Original Article

Journal of Advances in Medical Education & Professionalism

The Effect of Teaching Professionalism by Using Real Lifetime Scenarios in Undergraduate Medical Students: An Educational Trial

SHAZIA RASUL[1*], MD; SAIMA CHAUDHRY[2], PhD; AFLAK RASHEED[3], MD

[1]*Adjunct Faculty Medical Education, Shalamar Medical & Dental College, Lahore, Pakistan;* [2]*Department of Oral Pathology, University of Health Sciences, Lahore, Pakistan;* [3]*Department of Rheumatology, Sheikh Zayed Post Graduate Medical Institute, Lahore, Pakistan*

Abstract

Introduction: The objective of this research is to evaluate the effect of teaching professionalism by real lifetime scenario to undergraduate MBBS medical students.

Methods: This comparative quasi-experimental trial was conducted in OBS/GYN department from May 2019 to Jan 2020. The final year MBBS students of Shalamar Medical and Dental College, Lahore, who attended the clinical rotation of Gynae OBS were enrolled in the study using consecutive sampling. Each batch consists of 15 students. The first two batches were taken as active control, whereas the third batch was taken as an interventional group. The certified faculty in medical education assessed professionalism by using P-MEX at the start and end of the rotation in the gynae ward. P-MEX data are presented as mean and standard deviation. The comparison between the two groups was done using independent sample t-test, and pre- and post-comparison within group was done by paired sample t-test. P-value less than 0.05 was considered as significant.

Results: Among the 45 students, 28 (62.22%) were male and 17 (37.78%) were female. Age and gender were statistically similar in both groups. The average total score, at the start of the rotation of the intervention group was 1.95±0.294, whereas the active control group was 2.23±0.31. At the end of the rotation, the average total score of the intervention group was 3.22±0.48 and active control was 2.56±0.53. Pre- and post P-MEX score was statistically significant with P<0.001.

Conclusion: This research showed that the teaching of professionalism using real lifetime scenarios led to statistically significant improvement of professionalism in the form of P-MEX mean score among final MBBS students.

Keywords: Teaching, Professionalism, Medical students

**Corresponding author:*
Shazia Rasul, MD;
Adjunct Faculty Medical Education, Shalamar Medical & Dental College, 682 C, st 12, Phase 6, DHA Lahore, Pakistan.
Tel: +92-3334376321
Email: drshaz786@hotmail.com
Shazia.rasul@sihs.org.pk

Please cite this paper as:
Rasul S, Chaudhry S, Rasheed A. The Effect of Teaching Professionalism by Using Real Lifetime Scenarios in Undergraduate Medical Students: An Educational Trial. J Adv Med Educ Prof. 2024;12(2):79-87. DOI: 10.30476/JAMP.2024.100869.1904.

Received: 29 November 2023
Accepted: 8 January 2024

Introduction

The word professionalism is derived from profess, which means "to proclaim something public," and it is a mutual relationship of trust between a physician and society. The essence of professionalism is the trust of society in a doctor, along with professional competencies (1-3). The definition and domain of professionalism vary in different cultures and contexts; so far, there is no unanimous model of professionalism (1, 4-6). According to the UK model, altruism (patient first), excellence (professional development), teamwork (interprofessional skills), continuous improvement (reflection), integrity, and honesty are six components of professionalism (7). The American Board of Internal Medicine

added accountability and respect for others to altruism, duty, excellence, and integrity as basic components of professionalism (4). The medical educator from the Netherlands explained professionalism in the form of observable behavior so that assessment of professionalism can be possible (8).

Like all over the world, in Pakistan too, the attitudes and behaviors of young and junior doctors are being criticized by patients, the public, and even the senior doctors. It is the conduct of doctors that leads to complaints by patients and their relatives. Although professionalism is considered an important learning outcome of five years of medical school training, most of the teaching of professionalism is "hidden" or informal (9, 10). There is a need for an emphasis on the use of a formal curriculum for professionalism in the medical curriculum because it affects the future professional attitude of the students (11, 12). Although medical professionalism has been addressed by PMDC (Pakistan Medical & Dental Council), it is still not implemented in undergraduate medical colleges in spirit.

Role modeling is a form of the informal curriculum; however, the formal curriculum includes lectures, web-based modules, interactive sessions using role-playing, simulating patients or standardized patients, video clips, small group teachings, real-life scenarios, contextual learning in the clinical departments, and reflection, but none of them is recommended as an ideal single methodology (13-17). Alexander introduced the term cinemeducation (cinema and education) used to teach psychology with the use of commercial films 18. The use of video movies has been proven to be an efficient teaching method in social sciences and has given students deep insight into the patient's conditions (18-20). The use of movies like Dr. House, Grey's Anatomy, Emergency Room, etc. which are TV series also provide a good perception and are used as educational tools in educational settings to teach the subject in a clinical environment like professionalism and other aspects of medicine (21, 22).

Thus, the teaching methodology was the use of real-life scenarios in the form of video movies followed by active interaction and reflection to teach domains of professionalism like doctor-patient relationships, interprofessional relationships, reflective skills, and time management in this research. So far, the research has used either video movies or vignettes; in experimental research, the impact of teaching is assessed by the feedback of students and teachers in qualitative studies or by a self-rating questionnaire in quantitative research. The exposure to clinical settings is an opportunity to learn and apply professionalism. Thus, in this research, the final year MBBS students were the subjects of this research. The real-life scenarios were introduced in the form of movie clips, followed by reflection and interactive discussion, as an intervention to teach professionalism to final year MBBS students at SMDC. P-MEX was used for the assessment of the student's professionalism (3, 23-25). Therefore, this research gives an insight into the effectiveness of the teaching of professionalism to undergraduate students through real-life scenarios in the form of video clips during their clinical rotation.

Methods

This was a comparative quasi-experimental trial at the OBGYN department of SMDC, Lahore. The following operational definitions were used:

Real lifetime scenario: Real lifetime scenarios mean the real experience encountered with patients, colleagues, nurses, paramedical staff, etc. during the practice of medicine in the hospitals, indoors, outdoors, in emergency settings, operation theatres, offices, etc. The real-life scenarios were introduced in the form of movie clips, followed by reflection and interactive discussion, as an intervention to teach professionalism to final year MBBS students at SMDC.

Professionalism: The following attributes will be taught and then assessed using PMEX: doctor-patient relationship, reflective practices, time management, and interprofessional relationship skills.

Professionalism mini evaluation exercise (P-MEX)

P-MEX, or professionalism mini exercise evaluation, is basically based on mini CEX (mini clinical assessment exercise) in which the clinical skills are being assessed by the faculty; however, P-MEX addresses the attitudes component of professionalism in P-MEX. The student's behavior is assessed and scored using a Likert scale ranging from 1 to 4. The interpretation of the scoring of P-MEX is in the form of either unacceptable, less than expectation, met expectation, or above expectation, which is according to the guidelines given by C. Ruess (23).

Effectiveness/Improvement: If the P-MEX score p-value is less than 0.05, this will be considered as imrovement/effective.

Sample Size

The sample size was calculated by the

following formula, keeping the power of the study equal to 90% and the level of significance equal to 5%.

$$n = \frac{\sigma^2 (z_{1-\alpha/2} + z_{1-\beta})^2}{(\mu_o - \mu_a)^2}$$

The standard deviation of marks was estimated to be approximately 1.16. It was determined that fifteen students per group were required to detect a difference of 1 mark in the outcome variable.

The final-year MBBS students who were attending an OBGYN rotation during the study period were enrolled in the study as the control group. The final-year MBBS students who were attending both sessions of the workshop were included in the study as an intervention group.

The students who did not attend both sessions of the intervention were excluded from the study, and those who did not participate in both assessments were excluded from research.

Final year MBBS students of Shalamar Medical and Dental College, Lahore, who were attending the clinical rotation of Gynaecology OBS, were enrolled in the study after taking approval from IRB (REF: SMDC/IRB-068) and then obtaining written informed consent. The students in the first two batches were taken as controls and assessed for professionalism by using P-MEX at the start of the rotation in the Gynaecology ward. The active control group attended the Gynaecology rotation in which traditional method of teaching like students were allotted the case, used to take history, do examinations followed by case presentation with one of faculty member. The students in the active control group learned "professionalism" as part of informal curriculum, e.g., role modeling, environmental learning, etc. There were 16 students in each batch; two dropped out because they were unable to appear in the second assessment; they were excluded from the research. The third batch was taken as an interventional group; there were sixteen students in this batch; one was excluded from the study because he was busy with extracurricular activities and missed the first teaching session. These students were assessed at the start of the rotation, followed by an intervention in the form of a workshop. Then, they were assessed again at the end of the rotation by using P-MEX.

Intervention

Intervention was held in the form of a "teaching session" of 2 hours in which professionalism was taught. The real-life scenarios using video clips followed by reflection in an interactive manner were used for teaching professionalism. Patient-doctor relationship skills, reflective skills, time management skills, and interprofessional relationship skills were the attributes of professionalism taught in the workshop. This was conducted twice at intervals of one week. Then, they were evaluated at the end of the rotation using P-MEX. The faculty member who had certificates in medical education was assessed for professionalism by P-MEX. The facilitator of the teaching session was not the assessor to minimize the evaluation bias. P-MEX was based on the same pattern as mini CEX. The assessors were given training to use the P-MEX proforma. The assessors examined ten students and filled out ten P-MEX evaluations as a part of their training, and then the Kappa score that turned out to be 70, indicating a strong agreement between the assessors, was calculated as their score of agreement.

Format of "Intervention"

The Shalamar Hospital Auditorium, with its audio-visual systems and comfortable environment, was arranged for the mentioned purpose, and 16 students of the "intervention group" were asked to reach the auditorium by 11 a.m., and the teaching session continued till 1:00 p.m.

In the beginning of the intervention, an interactive discussion of the definition and different domains of professionalism was done to sensitize the subject. The meaning of reflection and how to reflect were explained. Then, the first movie clips from the website

http://www.siut.org/bioethics/CBECProduction.html, entitled "Sound of Silence" was shown for students. The first movie clip was of 9-minute duration, and it was picturized at the Sindh Institute of Urology and Transplantation Karachi. The second movie clip, "Examination of an Obstetric Patient," available at the following link: https://www.youtube.com/watch?v=aPWrXA57rZ8, was shown for students. This video clip was made for educational purposes and prepared by CUCMS (Cyberjaya University College of Medical Sciences) Malaysia.

Second teaching session

In the second teaching session, the recap of the previous teaching session was done, followed by the first movie clip being shown to students. This first movie clip was "to error is human," followed by reflection and interactive discussion about interprofessional skills, doctor-to-doctor relationships, senior colleague-(doctor)-to-junior relationship, compliance to standard operating protocol, concern for patients, surgeon-to-

radiologist relationships (interprofessional relationships), communication skills, relationships with staff and junior staff, doctor and administrative behaviors, composure in difficult situations, critical incident reporting, and acceptance of feedback. After showing "Tell or not to tell", the reflection and interactive discussion focused on the following points: involvement of patients in decision making, concerns of patients, and doctor patient relationship.

A third movie clip of fifteen-minute duration was also prepared by the Sindh Institute of Urology and Transplant and is available on their website at the following link:

http://www.siut.org/bioethics/CBECProduction.html, entitled "Walk on a tight rope." This movie led to excellent discussion about confidentiality breaches, the role of the team leader, care of team members, involvement of authorities, composure in difficult situations, confidentiality of patient information and records, involvement of guardians, taking all of your departmental staff, especially paramedics like apas, sweepers, etc., on board to maintain concern for patients, etc. The brainstorming, critical thinking, and interactive discussions with guided reflection led the group dynamics to a deep insight into medical professionalism.

Statistical Analysis

P-MEX data is presented as mean and standard deviation. The comparison between the two groups was done by independent sample t-test, and pre- and post-comparison within group was done by paired sample t-test. P-value less than 0.05 were considered as significant.

Ethical Consideration

This research was approved by Institution Review Board SMDC (Shalamar Medic.al & Dental College, Lahore, Pakistan), (REF: SMDC/IRB-068). After approval, all participants were recruited with informed consent & voluntary participation.

Results

In this study, 15 students were in the intervention group and 30 students were selected from the conventional/active control group. The age range of both groups was similar in both groups, and the gender distribution was the same (Table 1).

At the start of rotation, the total mean score of P-MEX in the intervention group was 1.95±0.294, whereas the active control group was 2.23±0.31. At the end of rotation, the total score of the intervention and active control groups were 3.22±0.48 and 2.56±0.53, respectively. The scores of pre- and post-tests were different significantly (P<0.001).

In the intervention group, average doctor patient relationship (DPR) at the start and end of the rotation was 1.85±0.46 and 3.21±0.70, respectively. Average reflective skills at the

Table 1: Demographic characteristics of the participants

Variables	Intervention	Active Control	P
Age , y (Mean±SD)	23±0	23±0	1.000
Gender, n (%)			
Male	9 (60%)	19 (63.33%)	0.802
Female	6 (40%)	11 (36.67%)	

Table 2: Comparison of the intervention and control groups at the start and end of the rotation (by applying the t-test)

Domains of professionalism	Time	Intervention (I)	Active Control (C)	P (Between group)
Total score (Mean±SD)	Start of rotation	1.95±0.29	2.23±0.31	0.006
	End of rotation	3.22±0.48	2.56±0.53	<0.001
	Within Group	<0.001	<0.001	
Doctor patient relationship (Mean±SD)	Start of rotation	1.85±0.46	2.12±0.51	0.870
	End of rotation	3.21±0.70	2.49±0.63	0.001
	Within Group	<0.001	<0.001	
Reflective skills (Mean±SD)	Start of rotation	2.00±0.33	2.50±0.47	0.001
	End of rotation	3.40±0.60	2.72±0.67	0.002
	Within Group	<0.001	<0.001	
Time management (Mean±SD)	Start of rotation	1.98±0.48	2.133±0.33	0.211
	End of rotation	3.40±0.63	2.63±0.57	<0.001
	Within Group	<0.001	<0.001	
Inter-professional skills (Mean±SD)	Start of rotation	2.22±0.37	2.48±0.37	0.034
	End of rotation	3.49±0.55	2.83±0.52	<0.001
	Within Group	<0.001	<0.001	

start and end of the rotation were 2.03±0.33 and 3.40±0.60, respectively. Average time management at the start and end of the rotation was 1.98±0.48 and 3.40±0.63, respectively. Moreover, average inter-professional skills at the start and end of the rotation was 2.23±0.37 and 3.50±0.55, respectively. Average total P-MEX score at the start of the rotation was 1.95±0.29, whereas at the end of the rotation it was 3.23±0.48.

In the active control group, average doctor patient relationship (DPR) at the start and the end of the rotation was 2.13±0.51 and 2.49±0.63. Average reflective skills at the start and of the rotation were 2.50±0.47 and 2.72±0.67, respectively. Average time management at the start and end of the rotation was 2.13±0.33 and 2.63±0.57, respectively. Average inter-professional skills at the start and end of the rotation was 2.48±0.36 and 2.83±0.53. Average total P-MEX score at the start and end of the rotation was 2.23±0.31 and 2.56±0.53. In the beginning of the rotation, domains like doctor- patient relationship (P=0.870) and time management (P=0.211) were statistically same at the baseline (Table 2).

Among both groups, the scores of different domains at the beginning of the study were significantly different from the end of the study (Figure 1).

Discussion

This study was conducted to evaluate the effectiveness of teaching professionalism through real-life scenarios to final year MBBS students at SMDC, which proved to be effective because the level of professionalism (P-MEX score and mean score of the domains of professionalism) has improved from "less than expectation" to the level of "met expectation". This is an educational trial in which the first two batches of final-year students who attended an OBGY rotation of two months were taken as active controls, and the third batch was taken as the "intervention". Their evaluation was done at the beginning and end of the rotation to evaluate the effect of the intervention. Teaching medical professionalism is a challenge in today's era of medical education because of the emerging attitudes and professional behavior of young doctors, so the importance of teaching medical professionalism cannot be overlooked. However, there is no single method that is the best for teaching professionalism because of the diversity in context, culture, and concepts. Thus, this study was conducted to evaluate the effectiveness of the use of real-life scenarios for teaching professionalism which was assessed through the change in the attitudes of students as measured by the P-MEX score.

Study tools

Real-life scenarios

Real-life scenarios mean the real experiences with which the patients, colleagues, nurses, paramedical staff, etc. are faced during the practice of medicine in the hospital, indoors, outdoors, in emergency settings, operation theatres, offices, etc. The real-life scenarios were introduced in the form of movie clips, followed by reflection and interactive discussion, as an intervention to teach professionalism to final-year MBBS students at SMDC.

Professionalism mini evaluation exercise (P-MEX)

P-MEX, or professionalism mini exercise

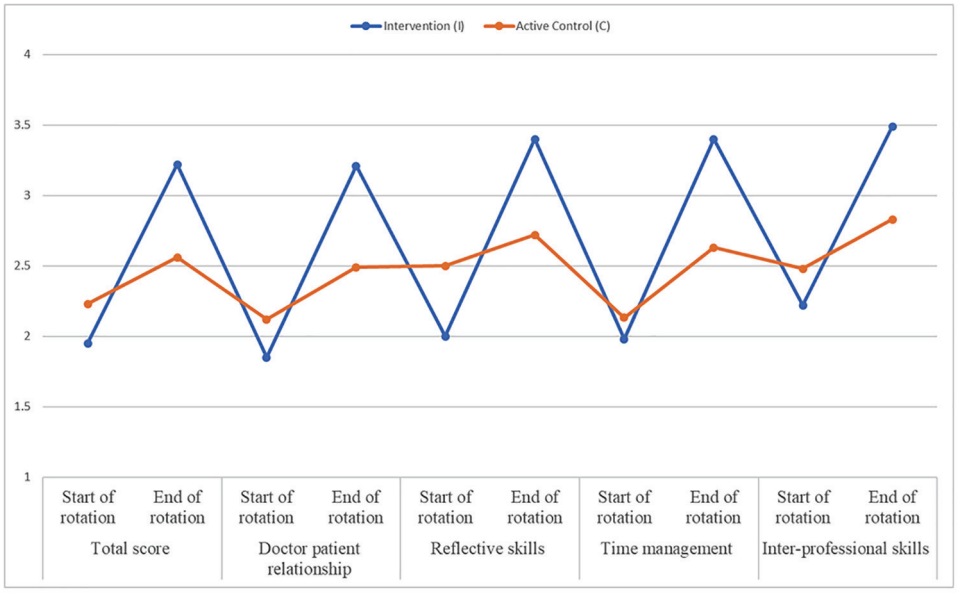

Figure 1: Group-wise comparison of different domains of P-MEX at the start and end of the rotation

evaluation, is basically based on mini CEX (mini clinical assessment exercise) in which the clinical skills are being assessed by the faculty; however, P-MEX addresses the attitudes component of professionalism in P-MEX (3). The assessment of professionalism by P-MEX done by Yusuke Tsugawa revealed the adequate reliability of P-MEX, and it is also applicable in East Asian cultural contexts. As professionalism is defined as a set of behaviors by the educationists of the Netherlands, the assessment can be possible. P-MEX is an assessment tool by which observerable behaviors of students can be assessed, followed by feedback to the students, and out of all the instruments available for observable behavior assessment, it is the most effective tool (3, 23-25). The student's behavior is assessed and scored using a Likert scale ranging from 1 to 4. The strength of P-MEX is that it is feasible to use, does not require vigorous training, and applies to students in patient-based and non-patient settings. The limitation of using P-MEX is that the number of observations cannot be a single, but rather a multiple of observations (3).

The interpretation of the scoring of P-MEX is in the form of either unacceptable, less than expectation, met expectation, or above expectation, which is according to the guidelines given by Cruess, but the subjective elements from the individual assessor may influence the assessment (23). However, in this research, the assessment was done by two assessors who remained committed throughout the research.

Mean P-MEX Score

The Mean P-MEX score has improved from 1.91±0.294 "less than expectation" to 3.22±0.477 "met expectation" in the intervention group by teaching professionalism by using real-life scenarios in this study. Smithikrai in 2016 reported the effectiveness of teaching with movies, followed by a discussion regarding the promotion of positive characteristics and behaviors (26). The results reported by Kadivar et al. indicate that observing and reflecting on movies as cinemedicine can be used as a tool to teach psychosocial aspects of medicine (20). His research used mixed methodologies (quantitative and qualitative); he used a self-assessment questionnaire as the assessment tool. According to their results, 85% of students perceived this method as a good learning tool; however, 56% believed that the points learned would be helpful in their future performance. The limitation of his research was that it was a post-intervention questionnaire by the students, which gave their perception only; an exact change in attitudes has not been observed. This limitation has been overcome by the current research as well as assessment of the change in the attitude of medical students after the intervention, which has been assessed by the instrument "P-MEX". Secondly, in my research, "the assessors" investigated the students' professionalism as compared to the students by themselves, which also gave weightage to our study.

The teaching of professionalism to medical students by using movie clips of clinical scenarios from TV series is a good teaching tool by Shevell AH when he took first-year medical students' perceptions as qualitative research about the usefulness of video movies for teaching physicians' qualities (21). In his research, first-year medical students as preclinical students were stuided, whereas in the current research, the subjects of the research were the final-year medical students, as their clinical exposure led to better improvement of their professionalism. The real-life scenarios in the form of video clips provide a controlled environment to teach professionalism to medical students. This is also a qualitative study in which the impact of teaching professionalism is assessed by the teachers in the form of essays and oral presentations; four domains of professionalism are recognized, including communication, empathy, the doctor's interest, and palliative care.

Doctor-patient relationship

Communication skills are an essential component of medical professionalism in the form of the doctor-patient relationship and interprofessional relationship skills. These domains of professionalism have improved from less than expectation to "met expectation" by the intervention in this research. Although the mean score of both these domains was "less than expectation" in both groups, it was not significantly different for doctor-patient relationship at the start of the rotation. The same results were reported as improvements in communication skills by Knowles, who used the video role play with structured feedback for teaching communication skills. He made a video of the medical students interactive with a simulated patient, followed by the structured feedback given by a physician and psychologist (16). He evaluated the effectiveness of this intervention by a blind randomized control trial and the use of OCSE (objectively structured clinical examination) and assessment according to a checklist; then, he compared both groups and found a statistically significant difference ($P<0.0001$ in the experiment group as compared to the control group); Thus, he reported this

methodology as effective to teach communication skills. The mean score of the intervention group improved from 6.4 to 13.4, as shown by Sukhlecha when they studied the improvement of communication skills and doctor-patient relationships after intervening in the form of structured communication skills training (27, 28).

Reflective Skills

Reflection means to look back on an experience with the concept of analyzing and then concluding the lesson to improve the learning and practice, so-called reflective learning and reflective practice, respectively. Reflective skills are used as a teaching tool for students in medical education, whereas in practicing medicine, the practice of reflection is an effective tool to improve patient care (29-31). The use of video clips with interactive sessions supervised by trained facilitators significantly improved the reflective skills of the intervention group as compared to the control group (P=0.000). The use of videos showed to develop reflective skills by Coffey in 2014, where he used the video of students and then reflected on their teaching skills with peer review. The video clips are used as educational tools in the form of online courses for students learning; however, the teacher's feedback and input for teaching reflective skills are required in addition to the video clips (32, 33).

Time management

Time management improvement was shown in both groups, as the p value was not statistically significant at the start of the rotation. This improvement in the time management domain in the control group can be due to "assessment-derived learning," as students used to do whatever was expected in assessment, and in this research, as students in the control group were exposed to the methodology of assessment P-MEX, they performed well afterward.

Interprofessional skills

The improvement of P-MEX and other domains of professionalism, especially time management, doctor-patient relationship, and interprofessional skills, was statistically significant in the intervention group; however, the mean score of interprofessional skills was significantly better in the control group and markedly improved in the intervention group after the intervention. Communication, interprofessional skills, reflective skills as well as early clinical exposure are the recommended teaching and learning methodologies shown by Subrat (34). Similarly, Rehman found a positive correlation between perceived professionalism and communication skills and interprofessional skills in undergraduate medical students (35).

One of the interesting aspects of this research is the comparison of the control and intervention groups before the intervention, which revealed that the mean scores of P-MEX and domains of professionalism were "less than expected," but the actual mean score of P-MEX and other domains of professionalism were better in the control group as compared to the intervention group. After the intervention, the mean score of P-MEX and those of other domains of professionalism were better in the intervention group as compared to the control, which also showed the effectiveness of real-life scenarios in improving medical professionalism.

The strength of this research is the assessment of the actual change in the behavior of medical students at SMDC according to P-MEX in both patient and non-patient settings, both of which were observed by the assessors, who were not the researcher or facilitator of the teaching session. Secondly, this research provides evidence for the future implementation of this methodology for the rest of the clinical departments of SMDC/ Shalamar Hospital during the final year of MBBS, so that the final year MBBS students will be expected to enter their practical medical careers with better medical professionalism. Thirdly, the two assessors who remained committed throughout the research and were involved in the assessment of the control group, as well as the intervention group, gave valuable strength to the research.

Limitation

This educational research is a non-randomized controlled trial in which the allocation of final-year students in the OBGY department was made by medical education, and it was not possible to randomly allocate the students for the study purpose. The small sample size was another limitation of this study.

Conclusion

This research showed the teaching of professionalism using real lifetime scenarios led to statistically significant improvement of professionalism in the form of P-MEX mean score among final MBBS students.

Acknowledgement

Dr. Shahzad Anwar, Head of Urology Department, Services Institute of Medical Sciences, Lahore, supervised this project for MHPE thesis and Prof. Fozia Amber and Dr.

Shabnam Tahir gave their valuable time for the assessment of the professionalism of final-year students and remained throughout this research.

Authors' Contribution

Sh.R has worked in all aspects, started from the selection of topic, study design, conducting research, data collection, data analyzing, data interpretation and draft writing as this was her MHPE thesis work. S.Ch has actively involved in study design, data analyzing and draft writing. She was co-supervisor for thesis. A.R has worked in data analyzing, data interpretation and draft writing and final proof reading of the draft.

Conflict of Interests

The authors declare no conflicts of interest.

References

1. Koch T. Professionalism: An Archaeology. InHEC Forum. 2019;31(3):219–32.
2. Seif-Farshad M, Bazmi S, Amiri F, Fattahi F, Kiani M. Knowledge of medical professionalism in medical students and physicians at Shahid Beheshti University of Medical Sciences and affiliated hospitals—Iran. Medicine. 2016;95(45):e5380.
3. Tsugawa Y, Ohbu S, Cruess R, Cruess S, Okubo T, Takahashi O, et al. Introducing the Professionalism Mini-Evaluation Exercise (P-MEX) in Japan: results from a multicenter, cross-sectional study. Acad Med. 2011;86(8):1026-31.
4. Klemenc-Ketis Z, Vrecko H. The perceptions of professionalism by 1st and 5th grade medical students. Acta Informatica Medica. 2014;22(5):292.
5. Epstein RM, Hundert EM. Defining and assessing professional competence. JAMA. 2002;287(2):226-35.
6. O'Sullivan H, Van Mook W, Fewtrell R, Wass V. Integrating professionalism into the curriculum: AMEE Guide No. 61. Med Teach. 2012;34(2):e64–77.
7. Modi JN, Gupta P, Singh T. Teaching and assessing professionalism in the Indian context. Indian Paediatrics. 2014;51(11):881–8.
8. Ashar A, Ahmad A. Developing professionalism: dental students' perspective. Journal of the College of Physicians and Surgeons Pakistan. 2014;24(12):902–7.
9. Al-Eraky M, Marai FH. Professionalism in medical education: a review article. Advance Health Prof Education. 2015;1(1):37-40.
10. Shah N, Javed M, Shah N, Soomro M. Comparison of Cognitive Professionalism in Residents of Public and Private Hospitals in Karachi. Journal of the College of Physicians and Surgeons—Pakistan: JCPSP. 2017;27(8):479–82.
11. Baingana RK, Nakasujja N, Galukande M, Omona K, Mafigiri DK, Sewankambo NK. Learning health professionalism at Makerere University: an exploratory study amongst undergraduate students. BMC medical education. 2010;10(1):76.
12. Phillips SP, Dalgarno N. Professionalism, professionalisation, expertise, and compassion: a qualitative study of medical residents. BMC medical education. 2017;17(1):1–7.
13. Guraya SY, Guraya SS, Almaramhy HH. The Legacy of Teaching Medical Professionalism for Promoting Professional Practise: A Systematic Review. Biomedical and Pharmacology Journal. 2016;9(2):809–17.
14. Al-Eraky MM, Chandratilake M, Wajid G, Donkers J, van Merrinboer J. Medical professionalism: development and validation of the Arabian LAMPS. Med Teach. 2013;35(sup1):S56–62.
15. Mueller PS. Teaching and assessing professionalism in medical learners and practising physicians. Rambam Maimonides Med J. 2015;6(2):e0011.
16. Knowles C, Kinchington F, Erwin J, Peters B. A randomised controlled trial of the effectiveness of combining video role play with traditional methods of delivering undergraduate medical education. Sexually transmitted infections. 2001;77(5):376–80.
17. Al-Eraky MM. Faculty development for medical professionalism in an Arabian Context. [Doctoral Thesis, Maastricht University]. USA: Maastricht University; 2015. 244 p.
18. Alexander M, Lenhan P, Pavlov A. Cinemeducation: A Comprehensive Guide to Using Film in Medical Education. NYU School of Medicine: Radcliffe Publishing; 2010.
19. Dave S, Tandon K. Cinemeducation in Psychiatry. Advances in psychiatric treatment. 2011;17(4):301–8.
20. Kadivar M, Mafinejad MK, Bazzaz JT, Mirzazadeh A, Jannat Z. Cinemedicine: Using movies to improve students' understanding of psychosocial aspects of medicine. Annals of medicine and surgery. 2018;28:23–7.
21. Shevell AH, Thomas A, Fuks A. Teaching professionalism to first year medical students using video clips. Med Teach. 2015;37(10):935–42.
22. Jerrentrup A, Mueller T, Glowalla U, Herder M, Henrichs N, Neubauer A, et al. Teaching medicine with the help of "Dr. House". PLoS ONE. 2018;13(3):e0193972.
23. Cruess R, McIlroy JH, Cruess S, Ginsburg S, Steinert Y. The professionalism mini-evaluation exercise: a preliminary investigation. Acad Med. 2006;81(10):S74–8.
24. Karukivi M, Kortekangas-Savolainen O, Saxén U, Haapasalo-Pesu KM. Professionalism Mini-Evaluation Exercise in Finland: A Preliminary Investigation Introducing the Finnish Version of the P-MEX Instrument. Journal of Advances in Medical Education and Professionalism. 2015;3(4):154.
25. Kwan YH, Png K, Phang JK, Leung YY, Goh H, Seah Y, et al. A systematic review of the quality and utility of observer-based instruments for assessing medical professionalism. Journal of graduate medical education. 2018;10(6):629–38.
26. Siritikul S, Chalanunt S, Utrapiromsook C, Mungara S, Wongpakaran T, Wongpakaran N, et al. Changes in character strengths after watching movies: when to use rasch analysis. BMC Res Notes. 2021;14(1):5.
27. Klemenc-Ketis Z, Kersnik J. Using movies to teach professionalism to medical students. BMC medical education. 2011;11(1):1–5.
28. Sukhlecha A, Dass R, Tiwari DS, Anand NI, Dholakia HJ. Structured communicative skills training for

medical interns improves history taking skills on sensitive issues: An interventional study. Medical Journal of Dr. DY Patil Vidyapeeth. 2016;9(5):579.
29. Hargreaves K. Reflection in Medical Education. Journal of University Teaching and Learning Practise. 2016;13(2):6.
30. 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(4):1188–92.
31. Devi V, Abraham RR, Kamath U. Teaching and Assessing Reflecting Skills among Undergraduate Medical Students Experiencing Research. J Clin Diagn Res. 2017;11(1):JC01–JC05.
32. Coffey AM. Using video to develop skills in reflection in teacher education students Australian. Journal of Teacher Education. 2014;39(9):86–97.
33. Brame CJ. Effective Educational Videos: Principles and Guidelines for Maximizing Student Learning from Video Content. CBE Life Sci Educ. 2016;15(4):es6.
34. Panda S, Das A, Das R, Shullai W, Sharma N, Sarma A. Teaching and Learning Medical Professionalism: an Input from Experienced Faculty and Young Graduates in a Tertiary Care Institute. Maedica (Bucur). 2022;17(2):371-9.
35. Rahman MM, Raman D, Anthony E, Hazwani NS, Iffah P. Perceived professionalism and its relationship with communication skills, social interaction and attitude towards medical subjects among undergraduate medical students in Malaysia. International Journal of Research in Medical Sciences. 2023;11(2):446-52.