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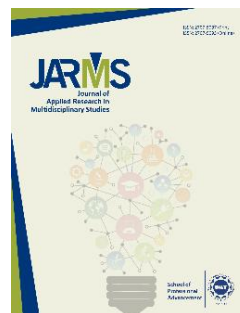
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## **Knowledge, Attitude, and Practice of Medical Students towards Evidence-Based Medicine in Private and Public Sector Medical Colleges of Peshawar, Pakistan**

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### **Abstract**

Evidence-based medicine (EBM) refers to a special and unique approach selected for an individual patient. It is prepared on the basis of patient's current health condition, the latest available research, and clinical expertise. It starts with a clinical question at the level of care (for instance, nurse-patient encounter or physician-patient encounter). Afterwards, evidence is acquired by investigating the previous literature regarding the patient's condition followed by the assessment of the quality of each evidence source. Subsequently, valid evidence is applied to patient's treatment according to their preference. In order to identify the areas of improvement in the EBM implementation, medical students were surveyed in the city of Peshawar, Pakistan regarding their knowledge and attitudes towards EBM practice. The current study followed a cross sectional research design which was carried out in two public medical colleges and two private medical colleges of Khyber Pakhtunkhwa (KPK). The duration of this study was 3 months from the time period July-October 2021. Random sampling was performed with the involvement of 286 participants. Inclusion criteria for the current study was fourth year and final year medical students. The data for the current study was gathered through a self-reported questionnaire. The characteristics of 286 participants showed that 44.76% ( $n=128$ ) were males, while 55.24% ( $n=158$ ) were females. The response rate was 100%. Out of all the respondents, 79.9% had an excellent knowledge of EBM. About 12.65 % reported excellent attitude towards EBM and only 6.3% had an excellent practice of EBM. The most common barrier that was identified was lack of time and lack of role modeling. The current study determined that females had a better attitude towards EBM than males ( $p$  value  $<0.5$ ). Moreover, there was also a strong relationship between year of study of respondents and practice of EBM which was greater in final year students ( $p$  value  $<0.5$ ). Although, majority of the medical students of KPK had an

excellent knowledge of EBM, only 6.3% of them had an excellent practice. Excellent knowledge regarding EBM does not necessarily show excellent attitude either. Overall, 78.67% of the respondents did have a good attitude towards EBM. The lack of practice can be due to the fact that only 8.1% of respondents strongly agreed that they had a clear understanding of EBM, proving that they know about EBM, however, are not fully aware of what it is. EBM should be integrated into the curriculum of the students for its application and incentives should be offered for undergraduates to develop an interest in it.

**Keywords:** attitude, barriers, evidence-based medicine (EBM), evidence-based practice (EBP), fresco test, knowledge

### Introduction

Evidence-based medicine (EBM) is an approach taken for the best suitable care of an individual patient, in accordance with the use of credible evidence available (Dickersin et al., [2007](#)). All the previous work on EBM shows that it has brought about tremendous advancement in the medical field which caters to individual patients (Moore, [2018](#)). One of the main hurdles for EBM to be incorporated is how one converts their knowledge into clinical practice (Feldstein et al., [2010](#)). A British epidemiologist, named Dr. Archie Cochrane, is the founder of evidence-based practice (EBP) who set afoot the idea of using systemic reviews while making healthcare decisions during the 1972's (Moore, [2018](#)). The main reason why EBM is important is because collective combination of all relevant information would always be a lot more valuable than traditional reviews. It can also eliminate discrimination since it is not based on individual studies or randomized clinical trials. Furthermore, poor quality evidence would ultimately lead to poor quality treatment of the patients (Dickersin et al., [2007](#)). The ability to discover, evaluate, and incorporate evidence from scientific researches available online is the main essence of EBM (Rangappa et al., [2018](#)). It all goes back to 1991, when a group at McMaster University in Ontario formulated the term EBM which arose from a concourse of events (Dickersin et al., [2007](#)).

Research, which is the core of EBM, is still not advanced in developing countries, such as Pakistan. The reason of still lagging behind in this field of interest is because people are stuck in traditional ways of learning and teaching. A study conducted in a hospital in Pakistan revealed that only 20%

of the residents read medical journals, only 12% ever wrote for a medical journal publication, and 12% never read a medical journal (Irshad et al., [2010](#)). The main difference between EBM and eminence-based medicine is that EBM does not consider all evidence equal or necessary. It also grades the quality of medical journals or articles for the best practice of patient. Bringing forth any fundamental change in medical practice involves influencing the knowledge, attitude, and practices of people. Thus, enforcing EBM is no different (Abeysena et al., [2010](#)).

The barrier to practicing this is most commonly the lack of time, however, it was overcome by the availability of secondary sources of evidence where clinical questions and their answers are compiled together and are ready to be used. Examples of such sources are mentioned in Table 1. The most appraisable achievement EBM brought about was the invention of systemic reviews (SR) and meta-analysis (MA) which are considered as the highest level of clinical evidence (Zaidi et al., [2007](#)).

A research conducted in 2019 in tertiary healthcare hospitals of Peshawar and district hospitals of KPK evaluated the knowledge, attitude, and practice towards EBP in physical therapists. This study is valuable as it was conducted in the same province where the current study was conducted. Thus, the perception about EBM in different regions of KPK was assessed. The sample was collected from 25 district hospitals of KPK and 6 tertiary care hospitals of Peshawar which included KTH, HMC, RMI, NWGH, and Fauji foundation. It provides a vast field of vision about different opinions regarding EBM. About 103 participants were screened and census sampling was performed. The inclusion criteria comprised of a clinical physiotherapist with at least one year of clinical experience. A modified APTA standard questionnaire was used. There was a positive attitude overall regarding EBP application where 35 (43.8%) participants strongly agreed, while 6 (7.5%) strongly disagreed. A biggest common barrier was reported by 49 (61.3%) respondents which was the inability to apply research findings to individual patients with quite unusual or uncommon conditions. They concluded that clinical physiotherapists of KPK have an interest in adopting EBP in their clinics and reported that EBP is necessary for daily clinical practice. (Ullah et al., [2019](#)).

Primary care practitioners in Malaysia were surveyed regarding EBM in 2019. The current study is important because it is the first research to explore knowledge, attitude, and practice along with the associated factors

for EBM in Malaysia. It also applied a new and validated questionnaire in a heavily populated state, Selangor, which consists of many governments as well as private primary care practitioners. Thus, the results were diverse since the study was conducted in nine different districts of Selangor. In the current study, 32.9% of the respondents had a high-level knowledge, 60.9% had a moderate level knowledge, and 6.2% had a low-level knowledge regarding EBM. Twenty-seven respondents (12%) were classified as having a positive attitude towards EBM. This was followed by neutral (81.8%,  $n=184$ ) and negative (6.2%,  $n=14$ ) attitude towards EBM. Regarding their own opinions towards EBM, 68.4% ( $n=154$ ) followed locally available clinical practice guidelines, 48.4% ( $n=109$ ) found it time consuming, and 32% ( $n=72$ ) perceived that experienced consultants should be followed in clinical practice. Moreover, 31.1% ( $n=70$ ) did not understand the research terms, 21.3% ( $n=48$ ) lacked research interest, 17.3% ( $n=39$ ) said that no senior doctors or colleagues practiced EBM or encouraged them to do so, and 8% ( $n=18$ ) suggested that they would favor financial incentive to use EBM. The conclusion showed that many of the physicians had suboptimal knowledge of EBM, however, majority of them had a neutral attitude towards EBM practice. The factors associated with EBM practice in the current study were a quick access to online references on a mobile phone, extensive experience, and a good attitude (Zanaridah et al., [2021](#)).

Many previous studies strongly proved that conducting a session on EBM increases its awareness and knowledge. A research was carried out in 2007, in the UK West region, where an e-learning course was conducted in EBM which was effective in improving the knowledge as a standard lecture-based course (Hadley et al., [2010](#)). In 2018, a research was conducted in a Nursing School of Portugal where participants were recruited in their last year before graduation to assess if introducing an EBP educational program to nursing students is effective by using a Fresno test. The Fresno test for undergraduate nursing students comprised of seven short answer questions and two fill-in-the-blank questions. The results showed that EBP educational program succeeded in increasing the knowledge and skills of undergraduate nursing students (Cardoso et al., [2021](#)). A research was conducted in Netherlands, in 2013 which stated that most participants had some understanding of the technical terms used in EBP, however, only teachers were able to explain these terms to others. About 45% of the students rated their perceived EBP knowledge as bad and 45% as average, whereas 78% of the teachers considered that they had good knowledge

(Scholten-Peeters et al., [2013](#)). While, there have been multiple studies to show positive results and there are plenty others that showed no significant statistical changes in conducting EBM courses. Some GP trainees from Netherlands in 2013 concluded that in a randomized controlled trial, no differences were found in EBM behavior, attitudes, or knowledge between GP practitioners who received EBM training through an independent module or those who received EBM training through a standalone module (Kortekaas et al., [2016](#)).

## **Materials and Methods**

### **Design**

The current study followed a cross sectional research design.

### **Setting and Population**

The population of current study comprised of 286 medical students studying in fourth and final year of KMC, KGMC, NWSM, and RMC of Peshawar, Pakistan.

### **Data Collection Instrument and Procedure**

A questionnaire based on knowledge, attitude, and practice was designed to assess EBP in undergraduate nursing students. This 16 item questionnaire was based on 3 subscales with questions that addressed EBP knowledge, attitude, and practice and an additional question about self-reported barriers. The questionnaire was graded by a 5-point Likert scale with knowledge and attitude response options ranging from strongly agree to strongly disagree. Options for the practice of EBP section ranged from never to daily. Firstly, a pilot study was conducted in NWSM by using a validated questionnaire. Necessary changes were made to the questionnaire according to the pilot study. One of them used easier terminologies as compared to the original questionnaire since some of the respondents found it difficult. The definitions of difficult terms were also added in the questionnaire. About 100 questionnaires were filled online through google forms due to lockdown resulting from the COVID-19 pandemic. They were shared with respondents through WhatsApp groups of their respective colleges. The remaining questionnaires were filled in person after the colleges reopened and classes resumed. Ethical approval was taken from the committee after reviewing the research proposal.

## Results

The data was processed and analyzed by using SPSS version 24. Simple arithmetic means were deduced for continuous variables, while frequencies were calculated for nominal and categorical data.

**Figure 1**

*Age of Respondents*

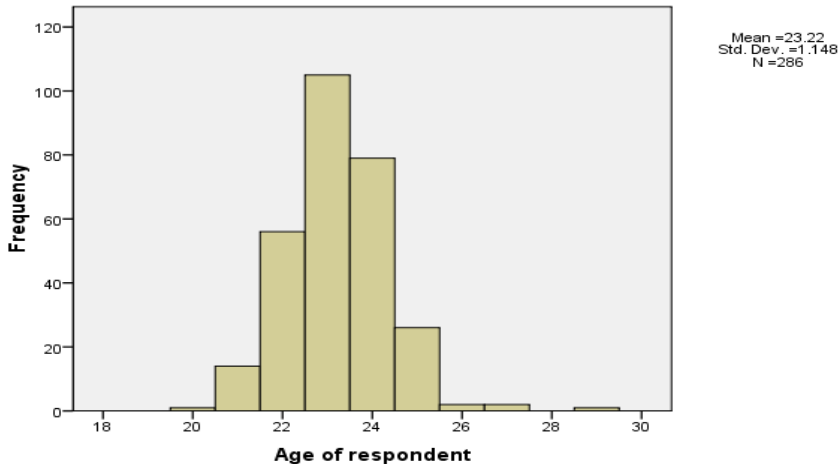


Figure 1 shows the range of age groups of the respondents. Most of the students were aged between 22 and 24 years with a mean age of 23 years.

**Figure 2**

*Representation of Respondents from Different Medical Colleges*

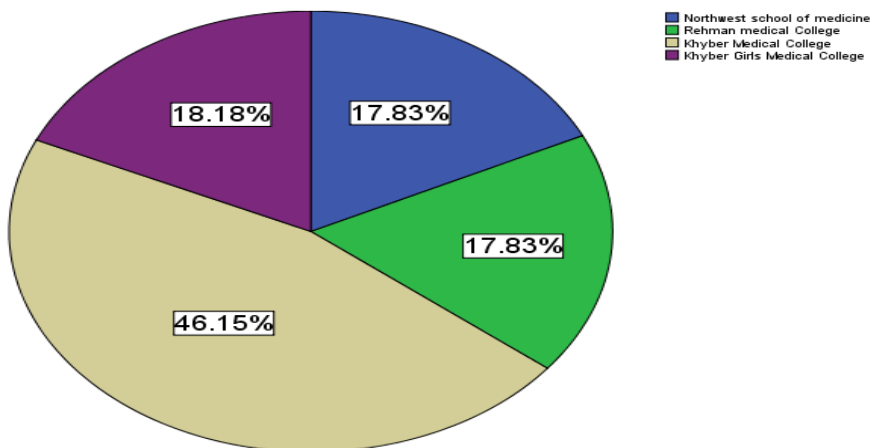


Figure 2 shows the medical college of respondents with 46% of the students from KMC, while 18% were from KMC. 17.83% were from both RMC and NWSM individually.

### Figure 3

*Representation of Respondents According to their Year of Study*

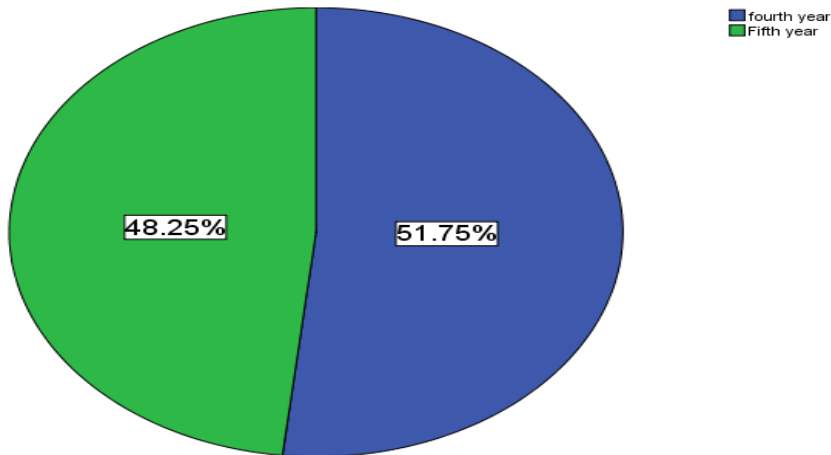


Figure 3 shows the distribution of students based on their year of study. 51.75% were studying in fourth year, while 48.25% were from final year.

### Figure 4

*EBM Knowledge Grading*

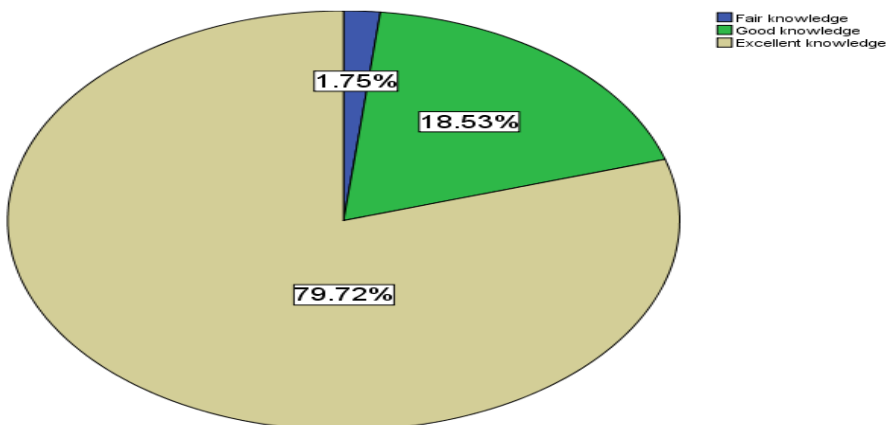




Figure 4 shows that out of 286 participants, 1.7% had fair knowledge, 18.5% had good knowledge, and 79.7% had excellent knowledge of EBM.

**Figure 5**  
*EBM Attitude Grading*

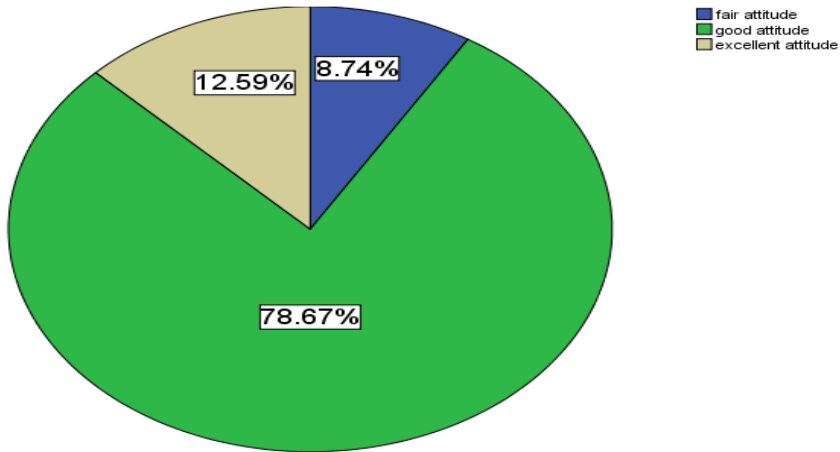


Figure 5 shows that out of 286 participants, 8.7% had a fair attitude, 78.7% had a good attitude, and 12.6% had an excellent attitude towards EBM.

**Figure 6**  
*EBM Practice Grading*

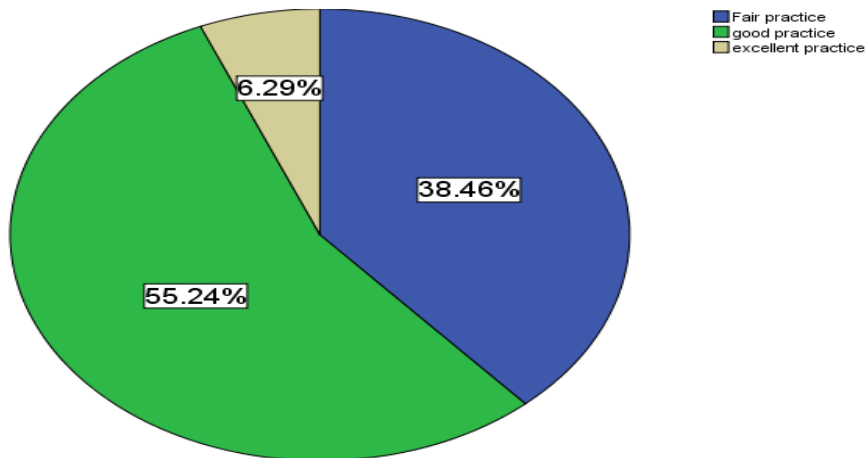


Figure 6 shows that out of 286 participants, 38.5% had a fair practice, 55.2% had a good practice and 6.3% had an excellent practice of EBM.

### Figure 7

#### *Understanding of EBM*

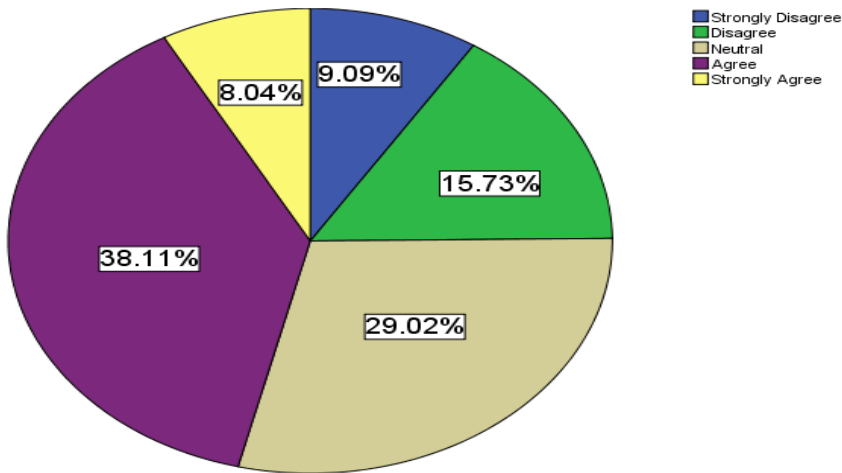


Figure 7 shows the results of the first question regarding EBM knowledge.

### Figure 8

#### *Research Using Clinical Trails is More Reliable Than Observational Research*

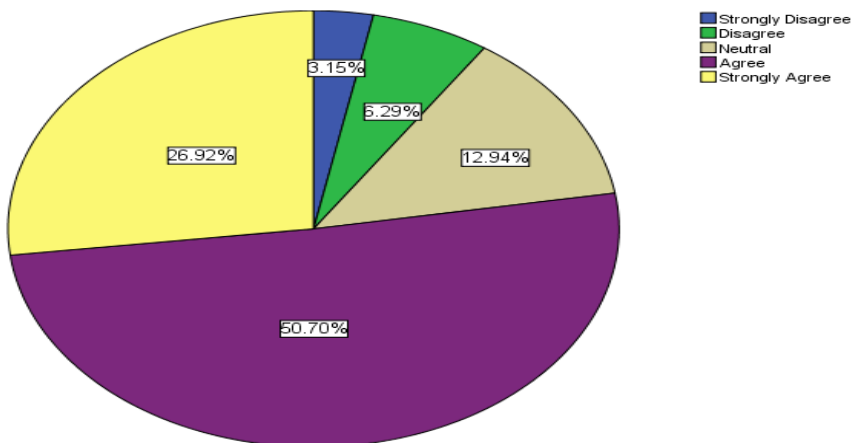


Figure 8 shows the results of the second question of the knowledge section of questionnaire.

**Figure 9**

*No personal Reason to Adopt EBP*

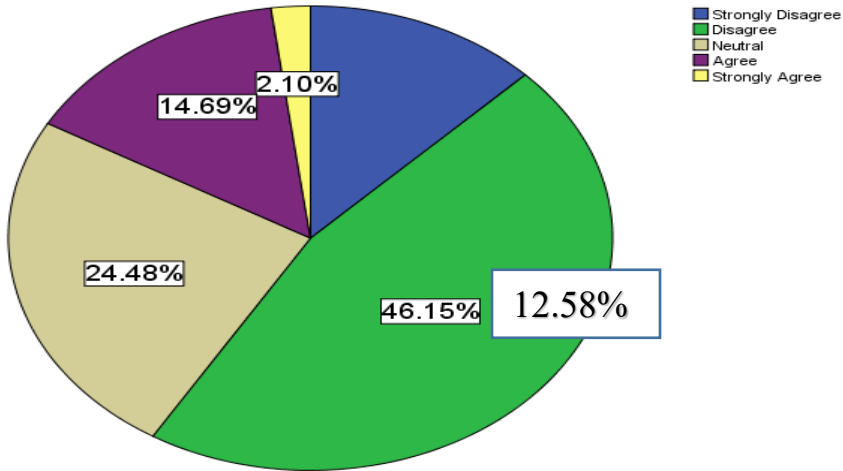


Figure 9 shows the results of the second question from attitude section of the questionnaire.

**Figure 10**

*Frequency to Access Research Evidence from Textbook*

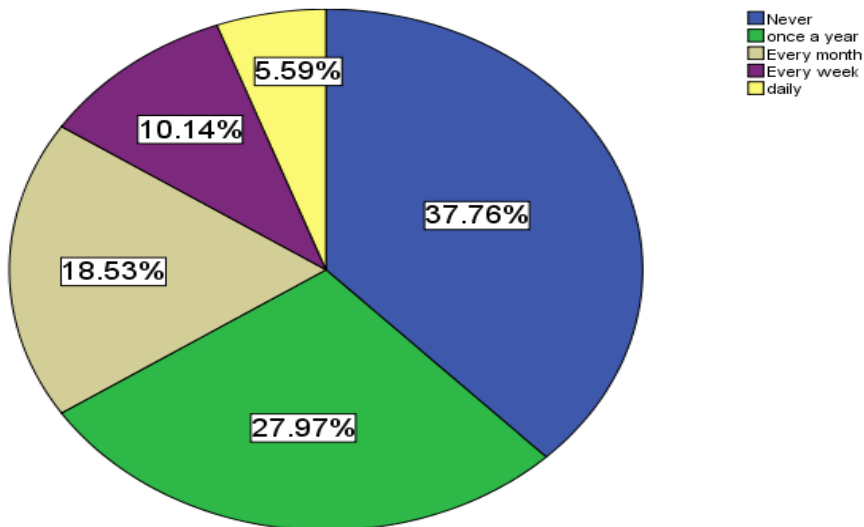


Figure 10 shows the results of the third question from the practice section of the questionnaire.

**Table 1**  
*Chi-square of Gender-wise Knowledge Grading*

Gender	EBM knowledge grading			Total	Chi square <i>p</i> -value	
	Fair	Good	Excellent			
Male	Count	3	26	99	128	0.597
	%	2.3%	20.3%	77.3%	100.0%	
Female	Count	2	27	129	158	1.031
	%	1.3%	17.1%	81.6%	100.0%	
Total	Count	5	53	228	286	
	%	1.7%	18.5%	79.7%	100.0%	

This table depicts that majority of males (77.73%) had an excellent knowledge regarding EBM, while their female counterparts also had a high score regarding EBM knowledge (81.6%). The current study found out that there was no statistical gender difference with EBM knowledge ( $p$  value  $>0.5$ ).

**Table 2**  
*Chi-square of Gender-wise Attitude Grading*

Gender	EBM attitude grading			Total	Chi square <i>p</i> value	
	Fair	Good	Excellent			
Male	Count	12	96	20	128	0.333
	%	9.4%	75.0%	15.6%	100.0%	
Female	Count	13	129	16	158	2.202
	%	8.2%	81.6%	10.1%	100.0%	
Total	Count	25	225	36	286	
	%	8.7%	78.7%	12.6%	100.0%	

This table shows that 75% of males had a good attitude towards EBM. About 81.6% of females had a good attitude towards EBM. 15.6% of males had excellent attitude towards EBM, while only 10.1% of females had excellent attitude towards EBM. The data shows that there is a statistical difference between gender and attitude towards EBM ( $p$  value  $<0.5$ ). The study concluded that females had a better attitude towards EBM than males.

**Table 3**  
*Chi-square of Gender-wise Practice Grading*

Gender		EBM Practice grading			Total	Chi square <i>p</i> value
		Fair	Good	Excellent		
Male	Count	48	73	7	128	0.802
	%	37.5%	57.0%	5.5%	100.0%	
Female	Count	62	85	11	158	0.440
	%	39.2%	53.8%	7.0%	100.0%	
Total	Count	110	158	18	286	
	%	38.5%	55.2%	6.3%	100.0%	

This table shows that 57% of males had good practice of EBM, while 53.8% of females had good practice of EBM as well. The study concluded that there is no statistical gender difference with EBM practice (*p* value >0.5).

**Table 4**  
*Chi-square for Medical College Wise\* EBM Knowledge Grading*

Medical College		EBM knowledge grading			Total	Chi square <i>p</i> value
		Fair	Good	Excellent		
Northwest school of medicine	Count	1	5	45	51	
	%	2.0%	9.8%	88.2%	100.0%	
Rehman medical College	Count	2	10	39	51	0.480
	%	3.9%	19.6%	76.5%	100.0%	
Khyber Medical College	Count	2	27	103	132	5.509
	%	1.5%	20.5%	78.0%	100.0%	
Khyber Girls Medical College	Count	0	11	41	52	
	%	.0%	21.2%	78.8%	100.0%	
Total	Count	5	53	228	286	
	%	1.7%	18.5%	79.7%	100.0%	

This table shows that majority of the students of private as well as public sector had an excellent knowledge regarding EBM. Students of Northwest School of Medicine had an exceptionally good score (88.2%). The current study concluded that there was a strong relationship between medical colleges and EBM knowledge.

**Table 5**  
*Chi-square for Medical College Wise\* EBM Attitude Grading*

Medical College		EBM attitude grading			Total	Chi square <i>p</i> value
		Fair	Good	Excellent		
Northwest school of medicine	Count	8	33	10	51	0.054 12.400
	%	15.7%	64.7%	19.6%	100.0%	
Rehman medical College	Count	1	45	5	51	
	%	2.0%	88.2%	9.8%	100.0%	
Khyber Medical College	Count	11	109	12	132	
	%	8.3%	82.6%	9.1%	100.0%	
Khyber Girls Medical College	Count	5	38	9	52	
	%	9.6%	73.1%	17.3%	100.0%	
Total	Count	25	225	36	286	
	%	8.7%	78.7%	12.6%	100.0%	

**Table 6**  
*Chi-square for Medical College Wise \* EBM Practice Grading*

Medical College		EBM Practice grading			Total	Chi Square <i>p</i> value
		Fair	Good	Excellent		
Northwest school of medicine	Count	17	29	5	51	0.520 5.185
	%	33.3%	56.9%	9.8%	100.0%	
Rehman medical College	Count	15	33	3	51	
	%	29.4%	64.7%	5.9%	100.0%	
Khyber Medical College	Count	54	70	8	132	
	%	40.9%	53.0%	6.1%	100.0%	
Khyber Girls Medical College	Count	24	26	2	52	
	%	46.2%	50.0%	3.8%	100.0%	
Total	Count	110	158	18	286	
	%	38.5%	55.2%	6.3%	100.0%	

Table 5 shows that students of both public and private sector had good attitude towards EBM. About 19.6% of the respondents from NWSM had

an excellent attitude towards EBM, while 17.3% of respondents from KGMC had the same. The study concluded that there was a strong relationship between respondents of medical colleges and attitude regarding EBM.

Table 6 shows that on average, all respondents of their respective medical colleges have good practice regarding EBM. Very few respondents had an excellent score regarding EBM practice. About 9.8% of students from NWSM had excellent practice regarding EBM. The current study concluded that there was no relationship between medical colleges of respondents and EBM practice ( $p$  value=0.5).

**Table 7**

*Chi-square for Year Wise EBM Practice Grading*

Year of study		EBM Practice grading			Total	Chi square $p$ value
		Fair	Good	Excellent		
Fourth year	Count	63	74	11	148	0.173
	%	42.6%	50.0%	7.4%	100.0%	
Fifth year	Count	47	84	7	138	3.574
	%	34.1%	60.9%	5.1%	100.0%	
Total	Count	110	158	18	286	
	%	38.5%	55.2%	6.3%	100.0%	

**Table 8**

*Frequency of Barriers to EBM*

Barrier	Responses		
	$N$	Percent	Percent of Cases
Lack of knowledge	140	22.2%	49.1%
Lack of time	144	22.8%	50.5%
Lack of role modelling from lecturers	120	19.0%	42.1%
Lack of role modelling from clinical instructors	127	20.1%	44.6%
Lack of role modelling from doctors	100	15.8%	35.1%
Total	631	100.0%	221.4%

Table 7 shows the difference in EBM practice between fourth and final year students. This study determined that there was a strong relationship between year of study of respondents and EBM practice ( $p$  value  $<0.5$ ). Table 8 shows the barriers faced by participants to practice EBM.

Out of 286 respondents invited to participate in the current study, all of them responded with a response rate of 100%. The sociodemographic profile of the medical students is shown in Figure 2. Two hundred and twenty-eight respondents (79.7%) of the students were classified as having excellent knowledge regarding EBM. This was followed by good (18.53%,  $n=53$ ) and fair (1.75%,  $n=5$ ) level of knowledge. The knowledge responses and its grading are shown in the above figures.

Majority of the students (78.67%,  $n=225$ ) had a good attitude towards EBM, excellent attitude was 12.59% ( $n=36$ ), while only a few respondents (8.74%,  $n=25$ ) had a fair attitude. The attitude responses and its grading are shown in the above figures. Associated factors with the attitude towards EBM included gender which was more positive in females.

Only eighteen (6.3%) respondents claimed to have an excellent practice of EBM. While, 55.2% ( $n=158$ ) had a good practice and the rest of the respondents (38.5%,  $n= 110$ ) had a fair practice. The practice was also directly related to the year of study, which was greater in final year students.

All medical colleges had an excellent score regarding EBM knowledge. The students of NWSM had an exceptionally good score (88.2%) regarding EBM knowledge. The current study determined that there was a significant relationship between medical college and knowledge regarding EBM. As far as the attitude towards EBM in medical colleges is concerned, there was a strong correlation between medical colleges and attitude towards EBM ( $p$  value=0.05). Students of all selected medical colleges had a good attitude towards EBM. Excellent attitude was found in 19.6% of students from NWSM and 17.3% of students from KGMC. Only 9.1% and 9.8% of students from KMC and RMC had an excellent attitude towards EBM, respectively. The practice was also directly related to the year of study which was greater in final year students.

The main barrier selected by students was lack of time (50.5%). Lack of knowledge stood second (49.1%) as the main barrier prevented them from practicing EBM. Role modelling also seemed to be a vital factor as a barrier to EBM. About 44.6% of the students claimed that there was lack of role



modelling from clinical instructors as well as from clinical instructors (42.1%) and doctors (35%).

Upon asking about a clear understanding of EBP, 29% of the respondents were unsure about it, while 9.1% of students claimed that they didn't have a clear understanding of EBP. About 8.04% of the respondents strongly agreed that they had a clear understanding of EBP, 38.11% agreed that they had a clear understanding of EBP, while 15.73% disagreed. About 29.02% of respondents were unsure whether they had a clear understanding of EBP or not. When asked about adopting EBP, 16.8% of respondents felt that there was no need because it is just a "fad" that would pass with time. Approximately, 58.75% of respondents disagreed with the statement, while 24.48% had no opinion regarding it. Most of the respondents (77.62%) agreed to the statement that conducting research by using clinical trials is generally more reliable than conducting research by using the observational method. Whereas, 9.44% did not agree with it and the remaining were unsure of it. More or less, 37.8% of students had never accessed research evidence from a textbook. Roundabout, 27.97% of respondents researched evidence once a year from a textbook. About 18.53% of the respondents researched every month with 10.14% researching evidence weekly. Only 5.6% of the respondents researched evidence from a textbook on a daily basis.

This shows a dire need for integrating EBM into the curriculum. There was a strong relationship between year of study and EBM practice which showed final year students averaging a better score than fourth year students. This could be attributed to the fact that final year students had more clinical exposure than fourth year students, even though research is a mandatory part of fourth year curriculum. The main barrier preventing students from practicing Evidence-based medicine was lack of time (50.3%). Lack of knowledge was a close second with 49%. Lack of role modelling from lecturers, clinical instructors, and doctors was 42%, 44.4%, and 35%, respectively. Most of the respondents had difficulty in understanding some of the terms in the questionnaire, particularly those in the attitude section. Some students found it difficult to understand the terms "art of medicine" and the analogy of EBM to a "cookbook". Some students had never heard of the Cochrane library, while most students had never researched evidence using the Cochrane library (72.4%). Generally, students had a fair practice related to EBM. This is true because most

students highlighted lack of time as their major barrier towards EBM practice.

## Discussion

The current study was performed between undergraduate medical students with a mean age of 23 years, and 55.24% were females. There is a very slight gender imbalance, however, globally, 32% of the doctors that graduate are female (Zanaridah et al., [2021](#)).

A vital finding was that there seems to be excellent knowledge regarding EBM (79.7%,  $n=228$ ) when compared to a research conducted in Rwanda which concluded that 90% of respondents had clear understanding of EBM. Most studies judged EBM knowledge on the basis of statistical or technical terms. In a systemic review of physician's knowledge, practice, and attitude towards EBM, 57 articles were studied. Most studies assessed the respondents with the McColl questionnaire, then was the fresco test, and self-developed questionnaire (Zanaridah et al., [2021](#)). The questionnaire designed for the current study was a modified form of the validated questionnaire which was used to assess the knowledge, attitude, and application of evidence-based practice in Rwandan nursing students (Iradukunda & Mayers, [2020](#)).

In this study, most of the respondents (35.7%) did not agree to the statement that conducting research by using clinical trials is generally more reliable than conducting research by using observational method. This result is in contrast with that of the Rwandan study in which 84% of the respondents opined that clinical trials are more reliable than conducting research by using the observational method

A study conducted in Dental College of South India concluded that 76% of respondents had a positive attitude towards EBM and its usage improved clinical skills, whereas in the study, only 12.59% had an excellent attitude regarding EBM (Pratap et al., [2014](#)).

Majority of the participants hold positive attitudes towards EBP, however, lacked sufficient knowledge and skills for implementation according to the study conducted in North Karnataka, India in 2018 in which 50-60% of respondents intended to undergo formal training about EBP and its principles. While in the current research, majority of respondents (78.67%) had a good attitude towards EBM.

Similar studies were identified from the literature in order to compare EBM practice: A study of 719 students conducted in Sudan stated that students rated their skills in EBM as average or below average for all the questions. Students rated their skills as poor (31%) in finding professional literature, average (34%) in searching online databases, poor (42%) in critical appraisal of a scientific publication reporting findings from clinical research, and poor (36 %) in critical appraisal of available scientific literature. (21). When compared to the current research, the respondents showed good practice (55.2%) in EBM amongst medical students of fourth and final year.

Another study was conducted locally in Karachi amongst first and third year students of Jinnah Medical and Dental College to assess the perceptions and barriers of EBM practice. To assess the results, a five-point Likert scale-based questionnaire was used at the end of the course. The attitude of practicing EBM in clinical medicine was appreciated by 84.5% of first year medical students and 66.2% in third year students. While, 61.9% of first year students and 54.9% of third year students agreed that EBM course helped them in understanding the importance of articles during their medical practice. The study determined that more pre-clinical students were accepting the concept of EBM rather than the clinical students. EBM, not being a course subject, tends to decrease the interest as well as the lack of vision of the institute to embed EBM in the curriculum (Samad et al., 2018). The current study was conducted amongst clinical classes of fourth and final year students who had good interest as well as excellent knowledge regarding EBM.

The main barriers to implement EBP include insufficient time to read scientific research articles and the cost to its access (Rangappa et al., 2018). When compared to the current research, knowledge of students regarding EBM was sufficient. The findings were different than previous literature, easily understandable, and amongst medical students. On the other hand, previous researches showed low knowledge of extracting journals, review publications, and databases relevant to EBM. Previously used tools included 1. American family physician from American academy of family physicians having clinical review journal that contains evidence-based components 2. Clinical evidence from BMJ publishing group which is a compendium of systemic reviews gathered from Cochrane, Medline, and other sources 3. Cochrane database of systemic review 4. SPSS software

version 24.0 which was used to compute data 5. Google forms which were sent to various students of medical colleges.

As per the literature review, no such study was conducted in Peshawar which compared attitude, knowledge, and practice amongst medical students. One of the strengths of the current research is its sample size which is enough for a 95% confidence interval. The study was conducted in multiple medical colleges of Peshawar and the results were compared against each other. This study was also conducted to deduce the difference in KAP of male and female medical students of aforementioned medical colleges. Due to the lack of literature in our area, our research could serve as a reference for other researches on this topic conducted in a similar setting. This also emphasizes a need for establishing a proper course for evidence-based medicine across all the medical colleges of Peshawar as well as steps taken in implementing it.

### **Limitations**

The limitation of this study was that all the barriers and responses were self-reported and there was no way of confirming the exact cause of hindrances in practicing EBM. Due to the pandemic, some of the questionnaires were filled through Google forms. Consent was taken online and in person from the respondents who had a clear idea of the questionnaire. These factors may interfere in the transferability of the collected information.

### **Conclusion**

The vital finding was that the attitude towards EBM was generally good. However, the study revealed that despite having no prior training of EBM, the students had excellent knowledge regarding EBM. Thus, if many students are aware of EBM then integration and acceptance into practice can be followed easily.

Although, medical students had a gap in EBM practice which was in contrast to their excellent score regarding knowledge of EBM. The current study proved that EBM should be integrated in the academic curriculum and more emphasis needs to be put on it by lecturers, clinical instructors, and doctors. This also shows that students have a large academic burden which leads to lack of time for other academic activities as proven by this research. EBM is a necessity for future doctors due to the rapid advancement in medicine and medical techniques and our curriculum should be up to date

in order to prepare the doctors to deal with new and challenging cases. EBM should be integrated gradually and steadily into the academic curriculum in order to improve the attitude of students towards it and develop their interest in the subject. Students should be taught how to use the Cochrane library and how to research evidence by using different tools, such as SPSS and online databases. Incentives should be offered to students in order to develop interest and students should be encouraged to go to medical conferences with EBM.

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