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EDITORIAL

Socratic Method of Teaching in Medical Education

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Socrates (469-399BC) is regarded as the founder of Western philosophy. His method of teaching was based on a shared discourse between teachers and students. He would ask thought provoking questions from his students. This would result in motivating the students to think and generate debate. This was an iterative process and would continue till the answers to the questions were found or discussion was exhausted. This method is termed as Socratic method of teaching (Birnbache, 1999). It also involves the zone of proximal development and scaffolding as advocated by Vygotsky. Many teaching method, based on small group teaching such as problem-based learning, case-based learning, one minute preceptor rely on the philosophy of Socratic method.

Socratic method relies on getting the answers from the students rather than telling them the answers directly. Socrates in his sessions would pick students randomly and ask them a question. The student would either answer the question if s/he knows it or would learn it from the discussion between her/his peers and the teachers.

This method of teaching is also known as Socratic debate and involves a helpful and accommodating argumentative dialogue that not only stimulates critical thinking but generate newer ideas. Through this method, though teacher aims that students learn the factual knowledge, but they put more emphasis on the use of this knowledge. In this method both teacher and students move the discussion forward through a process of questioning called Socratic questioning. It is opposite to the idea of the sage on the stage in the medical education in which teacher is the centre of focus. In Socratic style of questioning, the teacher acts ignorant and expects from the students to contribute to the discussion. These questions that are asked from the student can be concise and directed or open but with a purpose (Oh, 2005).

In contrary to Socratic method, didactic teaching involves verbal delivery of facts in which the learner is inactive. This is purely instructor led and fails to gain attention of a student for longer duration (Zou et al., 2011). This method is mainly used in didactic lectures. Another method of teaching that is based on questioning that is employed in clinical teaching is called as 'Pimping'. This is aggressive form of Socratic questioning and should be discouraged (Oh & Reamy, 2014). In this method, the senior clinician asks questions from interns or medical students that are intentionally unanswerable or are very difficult. This results in embarrassment or humiliation of the medical students and deter learning.

Socratic method of teaching has passed the test of time and is still successful after 2500 years. When used in its true essence and spirit, it promotes active learning through promotion of critical and logical thinking.

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GUEST EDITORIAL

E-Professionalism: challenges of being social in social media in health profession

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Digital revolution is set to influence medicine significantly in coming days. Healthcare professionals should embrace the positive potential of social media (SM) and social networking sites (SNSs) and take advantage of these technologies and tools for their personal and professional development but also be aware of the potential impact of their online behaviors. Moorhead et al identified six arching domains of social media use by general public, patients and health professionals. These include Information provision and answering questions on various conditions; facilitation of dialogue between patients, and patients and healthcare professionals; data collection on patient experiences and opinions; SM use for health intervention; health promotion and health education; reduction of stigma & online consultations (Moorhead et al., 2013). Social media has various advantages, such as reaching an extensive audience, low cost, peer/social/emotional support, helping students to keep updated the latest health trends, helping them to formally and informally learn material, prompt communication & potential to influence health policy (Moorhead et al., 2013; Mostaghimi & Crotty, 2011). At the same time, there are various limitations of social media use in healthcare. These include lack of reliability, information overload, lack of confidentiality & privacy, risks associated with providing incorrect advice using social media, concerns about correct application of online information to one's personal health & adverse health consequences. Furthermore, in some cases social media may restrict patients from visiting health professionals (Moorhead et al., 2013).

Although Healthcare Professionals understands that professionalism and ethics is a significant aspect of their day-to-day work but they feel inadequately prepared in an increasingly digital world. One need to understand that the professional standards don't change because stakeholders are increasingly communicating through social media rather than traditional face to face interaction. Social media platforms unique characteristics of persistence, searchability, replicability and invisible audience lead to "permanent" digital footprint and can blur personal and professional identities. Altogether,

these pose serious challenges and considerations in terms of professionalism lapses. In this digital age, a professional approach is necessary to maintain trust in medical profession thus leading to a relatively new e-professionalism construct with regards to professional attitudes and behaviors displayed in online domains and as part of one's online presence on social networking sites like Facebook (Gettig, Lee, & Fjortoft, 2013). E-professionalism thus encompasses multiple aspects of social media including issues linked to online presence, professional boundaries, and appropriateness of content posted on social networking sites.

In healthcare settings, social media offers unlimited opportunities in social connectivity, professional development, and public outreach. Chretien and Kind in a commentary very nicely conceptualized: hierarchy of needs" on social media professionalism. They identified safety (knowing which behaviors may compromise one's career) as the most basic need. It advances to reflection on one's social media image and lastly discovery [use of social media to innovate and bring about improvement in healthcare systems] (Chretien & Kind, 2014).

Various studies have raised concerns that medical professionals may be unknowingly exposing themselves to risks related to lapses of professionalism by being less vigilant in the use of social media. They struggle at times to strive the right balance between personal and professional images. Troublesome themes of unprofessional conduct, defamation of faculty & institutes, breaches of patient confidentiality, sexual and violent content, friending patients and faculty are observed by researchers in this field (Chretien, Greysen, Chretien, & Kind, 2009; Thompson et al., 2008). Identifiable photographs of patients, information identifying patient or physician was observed in 17% of physicians blogs in a review (Lagu, Kaufman, Asch, & Armstrong, 2008). Reporting of physicians violations of online professionalism is also common, resulting in disciplinary actions including dismissals (Chretien et al., 2009; Gettig et al., 2013). Only some medical professionals consider risks of their online posts but that is also only in relation to their own career rather than for the medical profession as a whole (Chretien et al., 2009; Chretien & Kind, 2014). Peer posting of unprofessional content was reported by both faculty and students (Mostaghimi

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& Crotty, 2011). Significance of online presence can be gauged from the fact that 11% of employers have reported going through Facebook profile of candidates in hiring decisions (Switzer, 2008). Different stakeholders in medicine i.e. faculty, students and public were found to have significant differences in perceptions related to e-professionalism. Unprofessional conduct online has been associated with consequences of suspension from medical school, staff being dismissed from jobs, license restrictions, impact on selection of candidates for future residency and jobs as well as raising trust issues in medical profession and physicians (Kitsis et al., 2016; Thompson et al., 2008).

Despite the fact that professionalism is considered as an integral & core component of medical curriculum, but to what extent e-professionalism is integrated in teaching in Pakistan, varies. Medical colleges have the uphill task of establishing foundations of professional behavior in medical students yet online medical professionalism in this digital age is perhaps not being given adequate attention. Majority of the literature in the field of e-professionalism hovers around the experience of medical colleges in the West. Our literature search revealed only one study that focuses on e-professionalism in the context of medical schools in Pakistan (Jawaid, Khan, & Bhutto, 2015). Also worthy of note is that medical education system as well as cultural values in Pakistan are different from West. In depth analysis of some publicly available Facebook accounts of Pakistani medical students identified potential unprofessional content related to politics and violence (Jawaid et al., 2015). Faculty has responsibility to teach professionalism including online professionalism to medical students, but their own familiarity with social media & e professionalism may not be adequate.

This scenario has led to various organizations to develop guidelines for physicians on how to conduct themselves in social media (Cork & Grant, 2016; Farnan, Reddy, & Arora, 2010). All guidelines emphasize the need to maintain patient confidentiality, be vigilant regarding privacy settings, maintain appropriate patient physician boundaries, provide accurate information, declare conflicts of interest, and maintain separate personal and professional profiles. Doctors & medical students are also advised not to accept patients friendship requests on social networking sites like Facebook. Educational interventions stressing a proactive approach to digital forums is need of the day as "connectivity should not come at the cost of Professionalism" (Farnan et al., 2010).

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Original Article

Correlation between Strength of Motivation and Academic Performance among Dental Students of University College of Medicine and Dentistry (UCMD), Lahore.

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ABSTRACT

Introduction: Student motivation plays a vital role in how well they perform academically. It is particularly important in dental students due to intense studies and tiring clinical duties. Research has been done to find out the relationship of qualitative and quantitative motivation with academic performance, but with contradictory results.

Objective: To find the correlation between strength of motivation and academic performance among dental students of University College of Medicine and Dentistry (UCMD).

Method: A correlational research design was applied. The strength of motivation was calculated using the SMMS-R questionnaire. The questionnaire was sent on WhatsApp to the 1st, 2nd, 3rd, and final year students. One hundred and forty-four responses were recorded. Out of these, 4 students did not allow to access their results, thus they were excluded from the study. For the rest of the 140 students, their academic scores of Combined Block Assessment 1 (CBA-1) were provided by the administration department. Data analysis were done using the SPSS 25.

Results: Strength of motivation and academic performance showed a positive relationship; Pearson's correlation coefficient (r) was 0.6 with a p-value of 0.01. With an increase in strength of motivation, academic performance also increased.

Conclusion: A positive relationship was found between the students' strength of motivation, and their academic performance as calculated by the SMMS-R questionnaire.

KEYWORDS: Motivation, academic performance.

INTRODUCTION

Several factors contribute to how well a student performs academically; strength of motivation recognized as one of them (Fraser & Killen, 2005). Motivation is the driving force which helps in achieving our goals (Taormina & Gao, 2013). Several different theories of motivation have been reported in literature; the focus of all of them being either on quality or quantity of motivation. (Kusurkar, Croiset, Mann, Custers, & Ten Cate, 2012) In medical education, strength of motivation is referred as the student's willingness to take up and complete his medical training regardless of compromises at personal and social levels, hindrance's, unfortunate or unpleasant perspectives (Nieuwhof, ThJ ten Cate, Oosterveld, & Soethout, 2004). Medical students must possess high strength of motivation due to the intensive nature of studies along with long and tiresome clinical duties (Rashmi A. Kusurkar, 2012).

During the admission procedure, more emphasis is laid on the quality of motivation as the selection board tries to find out genuine, intrinsic motives among applicants through interviews and application letters (Nieuwhof et al., 2004). However, literature suggests that a blend of both qualitative as well as quantitative motivation is required to achieve academic success (Rashmi A. Kusurkar, Croiset, Galindo-Garré, & Ten Cate, 2013).

A review of the literature shows that extensive research has been done to compare motivation with academic performance, but with contradictory findings (Rashmi A. Kusurkar et al., 2013). Almost all the studies that have been carried out focus on quality of motivation only (Goodman et al., 2011). Search of the literature did not yield any research measuring strength or quantity of motivation using the SMMS-R questionnaire in students and comparing it with their academic performance, especially among dental students.

With the drastic increase in Pakistani population, the number of consumers requiring dental care has also increased. Literature clearly suggests that those students who have high level of motivation, leading to academic success will enroll themselves in specialist training programs after their BDS program, and commit their lives to patient care (Whittington, 2015). Thus, more and more such students are required to fulfill the consumer demands.

Unfortunately, a review of the literature yields that none of the medical curriculum developers have ever given deliberate attention to student motivation while making curriculum reforms (Rashmi A. Kusurkar, Croiset, Mann, Custers, & Ten Cate, 2012).

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Research reveals that teachers teaching style and the environment of the institution plays an important role in student motivation (Ayu, 2017) . Many researches in the field of motivation have concluded that although teachers are not fully responsible for their students' motivation to learn, their responsibility is very high(Pelaccia & Viau, 2017). This proves that the teachers should use teaching and assessment strategies, which increases the level of motivation in their students. This study aims at exploring the relationship between strength of motivation and academic performance in dental students of UCMD through the following research question: What is the relationship between the strength of motivation and academic performance among dental students of UCMD?

METHODS

This research employed the quantitative co-relational design. The Strength of Motivation for Medical School Revised (SMMS-R) questionnaire developed by Olle Ten Cate (R. Kusurkar, Croiset, Kruitwagen, & ten Cate, 2011) was employed to calculate the strength of motivation for each student. The SMMS-R questionnaire contains 15 items, each item with a score ranging from 1 to 5, the higher the total score the greater the strength of motivation. Results from this tool have shown to have favorable psychometric properties and good validity.

The term 'medical student' was replaced by 'dental student' in the SMMS-R questionnaire, and the questionnaire was uploaded on Google Drive. The link to the questionnaire was sent to the Class Representatives (CRs) of 1st, 2nd, 3rd, and final years. The CRs then shared the link in the WhatsApp group, which they had already created including all their class fellows. One hundred and forty-four students recorded their responses, but out of these 4 did not permit to access their academic scores, and thus they were not included in the study. Total strength of motivation was calculated by summing up scores on each item; questions 2, 4, 8, 9, 11, 13 and 14 were reverse scored rest were scored as normal. An ethics clearance application form was filled and submitted to the Ethical Review Committee of UOL, along with a sample questionnaire. It was only after the approval from the committee that the questionnaires were distributed, and the academic results obtained from the student administration office. Students consent was obtained in the questionnaire. There were 15 questions used to measure the strength of motivation. The total strength of motivation was calculated as the sum of all responses. Pearson's correlation coefficient was used to measure the correlation between strength of motivation and academic performance.

RESULTS

The table 1 summarizes the responses of the students about the 15 questions in the SMMS-R Questionnaire. For each student, their responses were compared to their academic results. Overall, students with higher academic scores showed more motivation on the SMMS-R Questionnaire and students with low academic scores showed less motivation.

Table I: Frequency table of Questions 01 to 15

Q. No.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	10(7.1%)	14(10%)	30(21.4%)	55(39.3%)	31(22.1%)
2	6(4.3%)	16(11.4%)	24(17.1%0	46(32.9%)	48(34.3%)
3	17(12.1%)	28(20%)	31(22.1%)	51(36.4%)	13(9.3%)
4	9(6.4%)	26(18.6%)	21(15%)	62(44.3%)	22(15.7%)
5	5(3.6%)	13(9.3%)	14(10%0	70(50%)	38(27.1%)
6	19(13.6%)	34(24.3%)	15(10.7%)	39(27.9%)	33(23.6%)
7	7(5%)	23(16.4%)	41(29.3%)	59(42.1%)	10(7.1%)
8	4(2.9%)	11(7.9%)	20(14.3%)	55(39.3%)	50(35.7%)
9	6(4.3%)	13(9.3%)	26(18.6%)	56(40%)	39(27.9%)
10	3(2.1%0	21(15%)	38(27.1%)	68(48.6%)	10(7.1%)
11	4(2.9%)	14(10%)	29(20.75)	48(34.3%)	45(32.1%)
12	13(9.3%)	32(22.9%)	46(32.9%)	44(31.4%)	5(3.6%)
13	6(4.3%)	22(15.7%)	21(15%)	66(47.1%)	25(17.9%)
14	12(8.6%)	34(24.3%)	41(29.3%)	48(34.3%0	5(3.6%)
15	14(10%)	26(18.6%)	30(21.4%)	54(38.6%)	16(11.4%)

Questions 2, 4, 8, 9, 11, 13 and 14 are inverse questions while rest are direct. Interestingly, for question 2 majority (34.3%) students said that they would leave dental studies if they were 95% sure that they would not be able to pursue specialization degrees in their preferred fields. For questions 8 and 9 almost same number of students (55 and 56 respectively) said that they would quit dentistry if they started to get low scores continuously and if they have to study more than 60hours per week. In case of unavailability of jobs and resident positions, 47% students said that they would quit their studies.

A clear majority, 86 students said they would have regretted their choice if they had not enrolled themselves in dental schools (55 students agreed and 31 strongly agreed). A student population comprising of 36.4% were willing to continue medicine studies even if it meant studying in a foreign land and 46.8% students said they would not mind attending Continuing Medical Education courses throughout their dental careers. A significant positive correlation was found between total strength of motivation and academic performance, (r = .602, p < .01). This showed that if the total strength of motivation increases, the increase in academic performance should increase. The effect size was medium which means total strength of motivation is positively correlated at medium level. As total strength of motivation increased, academic performance increased.

Table II: Pearson Product- Moment Correlation of Total Strength of Motivation and Academic Performance

	Total strength of Motivation	Academic Performance
Total strength of Motivation	1	0.602**
Academic Performance		1

DISCUSSION

The aim of this study was to explore the relationship between strength of motivation and academic performance in dental students. The present study shows that total strength of motivation and academic performance are positively co-related. The strength of motivation has been identified as a factor contributing to how well a student performs academically (Fraser & Killen, 2005b). This study focuses on strength of motivation calculated through the SMMS-R questionnaire, and its correlation with academic performance in dental students, which is novel that no literature was found establishing this phenomenon in dental students.

Vansteenkiste et all suggest that strength of motivation is not as important as quality of motivation, because higher level of motivation does not necessarily yield more desirable results (Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). Though Vansteenkiste compared quality of motivation with academic performance, unlike the present study, they took into account self-reported performance results. I went a step further and used actual academic performance results. R.A. Kusurkar et al carried out several studies in the field of motivation. In most of them, they considered quality of motivation and compared it with academic performance. In one of the researches, similar to the present study, R.A. Kusurkar et al used students' actual results and compared it with quality of motivation. They concluded that students with higher intrinsic and lower extrinsic motivation get the highest GPAs (R. Kusurkar et al., 2011).

A study by Ten Cate et al suggests that both quality and quantity of motivation are equally important for success in medical education (Rashmi A. Kusurkar et al., 2012). They used the Thematic Apperception Test for the calculation of quantity of motivation, while the present study uses the SMMS-R questionnaire. Contrary to the findings of this present study, Tobias Engelschalk et al in their study found out that quantity of motivation has no effect on academic performance, only quality does (Tobias Engelschalk, Gabriele Steuer, 2017). In the present study, the target group consisted of the 1st year, 2nd year, 3rd year and final year dental students and there was no differentiation between them. Literature suggests that quantity of motivation change across these years (Mee, Jano, & Hussin, 2015). This study assumed that the size of the class has no impact on the motivation level of the dental students, however, in literature the size of the class has great effect on the level of motivation of a student (Kokkelenberg, Dillon, & Christy, 2006). While the current study did not take into account the different ethnic groups to which students belong, literature suggests strong relation between motivation levels and ethnicity (Isik, Wouters, Ter Wee, Croiset, & Kusurkar, 2017).

This study can be enhanced by carrying it out in more dental universities, from across Pakistan. The large sample size would be ideal for an accurate result. Additional variables, e.g., class strength, gender, ethnicity, study year etc. should be addressed as they have shown a strong relation with motivational levels in the past. Further, the questionnaire can be redefined by including few qualitative questions, where students' responses can be collected in more depth, which would be useful to identify hidden factors which affect student motivation (Meltzer, Katzir-Cohen, Miller, & Roditi, 2001).

The major limitation was the response rate. The expected turnover was 200 students, while only 140 students filled and returned the questionnaire. The study was conducted in one University only, thus having limited generalizability. The current study does not consider other factors like ability, effort, self-awareness, difficulty level of study material etc., which may have an impact on student academic performance

CONCLUSION

Multiple reasons might drive study behavior, resulting in how well a student performs academically. The current study clearly shows that the strength of motivation plays a key role in a good academic performance.

DECLARATION OF INTEREST

The author report no declaration of interest.

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AUTHOR'S CONTRIBUTION

1. Arooj Zafar conceived the idea, Planned study, literature study and write up.
2. Fadia Asghar: Date collection, review of manuscript.

Original Article
Perception of Patient Safety Among Final Year MBBS Students at King Edward Medical University Lahore

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ABSTRACT

Introduction: Patient safety is a vital part of healthcare. It is vital for the medical students that the concepts of "Do no harm" theory must be understood. Those that do not understand this ultimately perform poorly in healthcare practice. Therefore, it is very important that medical students must be tutored for the concept of good medical practice.

Objective: To assess the patient safety perception among medical students in a public sector Medical College.

Methods: A sample size of 179 medical students (n=179) from final year were selected. A questionnaire tool was used to calculate the understanding of medical students. Participant's responses were recorded and computed into SPSS 19 for descriptive analysis.

Results: About 55% participant's indicated lack in knowledge regarding patient safety.25% of the medical students could not understand the type and nature of iatrogenic error in providing good healthcare and exercising good medical practice. Also, 57% and 48 % medical students were unable to understand that how to explain iatrogenic error to patients, their attendant and to the superiors respectively and 59% did not know that patient safety can be improved by targeted medical practice.

Conclusion: Majority of the medical students in final year MBBS were unaware of patient safety and how to improve it. However, they showed keen interest in understanding it and applying the concept of good medical practice to ensure patient safety.

KEYWORDS: Patient safety, undergraduates, knowledge, attitude.

INTRODUCTION

Patient safety is very important in the academic and clinical practice. It is vital for the medical students that the concepts of "Do no harm" theory must be understood (Simpson, Aubin, & Fillatre, 2012). Those who do not understand this ultimately perform poorly in healthcare practice. In the past few years, many important steps have been taken to improve the situation about medical error reporting system and minimize the harm but there isn't much literature regarding patient safety perception of medical students in Pakistan (Shah, Jawaid, Shah, & Ali, 2015) . Therefore, present study was conducted regarding patient safety perception among medical students of final year MBBS at a public sector medical college.

Absence of a well-structured system of error scrutiny in healthcare system in developing countries has raised uncertainty about the patient safety concept and the students with greater exposure to clinical activities and patients in wards have a better perception of patient safety (Shah et al., 2015). Hence, education of undergraduates in respect to patient care and safety is very important. Also, patient safety should be included as a compulsory subject/topic in the curriculum of undergraduates.

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According to WHO, Patient safety means the lack of avoidable damage and harm to the patient during health facility provision and decreasing the risk of preventable damage accompanying health system to the least that is possible (Shah et al., 2015). The World Health Organization (WHO) has lately established a detailed Patient Safety curriculum (Shah et al., 2015). This is now internationally advocated that medical student ought to be introduced the concept of patient safety in their early years so that it would lead to the fortification of the concept. It is important to know the perception of medical students about patient safety and also to assess their attitude and behavior to devise a curriculum accordingly (Armstrong, Headrick, Madigosky, & Ogrinc, 2012).

This study is useful for medical students to improve their perception of patient safety and to achieve clinical skills and aptitude as safe doctors. So, the aim of this study was to explore the awareness of medical regarding patient safety.

METHODS

This quantitative cross-sectional study was conducted at a public sector medical college in Lahore. The target population was final year MBBS medical students (179 out of 375), as it was expected that they should have a good awareness about the patient safety. The duration of the study was one month. Formal consent from Dean was taken to carry out the study. Verbal consent was obtained from students. Discretion of data was made sure so that it should only be used for educational purposes. Data was

collected through questionnaire. Students fulfilling the criteria were selected. A semi-structured questionnaire (Madigosky, Headrick, Nelson, Cox, & Anderson, 2006) was prepared (consent for siting of Madigosky et. al was sought through email) and finalized by researcher for the study purpose. The responses were noted on the questionnaires.

A two-section survey form was utilized to gather the information. The initial segment was about demographic data of the participants; including age, gender. The next part comprised of 26 questions: 12 questions were structured to evaluate students' perception regarding safety of patient, involving two classifications of reasons for blunder and mistake administration, 6 questions were asked regarding undergraduates' information on patient, and 8 patient safety questions were asked regarding their outlook on involving patient safety concept in the respective institution's curriculum. A five-point Likert scale was utilized for gauging recognitions and states of mind of the participants.

Institutional Review Board (IRB) authorization was obtained from University of Lahore (UOL). The said study was conducted in agreement with the Declaration of Helsinki. No damage to the undergraduates was expected to happen. The students were guaranteed that their responses would remain private. After a formal informed consent and proper counseling, the questionnaire with the perspective of patient safety was given to the participants. This was carried out in the classroom, immediately after the scheduled lecture. The principal investigator with Class-Representative (CR) and two lecture hall attendants circulated the questionnaire.

Responses from the participants were recorded and computed into SPSS 19. Descriptive analysis was carried out. A non-responder was defined as a student who failed to return a completed questionnaire proforma. For numerical facts, mean and standard deviation was employed. For categorical data, percentage and frequencies were considered. Pearson correlation coefficients were computed to evaluate the item total score correlation. Cronbach coefficient alpha was calculated to measure the internal consistency aspect of dependability of the instrument. A p-value of <0.05 was taken into consideration to indicate statistical significance.

RESULTS

A total of 174 of 179 medical students responded to the survey (97% response rate). Fifty three students(30.11%) were male and 126 (69.89%) were females as shown in Figure-1.

25% of the medical students could not understand the type and nature of iatrogenic error in providing good healthcare and exercising good medical practice. Also, 57% and 48 % medical students were unable to understand that how to

explain iatrogenic error to patients, their attendant and to the superiors respectively and 59% did not know that patient safety can be improved by targeted medical practice. Spearman rank correlation coefficient was used to find out the relationship between variable that gauge patient safety while ANOVA was used to relate the mean values of the students' perception, information and attitude as mentioned in table 1.
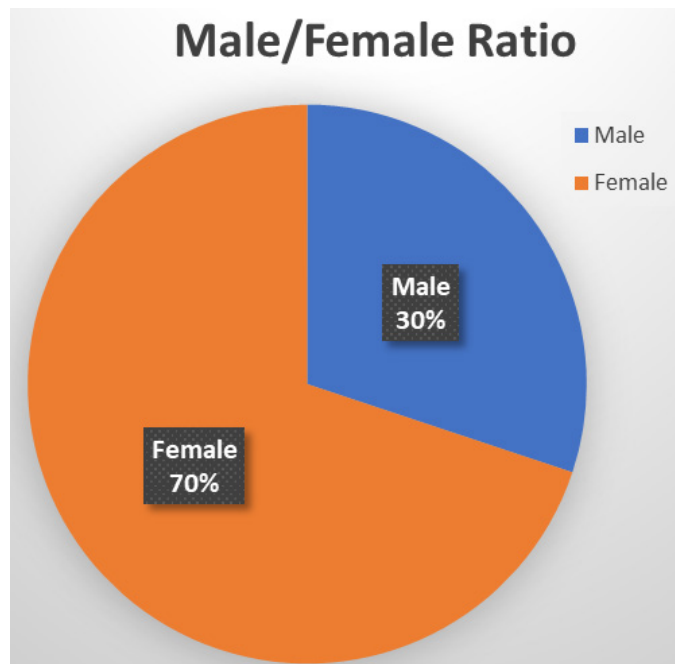
Fig I: Male / Female ratio showing lack in knowledge regarding patient safety.

DISCUSSION

Patient safety is an integral part of medical field. Having good concepts of patient safety improves professionalism and competency of health (Lewis, Vaithianathan, Hockey, Hirst, & Bagian, 2011).

As per importance of the patient safety concept, it should have been addressed as a compulsory subject/topic, but unfortunately, on undergraduate level, not much emphasize is given to the said subject resulting in overall low perception, knowledge and application of patient safety concept. Multiple studies have been done to cover the boundaries of patient safety and wellbeing and to evaluate the insight regarding concept of patient safety among healthcare professionals, medical and allied healthcare undergraduates around the world. These studies conducted in the past showed that perception of patient safety concept varies from institution to institution, specialty to specialty and person to person (Armstrong et al., 2012). Lately, a study conducted in United Kingdom reflected that undergraduate medical students had limited knowledge about error reporting and didn't know what and how to do it, if a fellow student makes a mistake or if a patient claims that a medical error has happened (Nabilou, Feizi, & Seyedin, 2015).Our study raised few important aspects such

Table I: Perception, Information and attitude of students

Attitude items		Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Causes of Errors	Making errors in healthcare is unavoidable	14.5	40.3	15	24.6	5.6
	Difference between what doctors label as "best care" and what is being provided on an everyday basis	15.8	55.8	9.7	14.5	4.2
	Capable doctors do not make such medical errors	5.9	24.8	20.9	44.2	4.2
	Factors that are out of doctors' hand	18.2	55.6	2.9	20.1	3.2
Error Management	If I witnessed a medical error, I would quiet about it	37	26.3	24.1	9.7	2.9
	Error not causing damage to the patient, No need to rectify it.	11.8	16.7	6	56.4	9.1
	Doctors can evaluate the causes of a medical error	5.4	21.3	9.4	33.8	30.1
	Reporting systems play small role to reduce future errors	9.6	8.3	17.1	52	13
	An efficient approach is to do better be more cautious	35.1	46.1	8.2	8.3	2.3
	Doctors ought not to overlook ambiguity in patient care	10.2	55.1	12.8	20.9	1
	The environment of healthcare system makes it convenient for caregivers to deal positively with errors	7.5	44.2	30.9	14.4	3
	Doctors report medical errors on a regular basis	3.2	16.7	12.7	46.1	11.3
Education	Doctors should habitually offer part of their professional time trying to make patient care better	23.1	59.5	9.2	7	1.2
	'Patient safety' is a vital topic	28.2	57.6	5.1	9.1	0
	Learning how to make patient safety better is a fitting expenditure of time in medical school	18.8	53.8	9.1	17.3	1
	You would be interested in acquiring further knowledge on patient safety	7.9	50.2	25.8	14	2.1
Skills	Supporting and counseling a colleague who must decide how to tackle an error	14	47.3	22.5	10	6.2
	Supporting and counseling a colleague who must decide how to analyze a case to reach the cause of an error	10.2	57.6	18	9.7	4.5
	Supporting and counseling a colleague who must decide how to reveal an error to a patient.	5.3	39.8	9.8	29.6	15.5
	Supporting and counseling a colleague who must decide how to disclose an error to a faculty member.	20.2	48.6	19	10.2	2

as limited knowledge about patient safety (45%) and practical application of patient safety concept. While dealing with the medical errors, when inquired about the causes of medical errors, many participants (40%) reflected that medical errors are unavoidable, and that human error does play a vital role in providing best healthcare to the patients. Such misconceptions regarding patient safety and healthcare provision were in correlation with studies conducted by Bahram, Aram and Hesam (Nabilou et al., 2015).When dealing with error management,

multiple aspects were considered like error reporting system, near-miss concept, determination of cause of error, good strategy plan and bearing the uncertainty and cultural limitations of healthcare provision. All the aspects were in line with the studies done by Bahram, Aram and Hesam (Nabilou et al., 2015).

As far as the knowledge about patient safety is concerned, students visiting clinical wards during official and non-official timings, were significantly better in perception of patient safety, thus confirming that spending more time on bedside of patient

Table II: Relationship between patient's safety and knowledge of students

Knowledge Items	The amount of avoidable unfavorable proceedings each year in Health care commission	1.3	16.6	40.2	39.9	2
	The amount of avoidable unfavorable proceedings each year reported by international bodies, e.g., IOM Report: To Err is Human	4	20.2	35.5	33.2	7.1
	Approximate percentage of hospital admissions with unfavorable occurrences	2.6	30.1	29.6	31.2	6.5
	Features of a reliable error reporting system	1	20.2	33,9	37.5	7.4
	Definition of latent factors	7.2	11.1	23	42.6	16.1
	You are well educated on 'patient safety'	4.6	27.4	39.1	25.4	3.5

has a beneficial role for the patient safety concept (Berwick, Shojania, & Atchinson, 2015). Similar results were reported by Hamdi, Hani and Kamal in Saudi Arabia (Almaramhy, Al-Shobaili, El-Hadary, & Dandash, 2011).

Overall, the participants (85%) showed a positive attitude towards the concept of patient safety (p-value < 0.05) and emphasized on the necessity of learning about patient safety. Leung also showed that most of the participants stressed the importance of tutoring patient safety, basic coaching skills and time allotment to the relevant courses (Organization, 2017). Bowman also indicated the significance of student's concern for training about patient safety (Organization, 2017). Patey and Abidi both stated that the lack of sufficient knowledge and negative approach of medical students during pre-clinical phase (Patey et al., 2007). It is important to consider that participants in this study were from a single institution. Multi-institutional studies can provide a better picture about the awareness of medical students about the patient safety.

CONCLUSION

The medical students of final year MBBS were familiar with the basic knowledge and concept regarding patient safety though majority lacked knowledge about occurrence of medical error and how to act after an error. Patient safety concept should be made a part of the syllabus of undergraduates, also multiple workshops and activity sessions should be organized to facilitate and enhance the learning of patient safety concept, which will certainly improve patient care.

DECLARATION OF INTEREST

The author report no declaration of interest.

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1. Ch. Nasir Ahmad: Conception and design of the work and the aquisition, analysis & interpretation of data for the work.
2. Aabish Mehreen Khan: Analysis and interpretation of data.
3. Muhammad Awais Asghar: Analysis and interpretation of data.
4. Nosheen Nasir: Critical review and final approval of the version to be published

Original Article

Evaluation of Knowledge Improvement by "Integrated Management of Neonatal & Childhood Illness" (IMNCI) Course

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ABSTRACT

Introduction: Integrated Management of Childhood Illness (IMNCI), taught by a 6-day training course, is an important initiative to decrease childhood mortality. Level 2 of the Kirkpatrick model entails the assessment of the learning achieved by training activity.

Objective: To assess improvement in the knowledge of IMNCI content among the participants of the 6-day IMNCI training program.

Methods: After taking approval from IRB, this one-group pre-test-post-test study was carried out in the Paediatrics Medicine Department, King Edward Medical University / Mayo Hospital Lahore over 3 months. By non-probability consecutive sampling, all 77 participants of three 6-day courses (with no previous formal training of IMNCI) were included in the study. To assess any improvement in the knowledge (Kirkpatrick Model Level 2), each participant filled a pre-test and a similar post-test after the training. Data was analyzed by SPSS software. As the data was not normally distributed, Wilcoxon test was applied to compare the overall median scores of pre-test and post-test. Kruskal-Wallis Test was applied for the comparison of the median scores of pre-test and post-test scores of each professional group. While Mann-Whitney U-test was applied for pairwise comparison of the pre-test and post-test scores between different pairs of professional groups.

Results: Of the 77 participants, there were 35 doctors, 20 nurses, 20 Lady Health Visitors, and 2 midwives. The overall median score was 3 (IQR 3) of the pre-test and 8 (IQR 2) for the post-test (p-value < 0.001). Except for the midwives, there was a statistically significant improvement in the median score of each group. Item-analysis of the questions showed that compared to the pre-test, the proportion of correct answers in the post-test showed statistically significant improvement for all the 10 questions. Pairwise comparison of the median pre-test and post-test scores between different professional groups did not show statistical significance except for the doctor-nurse pair.

Conclusion: IMNCI training program significantly increased the knowledge of health care providers with no statistical difference between the post-test scores of doctors, LHVs, and midwives.

INTRODUCTION

Pakistan has under-five mortality of 74.9 per 1,000 live births (Majeed & Munir, 2020). To reduce childhood mortality, the World Health Organization (WHO), UNICEF and other technical partners developed the Integrated Management of Childhood and Neonatal Illness (IMNCI). More than 100 countries have successfully adopted IMNCI (Mazumder et al., 2014; Nguyen, Leung, McIntyre, Ghali, & Sauve, 2013; Talati, Amin, & Nimbalkar, 2018). Cross-sectional studies from various parts of India assessing the skills of frontline workers identified the need for further reinforcement among community health workers regarding IMNCI.(Boschi-Pinto et al., 2018; Rakha et al., 2013; Talati et al., 2018) In Pakistan IMCNI has not been widely implemented(Amin et al., 2015). One of the reasons, among others, is lack of conviction whether IMNCI training does any benefit to the knowledge base of the health care providers(Goga & Muhe, 2011).Since its introduction by Donald Kirkpatrick in 1959, Kirkpatrick Four-Level Evaluation Model has been widely used to assess the effectiveness of training programs of a wide range of trainings and educational courses(Kirkpatrick & Kirkpatrick, 2006). The evaluation model has been used for as diverse training courses from cardiopulmonary resuscitation to complex instructional designs (Dorri, Akbari, & Sedeh, 2016; Jones, Fraser, & Randall, 2018; Rafiq, 2015). Level 1 of the Kirkpatrick model (Reaction) evaluates the feelings of

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the participants about the usefulness and other aspects of the training program. Level 2 (Learning) assesses if the trainees have learned from the program. Level 3 (Behavior) helps understand how well trainees are applying what they have learned. Level 4 (Results) analyzes the final outcome or goal of the whole training program.

In collaboration with UNICEF, 6-day IMNCI training courses are periodically organized for doctors and other health professionals in the department of Paediatrics Medicine, King Edward Medical University/Mayo Hospital Lahore. The question is does this 6-day training course help improve the knowledge of the participants regarding the core content of the IMNCI program. With this background, this study was done to assess the improvement in the knowledge of IMNCI core content among the participants of the 6-day IMNCI training program.

METHODS

This study was conducted in Department of Pediatric Medicine, Mayo Hospital (KEMU) Lahore. As this is an ongoing training program aimed at training all healthcare providers working at primary and secondary centers of Punjab, all participants of three consecutive IMNCI training courses were included. Research Design was Quantitative, one-group pre-test-post-test study design and non-probability consecutive sampling was done. All the participants of 3 consecutive workshops, belonging to different primary and secondary level centers of Punjab and all healthcare workers – doctors, nurses, mid-wives, and Lady Health Workers were included in the study. Participants who had previous formal training regarding IMNCI were excluded from this study.

Approval from Institutional Review Committee (IRB)/ethical committee (2045/ RC/ KEMU dated 17/10/2019) was taken to conduct this study. All the participants of three consecutive workshops (held from July to September 2019), belonging to different primary and secondary level centers of Punjab were included. These participants did not have any previous formal training of IMNCI. To assess whether there was any improvement in the knowledge (level-2 of Kirkpatrick evaluation model), a structured multiple-choice question paper was used (Figure-1). The construct of questions was to test the knowledge of the participants on the core content of IMNCI. To prevent bias induced by apprehension, the purpose of the questionnaire was explained to the participants, and they were assured of full confidentiality. Each participant filled a pre-test question paper having 10 questions before the start of the course. Each 6-day

course comprised of interactive classroom sessions and clinical indoor and outpatient practice sessions. At the end of the course, each participant filled a similar post-test question paper, but the questions and the options were rearranged. Data of all the cases was analyzed through SPSS (version 22). The scores were not normally distributed (as assessed by the Kolmogorov-Smirnov test), so the score for each question among the participants was summarized as median and inter-quartile range (IQR).

Since data was not normally distributed, the Wilcoxon Signed Ranks test was used to compare overall median scores of pre-test and post-test. Statistically significant (p-value < 0.05) increase in the median score was considered as "improvement in knowledge about IMNCI". Item analysis of the pre-test and post-test questions was done by Wilcoxon test. Data was further stratified according to the profession of the participants and analyzed according to the profession – doctors, nurses, lady health visitors (LHV), and midwives. Kruskal-Wallis Test was applied to compare median pre-test and post-test scores within each participant group. While Mann-Whitney U-test was applied to do a pairwise comparison of the pre-test and post-test scores between the different professional groups.

RESULTS

There were 77 participants in the three training courses 35 doctors, 20 nurses, 20 LHVs, and 2 midwives. There was a 100% response rate to the 10 questions of both pre-test and post-test. The median score was 3 (IQR 3) for pre-test and 8 (IQR 2) for post-test with a p-value of < 0.001. Table-I shows the comparison of median pre-test and post-test scores for each professional group of doctors, nurses, LHVs, and midwives. Except for the midwives, there was a statistically significant improvement in the median scores of each group.

Item-analysis of the questions showed that compared to the pre-test, the proportion of correct answers in the post-test showed statistically significant improvement for all the 10 questions (Table II). The overall difference between the median scores of pre-test and post-test was 5 (mean 4.22+1.94) with a p-value of < 0.001. (Table III) shows the overall comparison of the median scores of pre-test and post-test within each professional group. This shows that both the baseline knowledge and the post-training knowledge of the professional groups were significantly different from each other as depicted by the respective median scores. (Table IV) shows the pairwise comparison of the median pre-test and post-test scores between different pairs of professional groups. It is clear from Table IV that the difference

in scores between pairs of professional groups did not show statistical significance except for the doctor-nurse pair where both pre-test and post-test scores were significantly higher amongst the doctors.

DISCUSSION

This study has put light on various important aspects of the IMNCI training program. Applying the Kirkpatrick evaluation model at level 2 to assess the improvement in knowledge about contents of IMNCI, showed an increase in the median scores after the 6-day training. Except for the midwives, there was a statistically significant improvement in the median scores of each group, hence improvement in the knowledge. Our findings are comparable with the findings from Africa where IMNCI has been successfully implemented (Simoes et al., 1997). Overall, the health workers performed well after IMNCI training, as observed by Simoes et al(Kirkpatrick & Kirkpatrick, 2006). Horwood et al (2009) also highlighted the importance of health workers' achieving competency at identifying signs of severe disease during IMNCI training. In the IMNCI training program, we not only focus on theoretical knowledge but also on the practical application of this knowledge, which perhaps, led to the improvement in post-test scores. Previous evaluations have also shown that health worker performance is adversely affected when the amount of clinical practice included in IMNCI training is reduced (Harerimana et al., 2014).

In the context of IMNCI, it is worth mentioning the discordance between the strategy, capacity building, and implementation. Whereas capacity building of the health professionals like the training program being evaluated by this study has been robustly carried out in various parts including India, the real change would not occur until emphasis is given to strengthening the system and improving community practices at the grass-root level (Aneja, 2019). Hence, it is important to evaluate at level 3 and level 4 of the Kirkpatrick model, to achieve the desired decrease in childhood mortality.

We used the Kirkpatrick evaluation model in our study that is widely used for the assessment of various teaching and training courses (Dorri et al., 2016; Jones et al., 2018; Rafiq, 2015). This model has the ability to identify the gaps between the theoretical and practical components, with emphasis on imparting practical skills. To close this gap, the teaching material should be designed to promote in-depth understanding and active participation in the learning process (Bates, 2004). Kirkpatrick evaluation model, however, is not the perfect evaluation model as has been highlighted in recent literature (Reio, Rocco, Smith, & Chang,

2017). Results of this study demonstrate that this training course can be effective in preparing health workers from first-level health facilities to take good care of sick children under 5 years of age in developing countries in an integrated fashion.

CONCLUSION

The 6-day IMNCI training program significantly increased the knowledge of health care providers undergoing the training. There was no statistical difference between the post-test scores of doctors, LHVs, and midwives. The IMNCI training program can be used to train all the healthcare providers involved in the care of children as far as knowledge dissemination is concerned.

LIMITATIONS AND WAY FORWARD

One of the limitations of the study is the lack of an appropriate sample size. The other limitation of the study is the lack of evaluation at levels 1, 3 and 4. Understandably, evaluation at level 3 (behavior change) and level 4 (impact analysis) is not possible for such a study design. We intend to follow the subject cohort subsequently to assess how much of what has been learned is being practically implemented by the trainees (Level 3 evaluation). Also, in the longer run, it would be worth looking at the change in childhood mortality as a result of these training sessions (Level 4 evaluation).

This cohort of the trained personnel should be followed to assess the effectiveness of IMNCI training at level 3 of implementation and level 4 of attaining the goals in early detection and management of sick children and decrease in childhood mortality.

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DECLARATION OF INTEREST

The author report no declaration of interest.

Table I: Group-wise Pre-test and Post-test Scores

Participant Group		Median ± IQR	Z statistics	p-value [a]
Overall (n=77)	Pre	3 ± 3	-7.57	< 0.001
	Post	8 ±2		
Doctor (n= 35)	Pre	4 ± 2	-5.15	< 0.001
	Post	9 ± 2		
Nurse (n= 20)	Pre	3 ± 2	-3.94	< 0.001
	Post	7 ± 2		
LHV (n= 20)	Pre	3 ± 3	-3.80	< 0.001
	Post	8 ± 2		
Midwife (n= 2)	Pre	2.50 ±0	-1.34	0.180
	Post	7.50 ± 1		

[a] Wilcoxon test was applied

Table II: Correct Answer Before & After Training

N=77

Q. No.	No. of Correct Answers (%)		p-value [a]
	Pre test	Post test	
1	15 (19.5%)	67 (87%)	< 0.001
2	31 (40.3%)	74 (96%)	< 0.001
3	10 (13%)	26 (34%)	0.002
4	27 (35%)	57 (74%)	< 0.001
5	45 (58%)	69 (89%)	< 0.001
6	21 (27%)	62 (81%)	< 0.001
7	23 (30%)	65 (84%)	< 0.001
8	47 (61%)	61 (79%)	0.004
9	12 (16%)	36 (47%)	< 0.001
10	33 (43%)	73 (95%)	< 0.001

[a]Wilcoxon test was applied

Table III: Overall Comparison of Pre & Post Scores between the Groups

N=77

Group	Pre	Post
	Median (IQR)	Median (IQR)
Doctor (n= 35)	4 (2)	9 (2)
Nurse (n= 20)	3 (2)	7 (2)
LHV (n= 20)	3 (3)	8 (2)
Midwife (n= 2)	2.50 (0)	7.50 (1)
Z	7.92	8.9
p-value	0.048[b]	0.030[b]

[b]Kruskal-Wallis Test was applied

Table IV: Pairwise Comparison between Professional Groups

N=77

Pairwise comparison between Professional Groups		Pre p-value [c]	Post p-value [c]
Doctor	Nurse	0.041	0.004
	LHV	0.025	0.369
	Midwife	0.147	0.396
Nurse	LHV	0.602	0.068
	Midwife	0.623	0.701
LHV	Midwife	0.866	0.623

[c]Mann Whitney U-test was applied

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Original Article
Validation of Digital Readiness for Academic Engagement (DRAE) Scale in Pakistani Healthcare Students

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ABSTRACT

Introduction: Digitalization in the 21st century has transformed nearly all aspects of our society, including education. However, many believe that this transformation is occurring with little strategic planning and much may not be ready for all that it brings to the table. The Digital Readiness for Academic Engagement (DRAE) scale is a useful tool and merits validation in different contexts for effective use.

Objective: To validate the DRAE scale in healthcare students in Pakistan.

Methods: The scale was circulated electronically via Google forms to faculty members of different medical colleges and universities of Punjab using convenience-sampling method for sharing with their students. A total of 7 institutions participated. The responses were collected from a sample of 1744 undergraduate students. The demographic variables included gender, semester enrolled, and age. Data was analyzed using SPSS version 25 (for exploratory factor analysis) and AMOS version 26 (for confirmatory factor analysis).

Results: The mean age of the respondents stood at (SD=20.55 ± 1.6). The largest proportion of students were from MBBS (41%), followed by allied health science and Dentistry. EFA results in the two-factor model which was confirmed by CFA. The goodness-of-fit indices were achieved by removing four items (1, 2, 7, 8) with factor loading below .80 and by drawing covariance between errors.

Conclusion: The original model with 5 factors was not applicable and a 2-factor model was validated by CFA for our context.

KEYWORDS: Digital Readiness, Academic Engagement, Medical Education, Digitization & Validation.

INTRODUCTION

Among the many marvels of the 21st century is unparalleled digital advancement. Often referred to as digitization, the phenomenon is limited not only to the work environment but has transformed nearly all aspects of our society, including education (Schmidt & Tang, 2020). Though integrating digital technology in the educational context is nothing new, the pace of digitization in education in the recent past is unparalleled (Islam & Jahan, 2018). The COVID-19 pandemic has further contributed to pushing all teaching and learning towards virtual platforms and ushered education into a new digital world (Sun, Tang, & Zuo, 2020).

It is believed that this transformation is occurring with little strategic planning. The unprecedented pace of transformation may not have allowed many to get ready for this change (Schmidt & Tang, 2020). The lack of readiness may put the quality of teaching and learning in jeopardy, proving counter productive for students, especially in developing countries as orientation to the digital realm in these regions is not at par with the rest of the world (Bisht, Jasola, & Bisht, 2020).

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In the developed world, students are often called "digital natives" because of their exposure to digital technologies from an early age. They have experienced online education first-hand for some time now (starting with print-based mail learning and broadcasting systems and eventually leveling up to formal online distance learning). They had time to become well oriented with this system; having gained the skills needed to reap the benefits from online learning opportunities (Levy, 2017).

Elsewhere, the same is not true and most may still not be ready for the transition. The lockdowns and shift to online education have made it imperative to learn the use of digital devices and software (Hong & Kim, 2018). Published evidence suggests that students without prior exposure to the technology-rich environment may cope poorly with modern technology (Kim, Hong, & Song, 2018).

Digital readiness is an ongoing process. It includes learning both in the academic and social domains. Research shows that undergraduate students still prefer to use printed text to complete their academic assignments. Now that most students do not have a choice, how their lack of readiness will affect their academic performance is anyone's guess (Guzmán-Simón, García-Jiménez, & López-Cobo, 2017). With evidence reporting that the students' learning curve towards information technology is not up to the mark, it is becoming necessary to assess the students' digital readiness so that the underlying truth

be revealed (Woreta, Kebede, & Zegeye, 2013). Once the gap in digital readiness is identified, efforts may be directed towards making improvements. This research aims to validate the Digital Readiness for Academic Engagement scale in our context (Hong & Kim, 2018).

METHODS

The DRAE scale comprises of 5 domains, Digital tool application (DTA), Digital application usage (DAU), Digital Media Awareness (DMA), Information Seeking Skills (ISS), Information Sharing Behavior (ISB). Items in each domain are as follows:

(DTA): Item number 1,2,3,4
(DAU): Item number 5,6,7
(DMA): Item number 8,9,10
(ISS): Item number 11,12,13
(ISB): Item number 14,15,16,17

This scale was circulated electronically (as a google form) whose link was circulated by WhatsApp to faculty members of Medical and Dental Colleges of Punjab according to convenience sampling. A sample of 1744 undergraduate students of medicine, dentistry, and allied health science responded. The demographic variables included gender, semester enrolled, and age. After rooting out responses with missing values and incomplete answers (by deleting such entries list wise), the data was analyzed using SPSS version 25 and AMOS version 26.

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were done using the complete set of data. EFA was done using the 'principal components analysis' for extraction and was rotated with 'orthogonal varimax'. Criteria were set as Eigenvalue greater than 1 for factor extraction, Kaiser-Meyer Olkin (KMO) measure of sample adequacy greater than .5 for an adequate sample, and Bartlett's test of sphericity value less than .05 to indicate significance of factor analysis for the data set (Shrestha, 2021). An item with factor loading less than .4 was deleted (Lee et al., 2004). The final number of components to be included in CFA was based on eigenvalue, scree plot, factor loadings of each item, and the number of items within each component. CFA was done to confirm the results of EFA.

RESULTS

The mean age of the respondents was 20.55 (SD ± 1.6). The largest proportion of students were from the medical background (41%), followed by allied health sciences and dentistry. EFA revealed a two-factor structure according to data collected in the Pakistani healthcare context. It was carried out with Varimax rotation to identify the stable factor structure. The KMO value was .933 and Barlett's Test of Sphericity reached statistical significance (p=.00). The initial eigenvalues showed that the first factor explained 49.59% of the variance and the second factor with 57.84% of the variance. The two-factor model was preferred as it shows leveling off of eigenvalues on the Scree plot (figure 1) after two factors with difficulty in interpreting more than two factors. The rotated component matrix showed 16 items of the DRAE scale with a factor loading above .40 and only one item (4) with factor loading below .40 (Table1). The

item (4) with factor loading less than .40 was removed, resulting in a 16-item scale to be confirmed by CFA. The initial CFA with two factor model shows poor model as parsimonious fit was not within adequate range of fitness: Parsimonious fit (ChiSq/df=7.810), Absolute fit (ChiSq=546.713, df=70, p-value= .000, GFI=.964, RMSEA=.063), Incremental fit (TLI=.958, CFI=.975, AGFI=.930, NFI=.972). Alteration in the initial model structure was made by removing four items (1, 2, 7, 8) with factor loading below .80 (Chin et al., 1997). Goodness-of-fit indices (figure 2) for the final model were achieved by making covariances between errors as suggested by modification indices.
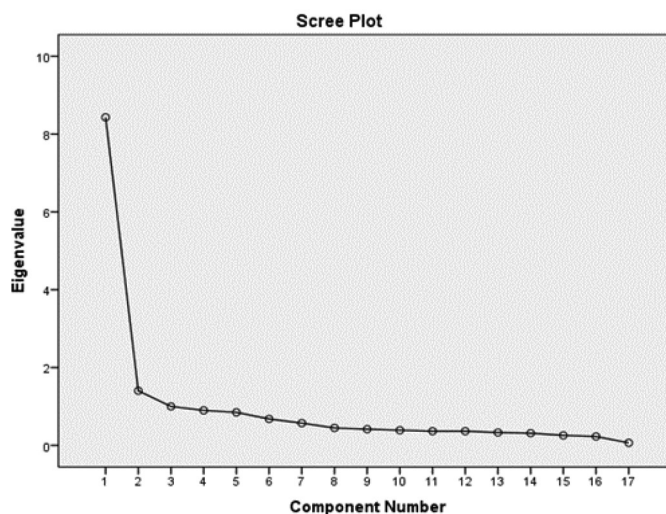
Fig.I: Principal component analysis for factor extraction, Kaiser Mayer Olkin (KMO) = .933, Bartlett's Test of sphericity (p= .00)
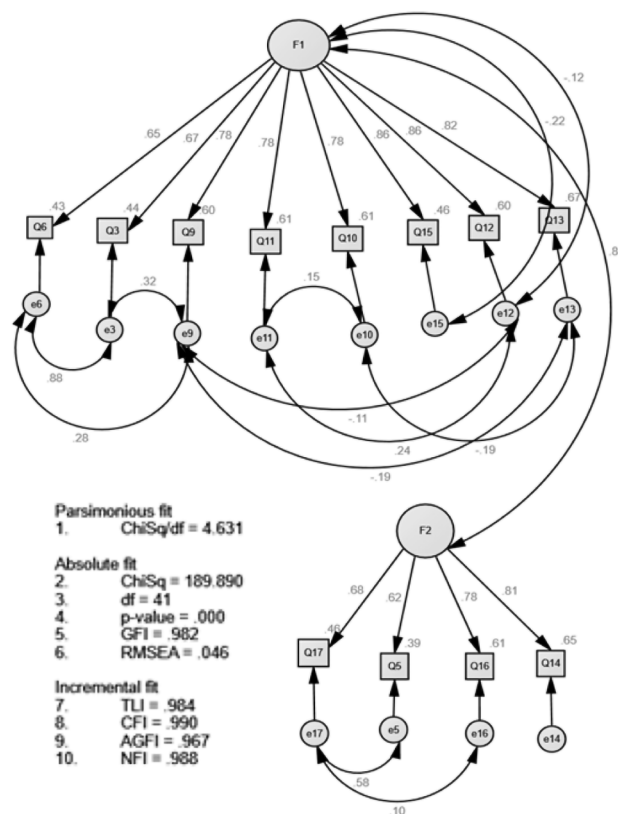
Fig. II: CFA model with two factor structure

Table I: Factor Loading based on Principal component analysis and Varimax rotation of 17 items

Item no.	Item Statement	Component 1	Component 2
1	I can fix a computer virus or malware on my laptop or desktop computer.		.591
2	I can upload and download media, including online photos, files, video files, and sound files	.635	
3	I can manage software or apps from a computer or mobile devices	.894	
4	I can set up and change security options in a web browser.		.306
5	I can use the fundamental functions of a presentation program (e.g., Microsoft PowerPoint) for class presentations.		.718
6	I can use the fundamental functions of word-processing programs to create and edit documents for class assignments.	.895	
7	I can use spreadsheet programs (e.g., Microsoft Excel) to handle data and analyze it for class assignments	.692	
8	I can recognize bias or rumors in digital media content		.726
9	I can critically interpret digital media content.	.754	
10	I know how to protect intellectual property rights when I use digital media content.	.667	
11	I can use a variety of available options to search for information that my colleagues are not aware of	.679	
12	I can inform my classmates of different ways to effectively search for information.	.586	
13	I can generate keywords to search information for academic work.	.579	
14	I can interact with classmates using real-time communication tools, for example, video conferencing tools or messengers		.620
15	I can share my opinions online, for example, with blogs, social networking services, or web pages	.586	
16	I can share my files with classmates using online software		.629
17	I can collaborate with classmates using online software		.726

DISCUSSION

This study aimed to validate the DRAE scale amongst the population of Pakistani healthcare students. The fitness of the model was achieved in the local context after deleting some items and altering the original model. This change is probably owing to two factors. First is the original scale developed in South Korea and tested on a cohort of University students (who probably had better Digital readiness and computer understanding) as compared to Pakistani healthcare students owing to lack of facilities and digital prowess in the later (Arshad & Ameen, 2018). Secondly, the digital readiness of students in non-healthcare disciplines has been greater than students in health care, as they use patient-centered and hands-on learning techniques (Back et al., 2016). Another important factor to keep in mind is the fact that this study was performed during the COVID-19 pandemic, which led to a complete disruption of the teaching system and an overnight shift to online learning .

The initial scale comprised five domains whereas analysis in this study confirmed two domains. This is consistent with other studies carried out for scale validation in different countries which shows that losing factor structure is due to cultural mismatch (Hung, Chou, Chen, & Own, 2010). A closer look at larger well-known scales such as Dundee Ready Education Environment Measure (DREEM) also corroborates this fact that for a scale to be validated in multiple contexts, the cultural component needs to be catered to include a variety of people and factors (Junaid Sarfraz, Tabasum, Yousafzai, & Fatima, 2011). The scale understudy (DRAE) used a single population from one university in Korea during the time of its development, hence it validates the change in structure when applied to the local context. In our study we achieved goodness of fit in all three indices proving the reliability of the DRAE scale.

To our knowledge, no study has been done to validate a digital readiness scale for health care students in Pakistan. However, studies on digital readiness environments were consistent with the items kept in our subsets such as lack of hardware knowledge, lack of programming skills, and the presence of basic information-seeking skills (Kanwal, Rehman, Bashir, & Qureshi, 2017). We used the English version of the questionnaire which is a secondary language of instruction in the country. A translation into Urdu, which is the mother tongue, might yield different results. Moreover, digital readiness of students in the private and public health sectors may give different results because of socioeconomic factors pertaining to computer and software availability.

CONCLUSION

Given that most of our indices fit well in CFA, this shows that the DRAE is a sound scale and may be used for checking digital readiness. The original model with 5 factors was not applicable and a 2-factor model was validated by CFA for our context.

DECLARATION OF INTEREST

The author report no declaration of interest.

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3. Nabila Talat. Conception, writing and data analysis.

4. Muhammad Muneeb Chouhan. Review of language references.

5. Muhammad Haroon Hamid. Review and editing.

Original Article

A Narrative Review of the Unprofessional Behaviors of Physicians at Workplace

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ABSTRACT

Introduction: To become an ethical physician and a good professional is the fundamental duty of a doctor. The complaints regarding medical professional behaviors are usually related to doctor practice management, doctor's manner, medical reports/records, and inappropriate behavior.

Objective : This review aims to see the concerning unprofessional behaviors and unethical conduct of physicians toward patients. The literature was reviewed to identify the common unprofessional behaviors among doctors.

Methods: A Narrative review was done, and databases explored were PubMed, Google Scholar, PsycINFO, Science direct, ERIC & Pak Medinet. A literature search was done regarding unprofessional behaviors by doctors at the workplace. Selected studies related to professional ethics, unprofessional workplace behaviors by doctors, professionalism, and patient experiences during their treatment were identified.

Results: Various items reported as unprofessional behaviors were identified and are classified into five themes: dishonesty, substandard practice, unethical behavior, disrespect & behaviors related to doctor manners.

Conclusion: Unprofessional behaviors are reported in different health care settings. Professionalism holds a central position to fulfill the expectations of the patients and for addressing disrespectful behaviors.

INTRODUCTION

The complaints regarding medical professional behaviors are usually related to doctor practice management, doctor's manner, medical reports/records, and inappropriate behavior (Rogers & Drogin, 2019). The broad range of disrespectful conduct is classified as disruptive behavior, insulting/demanding behavior, in consideration of treatment of patients & planned disrespect of patients (Brotherton et al., 2016). These can be in the form of verbal or non-verbal acts, abuse of power, and unwelcoming behavior (Tricco et al., 2018).

Disruptive behavior is defined as "when the physician uses inappropriate words or actions interfering with his ability to work with others and affecting the quality of health care" (Stewart et al., 2011). A study done on unethical and unprofessional behaviors among doctors during residency training has shown a wide range of unethical and unprofessional behaviors during their training and reflects the ethical stress associated with the clinical practice (Chang et al., 2015). Physicians showing unprofessional behavior also had unprofessional behavior at undergraduate levels (Vossen et al., 2016). Physicians have to bear ethical distress when they encounter difficult clinical situations (Genuis, 2006). Physicians have an ethical responsibility for the best treatment of patients. They should

make clinical decisions free of external pressures and influences (Collins, 2006). One observation suggested that unchaperoned patient examinations led to the charge of unprofessional conduct and sexual harassment of doctors (Mahmood, 2018). Controlling and preventing disrespect is a major challenge for the organization's leader (Leape et al., 2012).

To become an ethical physician and a good professional is the fundamental duty of a doctor. The act of unprofessionalism was witnessed by the colleagues of health care professionals in a clinical setting. Physicians have reported the unprofessional behaviors of their colleagues, which are related to the breach of confidentiality of patients, poor & aggressive communication and getting funding from pharmaceutical companies. It is very important to distinguish between disruptive behavior and advocacy on behalf of patients who are dependent on physician decisions regarding their health care, e.g., unattended patients (Jamal, 2009). The issues related to professionalism were presented as the patient's complaints. These were about poor ethical behavior by trainee doctors and advanced health professionals in medical practice. Higher knowledge about medical ethics is found in female physicians compared to male physicians (Jalal et al., 2018). Coworker observations are helpful in the identification of unprofessional conduct. Conveying the feedback of coworkers to the professionals involved can result in the modification of their behavior (Webb et al., 2016). It is seen that working experience and knowledge about the code of ethics are significantly related to these behaviors (Jalal et al., 2018). Most of the doctors are familiar with codes of ethics.

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By increasing awareness of professionalism among them, their behavior can be changed (Tiruneh, 2019). The primary goal of dealing with unprofessional behavior will be to protect patients and ensure safe and appropriate clinical care (Schwei et al., 2017). A literature review was planned to identify the common unprofessional behaviors from physicians during the provision of health care.

METHODS

PRISMA the Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocol was followed (Liberati et al., 2009). A literature review was performed, including all published studies on unprofessional behaviors reported and also the same behaviors exhibited by doctors (including post-graduate residents, family physicians, and advanced practice professionals). A search was performed to identify all related articles published in PubMed, Google Scholar, Science direct, Pakmedinet, PsycINFO, and ERIC between Januarys 2015and January 2019.

Studies relevant to unprofessional behavior in health care setting were searched by using different terms. Keywords included unprofessional conduct among doctors, disruptive physicians, and unethical physicians, what is unprofessional behavior and what is not & patient experience about unprofessional doctor behavior. Medical professionalism is a system in which professionals profess to each other and the public the

Table I: Literature Search and Keywords

Key words and phrases	Databases						
	Google Scholar	Pub Med	Science Direct	Pakme-dinet	Psyc-INFO	Eric	Total
unprofessional behaviors among doctors	7330	216	280	1	9	16	7852
Unprofessional conduct among doctors	9400	70	6	1	195	3	9675
Disruptive physician	14000	614	375	1	0	3	14993
Unethical physician	74800	77	6	2	0	1	74886
What is and what is not unprofessional behavior?	18500	0	37	0	5	44,043	62585
Patient experience about unprofessional doctor behaviors	21,100	14	19	0	0	11	21144
Total	145130	991	723	5	209	44077	191135

competency standards and ethical values they have to uphold (Rogers & Ballantyne, 2010). Unprofessional Behavior is an activity that is contrary to the accepted code of conduct of a profession (Parizad et al., 2018). Disruptive physician behavior is that which "interferes with patient care or could reasonably be expected to interfere with the process of delivering quality care" (Tatebe & Swaroop, 2018). Sexual harassment is unwelcome, sexually-oriented attention (Rademakers et al., 2008).

One lac ninety-one thousand one hundred and fifty-five citations appeared in search after using the keywords. The related articles were retrieved and thoroughly read to determine their eligibility for inclusion. Additional references were included by reviewing citations in the reference lists of search-identified abstracts and articles. Both qualitative and quantitative studies describing & assessing unprofessional, disrespectful behaviors among resident physicians, and advanced practice professionals were included. Full-text articles were included and the results showing the citations only were excluded. Studies reporting unprofessional behaviors of faculty, students, and nurses were excluded. Ethical approval was not taken as it was a narrative review and not the patient's data for analysis. The synthesis focused on describing the most prevalent unprofessional behavior reported in the literature by charting the data. The data was charted according to the study design. Most of the studies were qualitative. Finally, Qualitative analysis was done; themes were listed and named from various descriptions and definitions of unprofessional behaviors. Thematic analysis for unprofessional behavior was done against many definitions described in the literature review, as many variations were found. The PRISMA statement is shown in Figure: 1.
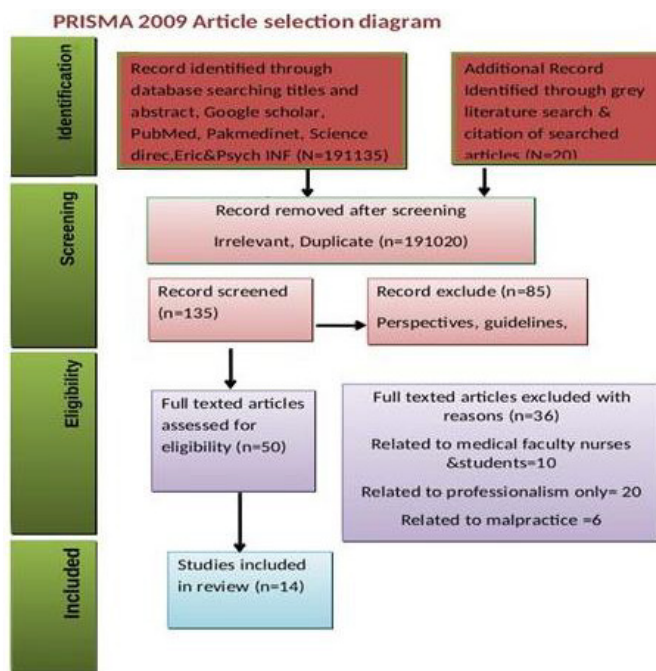
Figure I: PRISMA Flow diagram

RESULTS

One-lac ninety-one thousand one hundred and fifty-five citations were retrieved from the database search, grey literature search, systematic reviews, and reference scanning of searched relevant abstracts & articles (Table 1). Fifty citations that appeared to be relevant, their abstracts, and full-text articles were retrieved. Full text of these citations was reviewed. Thirty citations were from databases, eighteen from reference scanning, and two from grey literature. Fourteen articles met the inclusion criteria (nine articles from database search & six from reference scanning). Main characteristics of these studies/reviews were the discussions regarding unprofessional behaviors and methods reporting various unprofessional behaviors.

Summaries of studies are shown in Table: 2. Thematic analysis of the unprofessional behaviors taken from different studies was made.

Various items reported as unprofessional behaviors were identified and are classified into five themes, dishonest behaviors, behaviors related to substandard practice, unacceptable ethical behaviors, disrespectful behaviors, & behaviors related to doctor manners (Stewart et al., 2011). Dishonest behaviors: Falsification in reporting the record, inappropriate doctor practice management, conflicts of interest with colleagues and seniors and patients, breaking the confidentiality of patients, not reporting the medical examination accurately, not completing the duty hours, wrong documentation, violation of rules laid down by organization, refusal or inability to complete the assigned tasks, greed (Fargen et al., 2016). Behaviors related to substandard practice: Neglect of patient safety and provision of unsafe medical care, delayed treatment, talking about irrelevant issues in wards or in-patient room (Chang et al., 2015). Unacceptable ethical behaviors: Offensive behaviors, Offensive and abusive language, unwelcoming behaviors & annoying questions, beating, becoming violent (Genuis, 2006; Tricco et al., 2018). Disrespectful behaviors: Frightening communication, patronizing superiority, forcing for treatment, unwilling to talk about issues, blaming patients, dismissive attitudes toward patients, using obscene language, behavioral changes that impacts on patients and families (Grogan & Knechtges, 2013; Martinez et al., 2018) Behaviors related to Doctor Manners: Psychological incapacity, rude and loud comments, misrepresentation, abusive language, making fun of other physicians, excessive criticism (Chang et al., 2017).

DISCUSSION

The objective of this study was to review unprofessional physician behavior in the health care setting. There is a wide range of behaviors among physicians including providing treatment support and being helpful to patients than on the other end of the spectrum of being dictatorial and abusive behavior. This unethical behavior creates conflict in the working environment of the hospital. Disruptive physician behavior may add to the costs of the hospital as they may lose their patients and require additional resources for conflict management (Fargen et al., 2016).

Fourteen studies were identified that described unprofessional behaviors in different settings. In part of patients' disrespectful experiences can be related to health care system, health professional's behaviors, doctor and patient related cultural factors and has health impacts on patients and their families. Patient related internal or external factors can lead to modifying the pattern of disrespect. One study that assessed the association between professionalism and disciplinary actions against physicians showed that patient's complaints were directly related to the attributes of professionalism quantitated. Recognition of these behaviors increases patient safety and reduces harm. There is poor patient & doctor communication due to increased work load in the hospitals & leads to the doctor's aggression (Rogers & Ballantyne, 2010). The costs associated with having a disruptive physician on the hospital is due to Lawsuits by employees, Cost related to employee turnover and Patient satisfaction. Soft costs like employee morale, team work, patient care, quality and safety is affected (Martinez et al., 2018).

In hospitals many complaints are registered against the doctors on daily basis. Unprofessional behaviors increase the cost to hospitals as it increases the workload and decreases the revenue generated. Hospital actually lose patients and actions may be taken to resolve the conflict created by the disruptive physician (Stewart et al., 2011). The cause of these behaviors appeared to be the personality traits of doctors and extrinsic factors including hospitals management system, lack of professionalism, ranked system of hospitals and poor training (Chang et al., 2017). Specific interventions that can be done to deal with these kinds of behaviors can be collegial intervention and formal investigation of the issues (Martinez et al., 2018).

Code of ethics has outlined the inappropriate behaviors as being dismissive, conveying contempt, patronizing superiority, clearly and openly failing to respond to patient care and intentional failure to return to calls. Medical treatment and care is a complex process and it requires integrated team work. Frightening behavior on part of doctor can lead to medical errors patient dissatisfaction, increase in the treatment cost and adverse outcomes which otherwise can be prevented. The behaviors that threaten the performance of health care team must be addressed by the organization. Unprofessional behavior affects the clinical care & environment and has many negative implications (Roberts et al., 2014). It has been seen that the bad experiences of healthcare were interpreted as very painful and never forgotten (Lövgren et al., 1996). When physicians are involved in disruptive behavior it set off a chain of events that seriously compromises the process and flow of health care. To become an ethical physician and a good professional is the fundamental duty of a doctor. The act of unprofessionalism may be witnessed by the colleagues of health care professionals in clinical setting. It is very important to distinguish between the disruptive behavior and advocacy on behalf of patient who are dependent on physician decision regarding their health care e.g. unattended patients (Grogan & Knechtges, 2013).

CONCLUSION

Healthcare facilities are under a great deal of stress due to the demands of the healthcare field. When disruptive physicians are added to this heavy workload it is difficult for them to effectively cope with. It is critically important that hospitals should have a conflict resolution action plan for dealing with such problems and the disruptive physicians. Variation in physician perception about their obligation is found regarding provision of medical services irrespective of ethical consideration. Indicators measuring the patient's outcomes are directly related to complaints regarding maltreatment and lawsuits. Addressing and reacting disrespectfully are major challenges for leadership of the institutions.

DECLARATION OF INTEREST

The author report no declaration of interest.

Table II: Summary of results of individual Studies

Sr.no	Title	Author & year	Objectives	Study design	Study tool	Main findings	Conclusions drawn
1	Prevention and management of unprofessional behavior among adults in the workplace: A scoping review	Andrea C. Tricco et al 2018	To identify the steps taken for prevention and managing of unprofessional behavior in professional set up.	Qualitative analysis	'Population, Intervention, Comparison, Out- comes, Study designs, Timeframe' (PICOST)	Four constructs were identified in the definitions of unprofessional behavior: spoken words, unspoken words, Imbalance of power and persistent negative behaviors	There is a need of mitigation of unprofessional behaviors at workplace. Future reviews could inform practice in medicine.
2	Investigation of Unethical and Unprofessional Behavior in Korean Residency Training	Hyung-Joo Chang, et al 2015	Enhancing postgraduate medical education and training	qualitative, exploratory study	Semi structured interview, qualitative interviews conducted a thematic analysis.	unethical and unprofessional behaviors were divided in eight categories: a)poor practice. (b) breaking work ethics, (c) conflict of interest misconduct (d) dishonesty e) breech confidentiality of patients (f) lack of patients respect, (g) Disrespect for colleagues (h) falsification in research	There is a need to reinforcing ethics and professionalism education in postgraduate training programmers.
3	Patients' Narratives Concerning Good and Bad Caring	Gunvor Lovgren, RN, MSc e al 1996	To see the patient's experiences of good and bad health care to get a basis for making a policy of good health care.	Qualitative narrative research	Three written interview questions were asked.	Task during healthcare provision and relationships were used to describe good and bad caring. Criticism was taken as bad caring	The bad episodes of healthcare were unexpected and very painful as interpreted by patents
4	Qualitative Content Analysis of Coworkers' Safety Reports of Unprofessional Behavior by Physicians and Advanced Practice Professionals	William Martinez, MD, MS, James W. Pichert, PhD et al	To develop the reliable classification of reported unprofessional behaviors of physicians by coworkers To determine the prevalence of unprofessional conduct	Qualitative content analysis	Qualitative content analysis	Four domains of professionalism were identified as competent medical care, clear and respectful communication, integrity, and responsibility and these domains were directly related to patient complains	A useful and reliable and valid tool for analysis to promote behavior change to assess and was developed.
5	Physician professional behavior affects outcomes: A framework for teaching professionalism during anesthesia residency	Wadeeah Bahaziq, MD Edward Crosby, MD	To see the association of professional behavior of physician with the complaints and litigation against and patient satisfaction	Quantitativ e analysis	Narrative review	Professional behavior is associated with the personality traits evident at the start of training.	Behavioral expectations are defined and teaching and evaluation of behaviors and responding to people who breach the expected values
6	Unprofessional behavior and patient safety	Kevin stewart FRCP et al 2011	To identify the disruptive behaviors of doctors and to see its linkage with patient harm and he unsafe working environment.	Qualitative analysis	Review of research articles	Disruptive behaviors identified are verbal & action form which can be aggressive. These behaviors are modified b personality traits and external factors like family problems.	Disruptive behaviors contribute to medical errors and increased patient complaints against doctors.
7	Development of a framework to dscribe patient and family harm from disrespect and promote improvements in quality and safety: a scoping review	Lauge sokol-hessner et al 2018	To see the disrespectful behaviors prevalent and its management	Qualitative Analysis	Scoping Review research articles	Disrespectful experiences included: (1) care processes (2) healthcare provider behaviors; (3) patient- and doctor related factors, cultural factors and policies (4) health impacts on patients and families, (5) intrinsic and extrinsic factors related to patients modifying the results of disrespect.	Disrespectful behaviors recognition and management can prevent non-physical harms to patients.

8	Unprofessional Behaviors among Tomorrow's Physicians: Review of the Literature with a Focus on Risk Factors, Temporal Trends, and Future Directions(Fargen et al., 2016)	Kyle M et al 2016		Quantitative analysis	Review of literature	Prevent unprofessional behaviors were Inaccurate examinations on patients, false duty hou,pliagirism,cheating during examinations False Publication had highest frequently of 5-15% case	Further studies need to be done for evaluation of exact prevalence of these behaviors
9	Perceptions of negative health-care experiences and self-reported health behavior change in three racial and ethnic groups	Rebecca J. Schwei , Timothy P. Johnson ,	To see the relationship of negative health care experience with respect to race and the numbers of behaviors changed as a result of negative healthcare experience	Cross sectional study	Questionnaire based survey	32%participants had negative health care experience. Race was not associated with bad experience during health care	Race or ethnicity is not related to negative health care experience.
10	Towards a practical definition of professional behavior	Wendy Rogers, Angela Ballantyne	To distinguish professionalism from medical ethics.	Quantitative analysis	Review of literature	Definition of professionalism was reviewed Six domains of professionalism was defined respect of patient,probity,responsibility,selfawareness,reflection,collaboration and team work and care of colleague and I was reviewed with patients complaints against doctors.	Patient complaints was identified regarding Medical records, manners, Inappropriate behavior and disciplinary actions against the doctors were directly related to the professionalism
11	Awareness about Knowledge, Attitude and Practice of Medical Ethics pertaining to Patient Care, among Male and Female Physicians Working in a Public Sector Hospital of Karachi, Pakistan - A Cross-Sectional Survey	Sabeena Jalal et al 2018,	To assess the knowledge skills and attitudes of medical ethics among doctors	Quantitative study	A structured questionnaire based interview	9% of the doctors were not aware of the Hippocratic Oath. 89% of these were junior doctors	There is a need to improve the professional training regarding skills attitudes and knowledge among health professionals.
12	Dismembering the ethical physician	S J Genuis 2006	To see the ethical distress Faced by physicians when they are caught in difficult clinical situation	Qualitative analysis	Review of literature	Physicians contravene patient's expectations when they encounter difficult clinical situations.	The organization of daily work tasks is a key factor in workplace learning. It helps understanding of and organizational culture in clinical departments.
13	The Disruptive Physician:	Claramita, Mora; Utarini, Adi; Soebono, Hardyanto; Van Dalen, Jan; Van der Vleuten, Cees 2011	To explores the ideal communication style as perceived for doctor-patient consultations and actual practice style	Mixed method	In-depth interviews	High patient load does not allow the ideal interaction and communication between doctors and patients.	Further studies should examine the prevailing communication and should look forward the ways to change it.

| 14 | Causes of resident lapses in professional conduct during the training: A qualitative study on the perspectives of residents | Hyung-Joo Chang, Young-Mee Lee, Young-Hee Lee & Hyo-Jin Kwon 2016 | To understand the contributing factors to the misconduct / unprofessional behaviors. of residents | Qualitative study | In-depth interview | Systems within training hospitals are not working properly; (2) There is lack of education about professionalism; (3) Ranked system of hospitals (4) weak character of persons. | There is a need to organize and structure the training programs for enhancing professionalism |

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AUTHOR'S CONTRIBUTION

1. Nighat Majeed. Concept & design of the work, aquisition, analysis interpretation of data and critical review.

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