

ORIGINAL ARTICLE

A Trip Down Memory Lane: Exploring the Use of a Learning Tool in Undergraduate Medical EducationRizwana Kamran¹, Shazia Tufail^{2*}, Arub Ahmed³, Saria Khalid³, Aqsa Shafique¹, Junaid Sarfraz Khan¹**ABSTRACT****Objective:** To explore reflection as a learning tool in undergraduate medical education.**Study Design:** Cross-sectional survey.**Place and Duration of Study:** The study was conducted among MBBS and BDS undergraduate students of CMH Lahore Medical College and Institute of Dentistry, Lahore, Pakistan from 1st January 2022 to 30th June 2022.**Materials and Methods:** In this online cross-sectional survey, the Reflective practices questionnaire (RPQ) was administered to 290 medical (fourth and final year) and dental (third and final year) undergraduates. Data were analyzed through SPSS 24.**Results:** Out of 290 participants, the majority were female (179, 61.7%). Most of the participants were from MBBS (188, 64.8%). The overall mean score of the questionnaire was 73.493 ± 17.407 (95% CI: 16.286 ± 18.439) out of a total score of 96. The highest score of critical appraisal was 18.790 ± 4.248 (95% CI: 4.064 ± 4.608). There was no difference of the mean score of different domains based on gender, specialty or year of education.**Conclusion:** The undergraduate medical and dental students demonstrated good reflective practices. However, there is a need to improve critical thinking and appraisal among students to achieve better outcomes.**Keywords:** *Learning Tool, Medical Education, Medical Students, Reflection.***How to cite this:** Kamran R, Tufail S, Ahmed A, Khalid S, Shafique A, Khan JS. *A Trip Down Memory Lane: Exploring the Use of a Learning Tool in Undergraduate Medical Education.* 2023; 4(2): 170-175. doi: <http://doi.org/10.37185/LnS.1.1.281>This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license. (<https://creativecommons.org/licenses/by-nc/4.0/>). Non-commercial uses of the work are permitted, provided the original work is properly cited.**Introduction**

Medical education has become a challenging field recently.¹ The undergraduate student is not only required to learn scientific knowledge and clinical skills but is also expected to develop professional identity and skills for optimum patient care. Several new and innovative learning tools have been utilized to engage and educate students in directing towards self-directed learning, reflective practice is one of them.¹

Reflection is a metacognitive process.² Critical reflection is the “process of analyzing, questioning,

¹Department of Health Professions Education/
Gynecology and Obstetrics²/Dental Education and Research³
CMH Lahore Medical College & Institute of Dentistry,
Lahore, Pakistan

Correspondence:

Dr. Shazia Tufail

Associate Professor, Gynecology and Obstetrics
CMH Lahore Medical College & Institute of Dentistry,
Lahore, PakistanE-mail: shazia201007@hotmail.com

Funding Source: NIL; Conflict of Interest: NIL

Received: Sep 21, 2022; Revised: Jan 20, 2023

Accepted: Feb 03, 2023

and reframing an experience in order to make an assessment of it for the purposes of learning (reflective learning) and/or to improve practice (reflective practice)”.³

The history of reflection is quite old. Even Confucius considered it the noblest way to learn. Undergraduate health professionals need to gain skills of lifelong learning in order to deliver timely and efficient patient care.⁴ Reflection has developed into one such new learning tool that can help train the students to think about what happened during a given context and how to deliver better during similar conditions. Reflective practice can also help an individual to develop creative thinking skills and deals with strategic situations.⁵ It develops a better understanding of patient care.⁶ Reflection practicing with patients is important for students of health professionals to be empathetic and focused towards patient services.⁶

The importance of reflection is frequently mentioned; however, a limited number of instruments were developed, including Critical

Appraisal Skills, the GRAS (Groningen Reflection Ability Scale) and the Program (CASP) Qualitative Checklist.⁷⁻⁸ These tools investigate reflection as a learning tool among future health professionals.⁹ In current study, a valid and reliable tool, the reflective Practices Questionnaire" (RPQ) was used to measure the reflective ability. This tool helps to judge a wide range of psychological areas concerning the clinical practice.¹⁰ RPQ has been used to explore the reflective capacity of postgraduate residents in a local study, but to our knowledge, no such study has been conducted so far on undergraduate health professionals locally. The study results are expected to help identify target areas of undergraduate training regarding patient care and professionalism.

Materials and Methods

A cross-sectional survey was conducted from MBBS and BDS undergraduate students at CMH Lahore Medical College and Institute of Dentistry, Lahore, Pakistan after Ethical approval from Institution Review Board, CMH Lahore Medical College and Institute of Dentistry (ERC No 585/ERC/CMH/LMC). Undergraduate students of Fourth and Final year MBBS and Third and Final Year BDS were included in the study as in both these specialities the students have different types of interaction with the patients and different learning experiences. The sample size was calculated through an Open-Epi sample size calculator with a 95% confidence level and 5% margin of error by taking 450 undergraduate students studying at CMH Lahore Medical College and Institute of Dentistry Lahore. A sample size of 290 participants was used for the study. Participants were sent a link to an online questionnaire through social media emails and WhatsApp groups of students. The Reflective Practices Questionnaire (RPQ), generated by Priddis and Rogers, was used for measuring reflective capacity, which measures a wider range of psychological areas and is a reliable questionnaire with a Cronbach's alpha value of 0.84.¹⁰ This sixteen-item RPQ scale consisted of four items sub-component. These items included reflection-in-action, reflection-on-action, reflection with others and critical appraisal. 6-point response scale was used for RPQ scoring: 1 = not at all, 2 = slightly, 3 = somewhat, 4 = moderately, 5 = very much, and 6 = extremely. The scores of each item were summed, resulting in a total maximum score of

96, and a least score of 16. Each sub-component had four questions with a total score of 24. High score levels showed a high level of reflective practices among undergraduate health professional students. For background information on the participants, Online survey questions included demographic information regarding age, gender, course and the year of studying. A detailed definition of reflective practices was provided in the questionnaire. Participants voluntarily participated in the survey. All respondents were informed before filling out the survey form that they were free to participate or quit. The questionnaire submission would be considered consent for participation. This was an anonymous survey, as students of health professionals were not asked to disclose their names. The information collected was analysed by using the statistical software SPSS-24. Qualitative variables were presented by calculating frequency and percentages. Mean and SD was calculated for the scores of questionnaires. These scores were compared between the undergraduate students of MBBS and BDS. An Independent T-test was used to measure the difference between mean scores among both groups. A value of $p < 0.05$ was considered as statistically significant.

Results

There were a total of 290 study participants. Descriptive statistics were carried out, which revealed 64.8% (188) MBBS undergraduate students and 35.2% (102) BDS undergraduate students participated. 38.8% (111) were male, and 61.7% (179) were female in different years of training (Table 1); the majority of students were from 4th year 54.1% (157) and final year 29%.

Table 1: Demographics of participants n=290

Gender	Male n(%)	Female n(%)
Number	111(38.3)	179(61.7)
Age		
<24 years	76(68.4)	152(84.9)
>24 years	35(31.5)	27(15.1)
Education		
BDS	21(36.9)	82(28.3)
MBBS	91(31.4)	97(33.4)
Residence		
Urban	107(36.9)	177(61)
Rural	4(1.4)	2(0.7)

Table 2 contains the percentages of responses of study participants to each question.

Table 2 : Response of Study Participants

Q. No	Questions	Response Scores					
		Extremely n(%)	Very Much n(%)	Moderately n(%)	Somewhat n(%)	Slightly n(%)	Not at All n(%)
1	[After interacting with patients I think about how things went during the interaction]	59(20.3%)	112(38.6%)	80(27.6%)	25(8.6%)	10(3.4%)	4(1.4%)
2	[When reflecting with others about my work, I develop new perspectives]	48(16.6%)	147(50.7%)	73(25.2%)	14(4.8%)	8(2.8%)	0(0.0%)
3	[I gain new insights when reflecting with others about my work.]	51(17.6%)	152(52.4%)	61(21.0%)	18(6.2%)	4(1.4%)	4(1.4%)
4	[After interacting with patients, I wonder about the patient's experience of the interaction]	53(18.3%)	124(42.8%)	66(22.8%)	25(8.6%)	18(6.2%)	4(1.4%)
5	[I find that reflecting with others about my work helps me to work out problems I might be having]	57(19.7%)	131(45.2%)	71(24.5%)	15(5.2%)	11(3.8%)	5(1.7%)
6	[After interacting with patients, I spend time thinking about what was said and done]	60(20.7%)	102(35.2%)	83(28.6%)	30(10.3%)	9(3.1%)	6(2.1%)
7	[I think about my weaknesses for working with patients.]	75(25.9%)	125(43.1%)	58(20.0%)	20(6.9%)	8(2.8%)	4(1.4%)
8	[After interacting with patients I wonder about my own experience of the interaction]	60(20.7%)	120(41.4%)	65(22.4%)	30(10.3%)	12(4.1%)	3(1.0%)
9	[During interactions with patients I consider how their personal thoughts and feelings are influencing the interaction]	38(13.1%)	128(44.1%)	73(25.2%)	34(11.7%)	11(3.8%)	6(2.1%)
10	[I think about how I might improve my ability to work with patients]	84(29.0%)	135(46.6%)	52(17.9%)	14(4.8%)	4(1.4%)	1(0.3%)
11	[During interactions with patients I consider how my personal thoughts and feelings are influencing the interaction]	53(18.3%)	101(34.8%)	78(26.9%)	33(11.4%)	13(4.5%)	12(4.1%)
12	[I critically evaluate the strategies and techniques I use in my work with patients]	51(17.6%)	105(36.2%)	89(30.7%)	28(9.7%)	11(3.8%)	6(2.1%)
13	[I think about my strengths for working with patients]	54(18.6%)	123(42.4%)	70(24.1%)	24(8.3%)	15(5.2%)	4(1.4%)
14	[When reflecting with others about my work, I become aware of things I had not previously considered.]	59(20.3%)	131(45.2%)	68(23.4%)	23(7.9%)	6(2.1%)	3(1.0%)
15	[During interactions with patients, I recognize when my pre-existing beliefs are influencing the interaction]	35(12.1%)	113(39.0%)	74(25.5%)	37(12.8%)	19(6.6%)	12(4.1%)
16	[During interactions with patients I recognize when my patient's pre-existing beliefs are influencing the interaction]	42(14.5%)	122(42.1%)	84(29.0%)	23(7.9%)	14(4.8%)	5(1.7%)

Independent t-test was carried out which showed a statistical significance in between MBBS and BDS in Q2, Q3, Q4, Q5, and Q9 that is $p \leq 0.05$ shown in Table 3.

Table 3 : Level of significance for each question between and within groups (MBBS and BDS)

Q. No	Questions	All Students N= Mean(SD)	MBBS N= Mean(SD)	BDS N= Mean(SD)	P - Value
1	[After interacting with patients I think about how things went during the interaction]	4.597(1.094)	4.516(1.145)	4.745(0.982)	0.089
2	[When reflecting with others about my work I develop new perspectives]	4.734(0.889)	4.660(0.866)	4.873(0.919)	0.051
3	[I gain new insights when reflecting with others about my work.]	4.745(0.958)	4.665(0.975)	4.892(0.912)	0.054
4	[After interacting with patients I wonder about the patient's experience of the interaction]	4.541(1.153)	4.394(1.208)	4.814(0.992)	0.003
5	[I find that reflecting with others about my work helps me to work out problems I might be having]	4.666(1.076)	4.569(1.156)	4.843(0.887)	0.038
6	[After interacting with patients I spend time thinking about what was said and done]	4.538(1.144)	4.463(1.158)	4.676(1.109)	0.129
7	[I think about my weaknesses for working with patients.]	4.783(1.077)	4.729(1.131)	4.882(0.968)	0.247
8	[After interacting with patients I wonder about my own experience of the interaction]	4.610(1.111)	4.548(1.144)	4.725(1.045)	0.194
9	[During interactions with patients I consider how their personal thoughts and feelings are influencing the interaction]	4.448(1.106)	4.356(1.177)	4.618(0.944)	0.055
10	[I think about how I might improve my ability to work with patients]	4.959(0.918)	4.910(0.952)	5.049(0.849)	0.217
11	[During interactions with patients I consider how my personal thoughts and feelings are influencing the interaction]	4.386(1.265)	4.362(1.278)	4.431(1.247)	0.655
12	[I critically evaluate the strategies and techniques I use in my work with patients]	4.479(1.129)	4.394(1.140)	4.637(1.097)	0.079
13	[I think about my strengths for working with patients]	4.569(1.124)	4.511(1.145)	4.676(1.082)	0.231
14	[When reflecting with others about my work I become aware of things I had not previously considered when reflecting with others about my work I become aware of things I had not previously considered]	4.707(1.012)	4.691(1.055)	4.735(0.932)	0.726
15	[During interactions with patients I recognize when my pre-existing beliefs are influencing the interaction]	4.248(1.256)	4.218(1.320)	4.304(1.133)	0.579
16	[During interactions with patients I recognize when my patient's pre-existing beliefs are influencing the interaction]	4.483(1.095)	4.512(1.149)	4.431(0.990)	0.557

Items that address the domain of reflection in action have shown the least score, while the items that addressed the domain of reflection with others have shown the highest score. However, item [Q10] has

the highest mean score, 4.959(0.918), while item [Q15] portrayed the least mean score, 4.248(1.256). The results of this study show that there is a need to help improve students' thinking while talking to the

patient and even after that so that better outcomes can be achieved.

Discussion

This study describes and identifies the importance of reflection methodology with the intention of improving the academic performance of students. This cross-sectional survey included 290 undergraduate students of MBBS and BDS at CMH Lahore Medical College, Lahore. The results showed that reflection intervention has positive and significant learning impacts, while there is a need to improve critical thinking and appraisal among students to achieve better outcomes.

The study has two important findings. Firstly, the results revealed that the domain of Reflection in action was the lowest-scored domain with a mean score of 17.565 ± 4.722 . Reflection in action involves analysis of the current situation followed by problem-solving in such a way that it affects the reflecting person directly, changing his views about self and life.¹¹ Low scores in this domain point towards an important gap in undergraduate training whereby the students do not feel themselves to be able to cope with real-life situations. Similar findings have been seen in a local study carried out on postgraduate residents.¹² In a study carried out on the self-reflection of undergraduates, it was revealed that the students had more positive perceptions of reflection-in-action as they thought it would help them to improve their future performance and critical thinking skills.⁴ Reflection-in-action has been found to improve gradually with increasing years of training and clinical practice. The increase in this reflective practice reflects in the improvement of academic performance and diagnostic abilities, as is evident from the study by Sobral.¹³ A qualitative research by Sagasser et al. has also pointed out towards the gradual learning of health professionals through clinical experiences under supervision and feedback.¹⁴ Multiple clinical encounters in wards, clinics and outpatient settings under supervision by faculty can help the undergraduates gain confidence in similar situations.

The second important finding is related to the highest score of 18.852 ± 3.935 for the domain of Reflection with others. The majority of students (88.9%) found it useful to discuss their experiences with peers. Such discussions may help them develop

new perspectives and bring into light aspects of patient management previously not considered by the undergraduates. It may also help in improving problem-solving skills. The findings are comparable to a study by Bari et. al.¹², which revealed that 85% of residents were in favour of reflecting with others. Jennifer conducted a study in 2017 to explore the factors affecting medical student resilience and found that discussion of complex clinical encounters with peers played an important role in increasing medical students' resilience and reducing their stress.¹⁵

The scores of an item of reflecting on action (Q4) and an item of reflection with others (Q5) of dental students were found to be significantly higher (*p*-value 0.003 and 0.038 respectively) than the scores of medical students for the same items. This difference could be due to the greater clinical exposure and patient handling by the dental undergraduates compared to the medical students.¹⁶ Looking back on what happened during an event and realizing one's deficiencies can help avoid the same mistakes in future.¹⁷ This was appreciated by our undergraduates as Reflection on action was found to be the second-high scoring domain. Such reflective practices also help improve the students' deep learning skills and overall performance.¹³

Almost 85% of the students agreed that they critically evaluated the strategies they used. A local study has pointed out that health professional undergraduates feel they are less well prepared in self-directed learning and appraisal skills for their future professional life.¹⁸

Focusing on innovative skill acquisition techniques involving reflection and critical self-appraisal may help reduce the stress of transition from student to the clinician, building self-confidence and becoming better health professionals.^{19,20,21}

To our knowledge, this was the first study to explore the reflective practices of health professional UG based on RPQ. The study, however, has certain limitations. The current study involved medical and dentistry undergraduates, and the students may differ in their thinking disposition, outcome expectancy, efficacy belief and knowledge. Since it has been carried out in a single institution, the results are difficult to generalize. Further large-scale, multi-centre studies involving other health

professions UG like nursing, physiotherapy etc., are needed to corroborate the evidence further.

Future endeavors also need to develop guidelines for reflective intervention stimulating students to participate in study. Experimental studies are also needed to investigate the adaptive interventions tailored to individual needs and preferences. However, ultimately, the goal of reflective intervention is to guide students to materialize and integrate reflective practices into their learning process, cultivate a reflective habit and promote self-directed learning resulting in improved patient care.

REFERENCES

- Sandars J. The use of reflection in medical education: AMEE Guide No. 44. *Med Teach.* 2009; 31: 685–95. doi: 10.1080/01421590903050374.
- Gaupp R, Fabry G, Körner M. Self-regulated learning and critical reflection in an e-learning on patient safety for third-year medical students. *International Journal of Medical Education.* 2018; 12: 189–94. doi: 10.5116/ijme.5b39.d5a8
- Aronson L. Twelve tips for teaching reflection at all levels of medical education. *Medical teacher.* 2011; 33: 200-5. doi: 10.3109/0142159X.2010.507714.
- Senger JB, Kanthan R. An appraisal of students' awareness of "self-reflection" in a first-year pathology course of undergraduate medical/dental education. *BMC medical education.* 2011; 11: 1-1. doi: 10.1186/1472-6920-11-67
- Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. *Advances in Health Science Education.* 2009; 14: 595–621. doi: 10.1007/s10459-007-9090-2
- Ahmed MH. Reflection for medical undergraduate: learning to take the initiative to look back to go forward. *Journal of Hospital Management and Health Policy.* 2018; 2: 1-5. doi: 10.21037/jhmhp.2018.05.07.
- Boenink AD, Oderwald AK, de Jonge P, van Tilburg W, Smal JA. Assessing student reflection in medical practice. The development of an observer-rated instrument: reliability, validity and initial experiences. *Medical education.* 2004; 38: 368–77. doi: 10.1046/j.1365-2923.2004.01787.x.
- Winkel AF, Yingling S, Jones AA, Nicholson J. Reflection as a Learning Tool in Graduate Medical Education : A Systematic Review. *Journal of Graduate Medical Education.* 2017; 9: 430–9. doi: 10.4300/JGME-D-16-00500.1
- DK Dimoliatis I, Jelastopulu E. Surgical Theatre (Operating Room) Measure STEEM (OREEM) Scoring Overestimates Educational Environment: the 1-to-L Bias. *Universal Journal of Educational Research.* 2013; 1: 247–54. doi: 10.13189/ujer.2013.010315
- Rogers SL, Priddis LE, Michels N, Tieman M, Winkle JV. Applications of the reflective practice questionnaire in medical education. *BMC medical education.* 2019; 19: 1-1. doi: 10.1186/s12909-019-1481-6.
- Azim S, Shamim M. Educational theories that inform the educational strategies for teaching ethics in undergraduate medical education. *JPMA.* 2020; 70: 123-8. doi: 10.5455/JPMA.487.
- Bari A, Imran I, Ullah H, Arshad A, Naeem I, Sadaqat N. Reflection as a Learning Tool in Postgraduate Medical Education. *Journal of the College of Physicians and Surgeons Pakistan.* 2021; 31: 1094-8. doi: 10.29271/jcpsp.2021.09.1094.
- Sobral DT. Medical students' reflection in learning in relation to approaches to study and academic achievement. *Medical teacher.* 2001; 23: 508-13. doi: 10.1080/01421590120042973.
- Sagasser MH, Kramer AWM. Self-entrustment: How trainees' self-regulated learning supports participation in the workplace. *Advances in Health Sciences Education.* 2017; 22: 931-49. doi: 10.1007/s10459-016-9723-4.
- Houpy JC, Lee WW, Woodruff JN, Pincavage AT, Houpy JC, Lee WW, et al. Medical student resilience and stressful clinical events during clinical training Medical student resilience and stressful clinical events during clinical training. *Medical education online.* 2017; 22: 1-8. doi: 10.1080/10872981.2017.1320187.
- Ali K, Zahra D, McColl E, Salih V, Tredwin C. Impact of early clinical exposure on the learning experience of undergraduate dental students. *European Journal of Dental Education.* 2018; 22: e75–80. doi: 10.1111/eje.12260.
- Jorwekar GJ. Reflective practice as a method of learning in medical education: history and review of literature. *International Journal of Research in Medical Sciences.* 2017; 5: 1188-92. doi: 10.18203/2320-6012.ijrms20171223.
- Zafar A, Rehman A. Clinical Capability Self-Appraisal as Indicative of Preparedness For Future Medical Practice. A Graduates' Perspective. *Health Professions Education.* 2017; 3: 44–9. doi: 10.1016/j.hpe.2016.07.001.
- Désilets V, Graillon A, Ouellet K, Xhignesse M, St-Onge C. Reflecting on professional identity in undergraduate medical education: implementation of a novel longitudinal course. *Perspectives on medical education.* 2022; 11: 232-6. doi: 10.1007/s40037-021-00649-w.
- Devi V, Abraham RR, Kamath U. Teaching and Assessing Reflecting Skills among Undergraduate Medical Students Experiencing Research. *Journal of clinical and diagnostic research.* 2017; 11: JC01-JC05. doi: 10.7860/JCDR/2017/20186.9142.
- Rogers SL, Priddis LE, Michels N, Tieman M, Van Winkle LJ. Applications of the reflective practice questionnaire in medical education. *BMC medical education.* 2019; 19: 47. doi: 10.1186/s12909-019-1481-6.