

Medical Education / Original Article

Role of Immediate Personalized Verbal Feedback to First Year Medical Undergraduates During Formative Physiology Practical Test

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Abstract

Background: Timely given feedback is useful for cognitive performance during academic learning. Immediate feedback is more effective than delayed feedback. Immediate problem solving is acceptable than mass knowledge transfer.

Aim and Objectives: To assess the effectiveness of immediate feedback during clinical examination for improvement of cognitive learning and skills of 1st MBBS students.

Methodology: Immediate feedback versus no feedback was checked during formative practical test. Immediate feedback was given to one practical batch (B Batch= 32 students) of 1st MBBS students during their formative practical test. At the same time feedback was not given to second batch (A Batch= 33 students) of same academic year. Evaluation of feedback was done during next formative practical examinations. Formative Physiology practical examination was taken by Objective structured practical examination (OSPE).

Results: Students of study group (B batch, n=32) who received individual face to face feedback performed well as compared to control group (A batch, n=33) who didn't received feedback. The marks of clinical examination for study group, before feedback was 12.12±2.19 and after the feedback was 17.59±1.72. Difference between the marks of two exams in study group is 5.4 and it is around 27.35%. The marks of control group at the time of initial exam was 14.09±3.18 and during next exam was 16.39±1.86. Difference between the marks of two exams in control group is 2.3 and it was around 11.5%.

Conclusions: Results showed that immediate feedback during clinical (practical) assessment had a statistically significant positive effect on learning gains. Immediate verbal feedback is positively associated with learning. In order to facilitate role of immediate verbal feedback during formative assessment needs further supportive evidence from large longitudinal studies from multicenter.

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Introduction

Feedback is inherent component of learning (1). Feedback should be supportive, timely and specific. It is non-bias & confidential. Feedback should be positive, problem-solving, progressive and point-to-point (2). Constructive feedback is specific, structured & interesting. An informed feedback is given to improve competencies & practical skills. Feedback motivates learners, help them to identify and correct their mistakes (3). Positive feedback is always associated with improvement (4). Self realization and reflection are two fundamental steps to receive feedback and to work on it. So timely given personal feedback is more effective than delayed group feedback. This is the reason why feedback is more effective than commonly practiced classroom based mass knowledge transfer. Immediate correction of observed behavior during different phases of learning which includes skill training & skills assessment is needed before the actual competency has been forgotten (4, 5). If feedback is given after sometime, learner may forget the competencies or may not have enough opportunity to practice and demonstrate improvement. So effective feedback should be specific, timely, objective & with proper future plan of learning.

Casual feedback is given on the basis of observed behavior during routine clinical examinations or practical's every day. Formal feedback is given at the end of presentation. A major, corrective & more comprehensive feedback is given at the time of formative assessment. Immediate & personalized feedback given at the time of formative assessment is usually very well received and learner can improve before the final assessment (6, 7). Learners are always very eager to know their performance related mistakes and they are very receptive at that time to receive feedback (5). So, timely given positive feedback is helpful in future learning and cognition. Delayed feedback is associated with poor retention (8).

Methodology

The study was conducted after the approval from

Institutional Ethics Committee at Department of Physiology, Pramukhswami Medical College, Karamsad. Detailed information of current project and their outcomes were explained to the participants. Participants for the study were recruited from 1st MBBS (2014-15 academic year batch) after their voluntary consent. The present study was conducted with objective to check effect of immediate feedback during formative assessment for future improvement and learning. Participants from B batch (n=32) were selected as study group whom feedback was given and participants from A batch (n=33) were selected as control group whom feedback was not given.

During formative assessment, Physiology Clinical Practical test is conducted by objective structured practical test (OSPE) method. At the end of practical test, personalized verbal feedback was given to study group for 2 minutes. Structured feedback was given to study group for their observed mistakes of practical by trained faculty at the end of OSPE. Feedback was not given to control group and they sat quietly for 2 minutes at the end of OSPE.

Effect of personalized verbal feedback was checked during next formative assessment test which was conducted after the one month of previous test by same assessors and for the same topic. Marks of participants of study group (students of B batch) who received feedback was compared with participants of control group (students of A batch) whom feedback not given. Perception of participants of study group was documented by feedback questionnaire as per Likert scale.

Statistical analysis

Results of study group and control group for their marks of pre-test and post-test were compared by t-test.

Results

A significant statistical difference in marks of pre-test and post-test were seen in study groups. The marks of clinical examination for study group, before feedback was 12.12 ± 2.19 and after the feedback was 17.59 ± 1.72 . Difference between the marks of two

TABLE I: Showing marks of study and control groups.

	Study group (n=32)	Control group (n=33)
Pre-test marks	12.12±2.19	14.09±3.18
Post-test marks	17.59±1.72	16.39±1.86
P value	0.0001	0.006
Difference of marks	5.4	2.3
Percentage gained in marks	27.35%	11.5%

exams in study group was 5.4 and it was around 27.35%. The marks of control group at the time of initial exam was 14.09±3.18 and during next exam was 16.39±1.86. Difference between the marks of two exams in control group was 2.3 and it was around 11.5%. The results of feedback questionnaire showed that 100% of the students agreed that personalized feedback was more effective than group feedback and feedback helped them to identify their shortcomings. 90% of the students felt that the immediate verbal feedback programme was interesting, promoted active learning and improved practical skills and it was meaningful, appropriate and effective learning tool. Students also felt that immediate feedback was more effective at the time of examination than after assessment results. 85% of the students were of the opinion that structured feedback was more effective; solution oriented and helped to improve clinical skills.

Discussion

Our study was focused on effect of timely given

personalized feedback on students score and their perception during formative Physiology practical test. As per Table I, performance of students of study group improved very well as compared to control group. The present study showed that timely given personalized feedback to first year medical undergraduates was effective and helped them to improve their future performance. Our results indicate that immediate feedback given at the time of performance of clinical skill helped a lot to improve their clinical skills and clinical skills related shortcomings and also enhanced their future learning. Students felt that face to face personalized feedback was better than knowledge transfer in whole classroom. Our results showed that problem solving structured feedback helped students to improve their clinical skills.

Our findings were supported by Wigton RS and Boehler ML who had shown that feedback has been shown to improve clinical performance in medical schools (9, 10). According to Hattie feedback fell in the top 5-10 highest influences on student's achievement (11). Pressey (1926) and Skinner (1958) had pointed out that feedback had served great role for students by making them active learner of skill and knowledge rather than passive information gainer (12, 13). Timing of feedback was also very important (3, 7). Immediate feedback helps a lot as compared to delayed feedback. In our study, medical teacher gave feedback to undergraduate medical students immediately after their skill performance. Shute VJ and Hattie J had documented that immediate

TABLE II: Results of feedback questionnaire as per Likert Scale [Study group (B)=32].

Questions/Likert Scale	1	2	3	4	5
1 The immediate verbal feedback programme is meaningful, appropriate and effective learning tool.	Nil	Nil	Nil	08	92
2 The immediate verbal feedback programme is interesting, promotes active learning and improves practical skills.	Nil	Nil	Nil	10	90
3 Feedback given for 2 minutes is adequate	Nil	Nil	10	14	76
4 Feedback given at the time of examination is more effective than after the assessment results	Nil	Nil	Nil	04	96
5 Personalized feedback is more effective than group feedback	Nil	Nil	Nil	Nil	100
6 Structured feedback is more effective; solution oriented and helped to improve clinical skills.	Nil	Nil	08	07	85
7 Interaction of students with faculty member was very good	Nil	Nil	07	09	84
8 The whole feedback programme was stressful	88	06	06	Nil	Nil
9 The whole feedback programme has met your expectation	Nil	Nil	12	14	74
10 Feedback helped me to identify my shortcomings (practical skills)	Nil	Nil	Nil	Nil	100

(Likert scale: 1. strongly disagree, 2. Disagree, 3. neither agrees nor disagree, 4. Agree, 5. Strong Agree)

feedback is more effective for student learning (1, 2). Immediate feedback is more effective than delayed, and it is acceptable by almost all students. Our results show that there is immediate academic gain by the students due to immediate feedback provided to them. Garner and Gusberg in their study concluded that despite the challenges, there appear to be real educational gains associated with immediate feedback (15). In last few years Epstein and his colleagues had validated an assessment procedure known as the Immediate Feedback Assessment Technique (IFAT) (3). Dihoff et al. (2003) studied association of feedback with its timing in students after completion of classroom examinations using response format. They gave feedback after each response, after the end of a test and after 24 hour of test means after 24 hour delay (16, 17). Feedback given at the end of test or within 24 hours is more useful than delayed. Feedback timing is the most crucial component of feedback (16, 18). Feedback is more effective when it involves not only correction but also wants solutions on how to improve. Specific feedback helps students a lot. Our results showed that 85% of the students were of the opinion that structured feedback was more effective; solution oriented and helped to improve clinical skills. In our study as suggested by Shute VJ and Hattie J more emphasis was given on specific feedback rather vague knowledge transfer (1, 3, 19). Timing, confidentiality and specificity were maintained and that helped student a lots in their future learning. Corrective feedback on classroom examinations, in the absence of computers, cannot be provided until the examination has been completed, whereas the conditions and equipment within the laboratory permit the immediate delivery of corrective feedback on an

item-by-item basis (11, 17, 18). The development of the IFAT now provides the practical means through which immediate feedback can be provided in the classroom without reliance upon elaborate technology, and it also permits the direct comparison of the effects of immediate and delayed feedback on classroom learning (3, 17, 18, 19).

Strength of our study is that feedback was given at the time of skill testing by trained faculty members and face to face personalized feedback was given. Structured feedback was given at the end of examination of each response points of students which helped them to correct their mistakes. One of the limitations of study is sample size. Another limitation of study is feedback given by different faculty members at different stations. Verbal feedback was given by trained faculty members rather than written feedback.

We conclude that there is definite role of timely given feedback for future performance and skill development in learner. Personalized feedback is more acceptable than group feedback. Timely given constructive feedback is very good for learning. Feedbacks given during clinical skill testing helps and improves their mistakes and develops clinical skills.

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References

1. Shute VJ. Focus on formative feedback. *Rev Educ Res* 2008; 78(1): 153–189.
2. Hattie J, Timperley H. The power of feedback. *Rev Educ Res* 2007; 77(1): 81–112
3. Epstein ML, Lazarus AD, Calvano TB, Matthews KA, Hendel RA, Epstein BB, Brosvic GM. Immediate feedback assessment technique promotes learning and corrects inaccurate first responses. *The Psychological Record* 2002; 52: 187–201
4. Gigante J, Dell M, Sharkey A. Getting beyond “Good job”:
How to give effective feedback. *Pediatrics* 2011 Feb; 127(2): 205–207.
5. Chowdhury R, Kalu G. Learning to give feedback in medical education. *The Obstetrician & Gynaecologist* 2004; 6: 243–247.
6. Schmidt RA, Bjork RA. New Conceptualizations of practice: Common principles in three paradigms suggest new concepts for training. *Psychological Science* 1992; 3(4), 207–217.
7. Bertram Opitz, Nicola K. Ferdinand and Axel Mecklinger.

- Timing matters: the impact of immediate and delayed feedback on artificial language learning. *Frontiers in Human Neuroscience* 2011; 5(8): 1–9.
8. El Saadawi GM, Azevedo R, Castine M, et al. Factors Affecting Feeling-of-knowing in a Medical Intelligent Tutoring System – the role of Immediate Feedback as a Metacognitive Scaffold. *Advances in Health Sciences Education/ Theory and Practice*. 2010; 15(1): 9–30.
 9. Wigton RS, Patil KD, Hoellrich VL. The effect of feedback in learning clinical diagnosis. *J Med Educ* 1986; 61(10): 816–822.
 10. Boehler ML, Rogers DA, Schwind CJ, et al. An investigation of medical student reactions to feedback: a randomised controlled trial. *Med Educ* 2006; 40(8): 746–749.
 11. John Hattie and Helen Timperley: The Power of Feedback; Review of Educational Research. 2007; 77: 81.
 12. Pressey SL. A simple apparatus which gives tests and scores and teaches. *School and Society* 1926; 23: 373–376.
 13. Skinner BF. The science of learning and the art of teaching. *Harvard Educational Review*, 1954; 24: 86–97.
 14. Krista R. Muis, John Ranellucci, Gregory Trevors, Melissa C. Duffy: The effects of technology-mediated immediate feedback on kindergarten students' attitudes, emotions, engagement and learning outcomes during literacy skills development; *Learning and Instruction*; Vol 38 (2015); 1–15.
 15. Garner MS, Gusberg RJ, Kim AW. The positive effect of immediate feedback on medical student education during the surgical clerkship. *J Surg Educ* 2014; 71(3): 391–397.
 16. Dihoff RE, Brosvic GM., Epstein ML, & Cook MJ. (2004). Provision of feedback during preparation for academic testing: Learning is enhanced by immediate but not delayed feedback. *The Psychological Record* 2004; 54: 207–231.
 17. James A. Kulik, Chen-Lin C. Kulik: Timing of Feedback and Verbal Learning; Review of Educational research: 1988; 58(1): 79–97.
 18. Tina Bering Keiding, Ane Qvortrup ; Feedback as Real-Time Constructions, E-Learning and Digital Media. 2014(11): 191–203.
 19. Michael L. Epstein, Beth B. Epstein, and Gary M. Brosvic; Immediate Feedback During Academic Testing, *Psychological Reports*, 88, 889–894.