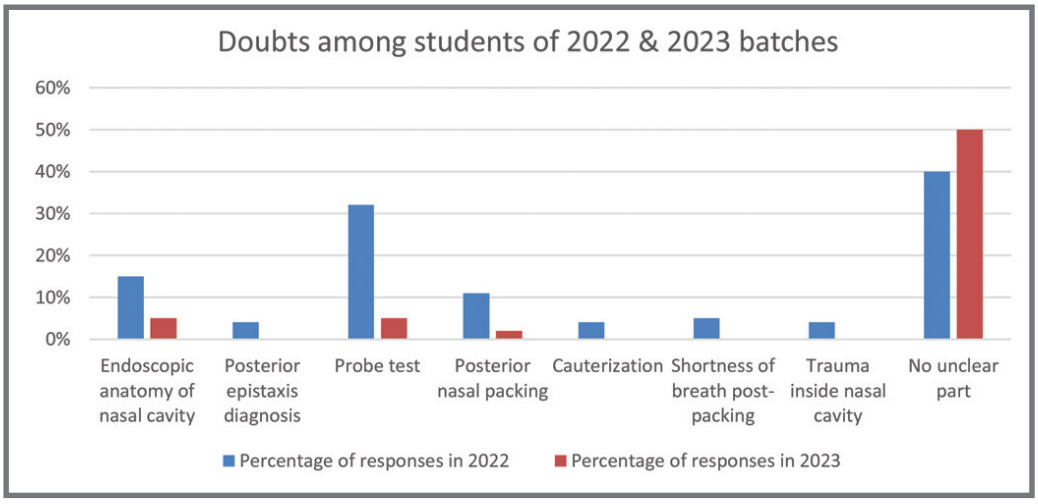

Fig. 1. Comparison of doubts in ENT class among the students of 2022 & 2023 batches

In the General Surgery department it was found that the answer to question number 1 was almost similar in both the groups (Table IV). The answers to question number 2 for both the groups are summarized in Table V. The answers to question number 3 for both the groups are summarized in Table VI.

Table IV: Responses for the learning aspect
What are the five most important things you learnt today?

SL NO.	RESPONSE	2022 (n=78)	2023 (n=73)
1.	Types of burns	78 (100%)	73 (100%)
2.	Classification of burns	78 (100%)	73 (100%)
3.	Calculation of burnt body surface area in burn patients	72(92.3%)	64 (87.6%)
4.	Fluid resuscitation in burns	75(96.1%)	73 (100%)
5.	Burn dressing	6 (7.6%)	3 (4.1%)
6.	Management of burns	72 (92.3%)	71 (97.2%)
7.	Tangential excision of burns	9 (11.5%)	7 (9.5%)

Table V: Responses for the questions which remained unclear at the end of lecture
What are the things you did not understand?

SL NO.	RESPONSE	2022 (n=78)	2023 (n=73)
1.	Fluid resuscitation in burns	19 (24.3%)	3 (4.1%)
2.	Fluid resuscitation after 24 hours	28 (35.8%)	0 (0%)
3.	Fluid resuscitation in children	16 (20.5%)	2 (2.7%)
4.	Tangential excision of burns	21 (26.9%)	0 (0%)
5.	Methods of burn dressing	34 (43.5%)	5 (6.8%)
6.	How to calculate the fluid requirement if the patient presents after 8 hours?	2 (2.5%)	0 (0%)
7.	How to calculate the burnt body surface area in young children?	0 (0%)	3 (4.1%)

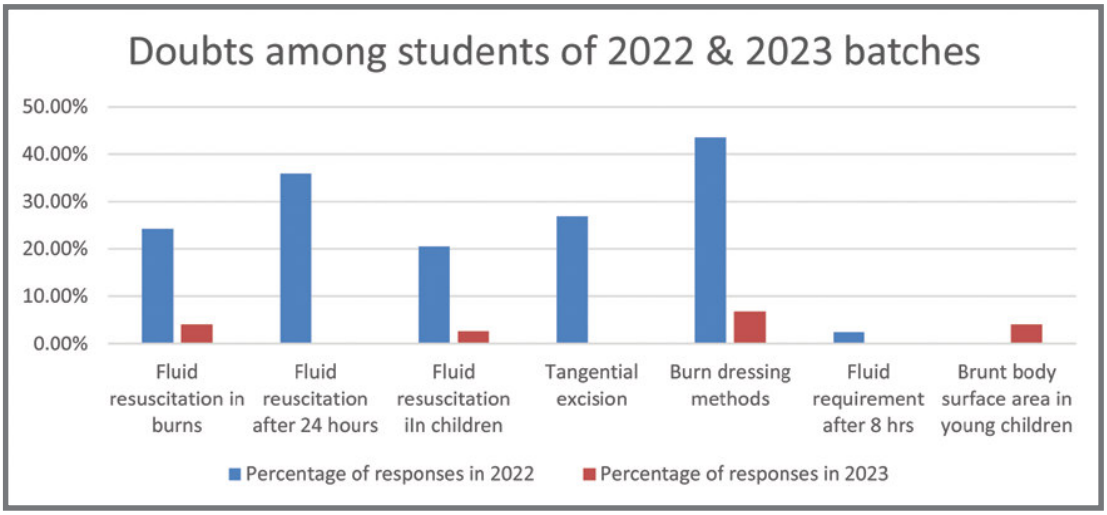

Fig. 2. Comparison of doubts in General Surgery class among the students of 2022 & 2023 batches

It is detected that doubts for fluid resuscitation in burns (p value=0.000989, i.e., $p < 0.05$), fluid resuscitation after 24 hours (p value=0.000000047, i.e., $p < 0.05$), fluid resuscitation in children (p value=0.001828, i.e., $p < 0.05$), tangential excision of burns (p value = 0.00000556, i.e., $p < 0.05$) and methods of burn dressing (0.000000674, i.e., $p < 0.05$) are reduced in significant way over the year due to modification of teaching-learning method based on feedbacks obtained through OMP in previous year. Figure-2 shows the improvements (%) of doubts for each response of table-5 among students of 2023 batch than student of 2022 batch.

Table VI : Responses for the call for suggestions for improvement
What are your suggestions for change?

SL NO.	RESPONSE	2022 (n=78)	2023 (n=73)
1.	The lecture was too fast	23 (29.4%)	6 (8.2%)
2.	Use more videos	43 (55.1%)	2 (2.7%)
3.	The teaching should be more case based	38 (48.7%)	0 (0%)
4.	Medicolegal aspects of burn injuries should be discussed	14 (17.9%)	17 (21.7%)
5.	The class should be more interactive	22 (28.2%)	0 (0%)
6.	Difficulty to pay attention in a post lunch lecture class. Lecture classes should be in the morning.	42 (53.8%)	34 (43.5%)
7.	A case should be taught in bedside clinics	0 (0%)	3 (4.1%)

We found that there was a significant drop in queries after introducing more videos, teaching by case based approach and focussing more on topics which students found difficult to understand. Certain aspects like changing the timing of the lecture classes and teaching the medicolegal aspects (taught later in forensic class) were beyond our scope.

Observations in Table/ 1: Topic on management by posterior nasal packing showed a large positive effect size: +19.4% (78%'!97.5%).

Other topics showed small negative effect sizes (e.g., Pyriform aperture: -16.1%).

Confidence Intervals (CI) are naturally narrower on very high or low proportions (near 0% or 100%).E.g., Responses on management by nasal packing in 2023 had a CI of 94.0–100%, showing high precision.

These tables directly show effect sizes as absolute risk differences (percentage point reduction in doubts) and relative risks (RR) or odds ratios (from regression).

Observations: The absolute reductions were large and practically meaningful: e.g., Probe test doubts dropped by 27% (from 32% to 5%) as well as methods of burn dressing dropped by 37%. Relative risk (RR) values </ 0.2 show that the odds of doubt were ~80–90% lower in the 2023 batches.

Confidence Intervals (CI): CIs around 2022 batch estimates were generally wider (e.g., 21.6–41.8%) than those around the smaller 2023 estimates (e.g., 0.2–9.9%). Narrower CIs for the 2023 group reflect lower variance (fewer students reporting doubt). CIs not overlapping between groups support statistical significance, aligning with the p-values.

Tables 3 (suggestions for improvement):

Observations in Table/ 3: 'Suggestions' dropped sharply with more video inclusion (-19.5%).

Surgery Table/ 6: 'Suggestions' dropped even more (-52.4%). Responses on 'No suggestions' increased in ENT (+14.0%), suggesting higher satisfaction.

Confidence intervals (CI): CIs are wider for smaller proportions; e.g., 2.5–14.6% in 2022 for small suggestions. Where suggestions dropped to 0%, CI becomes 0.0–0.0%, reflecting no variance.

Table VII: Calculation of Effect size & Confidence Intervals

RESPONSE	DOUBTS ON TOPIC-EPISTAXIS & ITS MANAGEMENT				DOUBTS ON TOPIC-BURNS				
	ENDO-SCOPIC ANA-TOMY OF NASAL CAVITY	POST-ERIOR EPI-STAXIS DIA-GNOSIS	PROBE TEST	POST-ERIOR NASAL PACKING	FLUID RESUS-CITATION IN BURNS	FLUID RESUS-CITATION AFTER 24 HOURS	FLUID RESUS-CITATION IN CHILDREN	TANGE-NTIAL EXCISION OF BURNS	METHODS OF BURN DRESSING
95% CI for 2022 batch	15.1–33.7%	0-7.7%	21.6-41.8%	9.9-26.7%	14.8-33.9%	25.3-46.5%	11.6-29.5%	17.1-36.8%	32.6-54.6%
95% CI for 2023 batch	0.2–9.9%	0-0%	0.2-9.9%	0-6.0%	00-8.7%	0-0%	0-6.5%	0-0%	1.1-12.6%
Absolute Risk Difference	–19%	–4%	–27%	–16%	–20%	–36%	–18%	–27%	–37%
Relative Risk	0.21	0	0.16	0.14	0.17	0	0.13	0	0.16

Discussion

Gathering feedback is a very important step towards the process of improvement. Feedback analysis tells us about the necessary modification required for subsequent lectures. The great advantage of One Minute Paper is that it provides a reasonable amount of timely and useful feedback with minimal effort.

According to Stead D. R; One Minute Paper provides instant feedback on class's understanding. It's an easy, resilient and widely used technique without any need of technology. Student can cogitate on what they have heard and ask questions on the topic learnt while providing the feedback.[8] For the teacher, the OMP answers help to ascertain the extent to which the aims and objectives of the class have been achieved, as well as help to set the future pace of teaching.[8]

In our study it was seen that analysing the feedback and making suitable changes helped to make the lectures more effective. It is noted that One Minute Paper helps to enhance class attention and better communication. OMP also serves as a tool for active learning.[9] In literature there are many studies on ways of giving feedback to students but there are very few articles regarding methods of taking feedback from the students. Most of the available literature is on the pre and post test model.[10] This method emphasizes more on the fixed topics. Our method of OMP and its subsequent follow up brings out unforeseen doubts among the students, hence it is more effective.

The responses obtained in OMP can be evaluated and analysed in little time and with minimal effort even for a large group.[2] These findings are consistent with our study. Most of the time students' learning is not up to the mark due to lack of uniform undergraduate ENT teaching curriculum across different medical colleges. Total hours allotted to ENT teaching are also limited resulting in inadequate in-depth learning. OMP acts as a consistent feedback measure that may help to standardize ENT teaching across institutions.[11] Knowledge acquisition and

its further application become effective when the students acquire clear concepts on the complex anatomy of ear, nose and throat.

It is obvious that understanding of complex endoscopic anatomy becomes clearer after inclusion of small video clips. It not only builds their concepts for further knowledge, but also helps them learn clinical part related to the topic along with better understanding of various diagnostic and therapeutic procedures. According to Caputo V et al. videos help students to retain complex 3D anatomy.[12]

In our study, the suggestion of adding small videos on clinical methods and procedures helped us later in preparing lectures with video demonstrations which was very much appreciated by the students. Barbara Robertson and Mark J. Flowers found that understanding and retention of a topic is better if lecture class is taken in combination of lecture video with power point presentation as teaching aid,[13]

As there is paucity in literature of articles discussing about the effect of the changes made by analysing feedback, it is difficult to compare our study with other studies.

One Minute Paper can help ENT teaching as well as procedural skill development of students/ residents by encouraging regular feedback between students/ residents and faculty with goal oriented learning and promoting their active participation. It helps them to identify areas of deficiency and pursue progress over time.

We find that the suggestions given in the feedback are not always feasible. Certain things cannot be changed. Nevertheless, feasible suggestions can make huge changes. In this study we found that elaborating the difficult topics and introducing new methods, has a huge impact on student learning. We observed another important thing that anonymous feedback has a better compliance. Students were not vocal when asked in the classroom but shared their true doubts in the anonymous feedback forms. The students were fully aware that there was no way to identify the source of feedback. This enabled them to give a genuine feedback without any social desirability bias. For example, a feedback that the teacher was too fast or that it was too difficult to concentrate in a post lunch session could not be given if the feedback was not anonymous. According to Shaheen A. et al. anonymous feedbacks establish more active participation from students' end as well as reduce their uneasiness about writing down the true responses [14]. OMP feedback technique respects all the responses provided by the students and encourages students to be engaged actively.[10]

OMP can be used to access students' / residents' understanding of complex endoscopic anatomy. It also helps to evaluate their procedural skills like performing endoscopic procedures or other technical skills in operating room[15]. These ultimately help to provide better patient care service in terms of diagnosis, management of ENT cases by developing skilled ENT specialists in a well-planned and fruitful learning environment. This is also applicable to other speciality too.

Conclusion

OMP is a very quick, simple and efficient method of obtaining student feedback in a large group. Analysing the responses aids in modifying subsequent lectures in a more student friendly way. These modified lectures help the students to understand the topic with more clarity, resulting in better retention of what they are taught. The study concludes that one minute paper is a useful method of gathering feedback for refining teaching-learning methods in medical education encouraging students in active learning. More multi - institutional and multi-topic studies are required to establish generalizability. Further longitudinal feedback tracking is required over the coming years to establish the fact strongly.

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