RESEARCH ARTICLE

Self-directed learning and approach to seeking medical evidence: Perceptions of students from a private medical university of Karachi

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Abstract

Objective: To assess self-directed learning among medical students and their approach towards seeking medical evidence.

Method: The cross-sectional study was conducted from November 30, 2021, to June 30, 2022, at the Baqai Medical University, Karachi, and comprised first to fifth year medical students of either gender. Data was collected using a structured online questionnaire which also included questions from the self-directed learning instrument. Data was analysed using SPSS 21.

Results: Of the 250 students who approached, 159(63.6%) responded were received; 102(64.2%) females and 57(35.8%) males. The overall mean age was 21.78±1.72 years, with 88(54.1%) subjects aged >21 years. Majority 127(79.9%) participants scored above average on the self-directed learning instrument scale, while 131(84.2%) showed satisfactory approach towards evidence-based medicine. Students with better attitude towards self-directed learning were more likely to have satisfactory approach towards evidence-based medicine, but this relationship was not significant (p=0.136).

Conclusion: Medical students were found to be keen to adopt self-directed learning and practice evidence-based medicine though they have not been formally exposed to it.

Keywords: Evidence-based medicine, self-directed learning as topic, Students, Medical. (JPMA 73: 1821; 2023)

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Introduction

Self-directed learning (SDL) is an emerging concept of grooming medical students intellectually and making them professionally responsible practitioners. It is helpful in inculcating communication skills and leadership qualities as a part of adult education already established in developed countries.[1] Worldwide there has been a shift from teacher-centred approach to student-centred approach of learning.[2] Medical educators have adopted the student-centred approach to help doctors develop lifelong learning skills.[3] SDL was defined as a process in which individuals take the initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.[4] Another SDL model stated that the essential components of SDL were self-management, self-monitoring and motivation.[5] Identifying students' deficiencies and outlining objectives of learning by oneself inculcates responsibility towards learning and serving better in healthcare. Critical thinking and self-motivation at pre-graduation level opens doors to evidence-based learning (EBL) and research which would be helpful in later years of practicing medicine.

The concept of evidence-based medicine (EBM) was introduced in 1992 at McMaster University.[6] It refers to identifying a clinical question and finding evidence for best management options. Identification of learning needs leads to searching relevant literature.[7] Integration of available evidence with biological needs of the patient enables physicians to improvise patient care.[6]

Since SDL methodology is an advanced mode of learning and medical students are future innovators in the field of healthcare, it is important to assess the approach of medical students towards SDL and seeking medical evidence to meet their learning needs. To the best of investigators' knowledge, local evidence describing the relationship of SDL with the approach of undergraduate medical students towards EBM is limited at best. The current study was planned to assess SDL among local medical students and their approach towards seeking medical evidence.

Subjects and Methods

The cross-sectional study was conducted from November 30, 2021, to June 30, 2022, at the Baqai Medical University

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(BMU), Karachi, which is a private-sector medical university recognised by the Pakistan Medical Council (PMC). It follows PMC-approved curriculum for its undergraduate medical programme. It has a tertiary care 500-bed associated teaching hospital, called Fatima Hospital, which caters to people from all over Sindh, especially from Malir district of Karachi.

After approval from the institutional ethics review committee, the sample size was calculated by using the OpenEpi calculator[8] while keeping the study outcome at 50%, confidence interval (CI) 95% and precision 8%.

The data was raised from among BMU students from the first to the fifth year of medical undergraduate programme. Those who refused to participate voluntarily were excluded.

After taking informed consent form the subjects, data was collected using a structured online questionnaire. Each questionnaire was kept anonymous and the collected data was also kept confidential. All the questionnaires after completion were reviewed and the data collection process was supervised by the principal investigator.

The questionnaire was developed in the English language. The questionnaire consisted of three sections. Section A included questions on demographic characteristics and certain general questions related to SDL and EBM. Section B contained 23 questions related to SDL. There were 3 introductory questions, and the remaining 20 questions were from the standard SDL instrument (SDLI), which is a pre-validated questionnaire and Cronbach's alpha for each item has been reported to be 0.70.[9,10] The response was assessed on a Likert scale, where 1=strongly disagree, 2= disagree, 3=neutral, 4=agree, and 5=strongly agree. Thus, the total possible score on the SDLI ranged 20-100. A higher score indicated a higher level of SDL.[9] A score of 90 and above was categorised as excellent, score 80-89 as very good, score 70-79 as good, score 60-69 as average, and 59 as below average.

Section C of the questionnaire comprised 13 questions related to attitude towards EBM with "Yes" or "No" responses. Questions 11-13 were based on an earlier study conducted among students of medical and health sciences faculties in Hungary.[11] Each correct response was given a score of 1, whereas each incorrect response was given a score of 0. Participants who correctly answered 70% or above questions, i.e. 10 out of 13, were considered to have satisfactory attitude towards EBM.

Data was analysed using SPSS 21. Categorical variables were described using frequencies and percentages, while continuous variables were summarised using mean and standard deviation. Inferential analysis was performed using chi-square test to check the association between SDL attitude and their approach towards EBM. The significance level was kept at $p<0.05$.

Results

Of the 250 students who approached, 159(63.6%) responded. Of the total, 102(64.2%)were females and 57(35.8%) were males. The overall mean age was 21.78±1.72 years, with 88(54.1%) subjects aged >21 years. Moreover, 10(6.3%) of the subjects were in the first year of their academic programme, 37(23.3%) in second year, 49(30.8%) in third year, 25(15.1%) in fourth year and 39(24.5%) in the final year. Overall, 112(70.4%) subjects were in clinical years, 107(67.3%) had passed their pre-medical exam from the Sindh Board, and 26(16.4%) from

Table-1: Responses to questions about self-directed learning (SDL)(n=159).

Variables	n (%)
Are you aware of the term self-directed learning?	
Yes	138 (86.8)
No	21 (13.2)
When did you hear of self-directed learning for the first time?	
Intermediate level	28 (17.6)
During course of MBBS	120 (75.5)
Never	11 (6.9)
Are you given allocated time for self-study?	
Yes	103 (64.8)
No	56 (35.2)
Frequency of accessing online data base journals	
Never	59 (37.1)
Less than once a month	47 (29.6)
More than once a month	53 (33.3)
What is the most common obstacle in practicing evidence based medicine?	
Inaccessibility to online journals and search engines	19 (11.9)
Lack of time due to packed schedule	70 (44)
Unavailability to standard textbooks in hand	8 (5)
Don't know exactly which authentic sources to refer to	51 (32.1)
Lack of interest	9 (5.7)
Financial constraints	2 (1.3)
When do you search for seeking medical evidence?	
During class lectures	35 (22)
During clinical rounds	59 (37.1)
While consulting patients	10 (6.3)
Same day at home	24 (15.1)
Postpone it till needed again in future	31 (19.5)
What can be the most effective way of prompting desire for bringing evidence-based medicine into practice?	
Clinical audits	76 (47.8)
Workshops	63 (39.6)
Lectures/Hand outs	20 (12.6)
Have you attended any workshop explaining evidence-based medicine?	
Yes	28 (17.6)
No	131 (82.4)
Have you been formally trained for critical appraisal?	
Yes	21 (13.2)
No	138 (86.8)

the Federal/Punjab Board.

Of the total, 138(86.8%) participants were aware of SDL, 120(75.5%) had heard of SDL during the academic life, whereas 103(64.8%) were given allocated time for self-study. Moreover, 59(37.1%) participants had never accessed online database journals, 70(44.0%) found lack of time due to packed schedule as the most common obstacle in practising EBM, 59(37.1%) searched for medical evidence during clinical rounds, whereas 76(47.8%) considered clinical audits as the most effective way of prompting desire for bringing EBM into practice. Further, 131(82.4%) participants had never attended a workshop explaining EBM, and 21(13.2%) had been formally trained for critical appraisal (Table 1).

Table-2: Effect of self-directed learning (SDL) on attitude towards evidence-based medicine (EBM)(n=159).

Variables	Evidence-Based Medicine Attitude		*p*-vlaue
	Satisfactory (n=131) n (%)	Unsatisfactory (n=28) n (%)	
Self-Directed Learning			
Excellent	8 (100)	Nil	0.136
Very Good	40 (81.6)	9 (18.4)	
Good	60 (85.7)	10 (14.3)	
Average	18 (78.3)	5 (21.7)	
Below Average	5 (55.6)	4 (44.4)	

Table-3: Association between variables and self-directed learning (SDL) (n=159).

Variables	Self-Directed Learning			*p*-value
	Excellent/ Very Good (n=57) n (%)	Good (n=70) n (%)	Average/Below Average (n=32) n (%)	
Age				
Up to 21 years	30 (41.1)	29 (39.7)	14 (19.2)	0.435
> 21 years	27 (31.4)	41 (47.7)	18 (20.9)	
Gender				
Male	22 (38.6)	24 (42.1)	11 (19.3)	0.864
Female	35 (34.3)	46 (45.1)	21 (20.6)	
MBBS Year				
Preclinical	22 (46.8)	18 (38.3)	7 (14.9)	0.162
Clinical	35 (31.3)	52 (46.4)	25 (22.3)	
Premedical Passing Board				
Sindh Board	39 (36.4)	43 (40.2)	25 (23.4)	0.699
Federal/Punjab Board	9 (34.6)	14 (53.8)	3 (11.5)	
Cambridge/O Levels	5 (41.7)	6 (50.0)	1 (8.3)	
Others	4 (28.6)	7 (50.0)	3 (21.4)	

Table-4: Association between variables and attitude towards evidence-based medicine (EBM) (n=159).

Variables	Evidence Based Medicine Approach		*p*-value
	Satisfactory (n=131) n (%)	Unsatisfactory (n=28) n (%)	
Age			
Up to 21 years	59 (80.8)	14 (19.2)	0.630
> 21 years	72 (83.7)	14 (16.3)	
Gender			
Male	49 (86.0)	8 (14.0)	0.376
Female	82 (80.4)	20 (19.6)	
MBBS Year			
Preclinical	39 (83.0)	8 (17.0)	0.900
Clinical	92 (82.1)	20 (17.9)	
Premedical Passing Board			
Sindh Board	89 (83.4)	18 (16.8)	0.729
Punjab/Federal Board	22 (84.6)	4 (15.4)	
Cambridge Board/O Levels	10 (83.3)	2 (16.7)	
Others	10 (71.4)	4 (28.6)	

Majority 127(79.9%) participants scored above average on SDLI, while 131(84.2%) showed satisfactory approach towards EBM. Students with better attitude towards self-directed learning were more likely to have satisfactory approach towards evidence-based medicine, but this relationship was not significant (p=0.136) (Table 2).

None of the participants' characteristic were significantly associated with their SDL knowledge (Table 3) and approach towards EBM (Table 4).

Discussion

The study showed no significant difference between male and female students in their approach to SDL, which is in line with literature.[1,12,13] However, studies from Italy and China have reported contradictory results, too.[10,14] Further assessment is therefore required before a meaningful conclusion can be drawn about this relationship.

The current study showed no significant relationship of age with SDL attitude, as was found in a study among Australian nursing students.[15] Similar results were reported from Ethiopia.[16] This could be possibly because of lack of exposure to learning and practice of SDL in the undergraduate years of education. On the contrary, studies on medical and nursing students in China and Thailand showed that maturity and increasing years of learning contributed to obtaining higher SDL scores.[14,17] Literature has shown that medical students who had higher scores on SDL scales used learning resources, such as libraries and electronic medical databases, more frequently and spent more time studying independently.[14] On the contrary, the current study showed that majority of the participants had never used online database journals. Students with better attitude towards SDL may be inclined on their own to utilise any means available to further polish their capabilities on any given topic, including online resources. The unauthentic learning resources are not fruitful in grooming students in the right direction. In fact, such reading materials can mislead students in building concepts and eventually managing patients in future.

Interestingly, and as expected, the results showed that the

students who passed premedical from the Cambridge Board were least likely to have average/below average score on SDL compared to other boards, arguably because the Cambridge Board has higher standards for evaluating students' academic performance compared to other boards in Pakistan.

EBM has become a core competence for medical students and practicing doctors as it has direct influence on patient care and management.[18] It refers to managing patients with the latest treatment options.[19] Management of patients is not only restricted to prescribing medicines, but also addressing patients' concerns about drug interactions, adverse effects, alternative medicine, home remedies, diet plan, etc. Their questions can be best answered on the basis of authentic, evidence-based information. This goes in the best interest of patient care, keeping in view their opinions and concerns in shared decision-making.[20,21] Hence, EBM is incorporation of EBM knowledge with patient values.[22]

With regard to EBM knowledge, the current study showed that 50.3% participants were not aware of the term EBM. This is close to a local study conducted a few years back, where 57% of the respondents were not aware of the term.[18] A study conducted at Khyber Medical University also concluded similar results.[23] Possibly, absence of efforts in developing the culture of EBM through training programmes and continuing medical education (CME) by the faculty may be responsible for such findings. Moreover, lack of provision of e-databases and online libraries is also a hurdle in promoting EBM as students may not be able to purchase them on individual bases. A study conducted in Iran showed only 24.5% participants were familiar with the term EBM as only few had formal training of EBM. Interestingly, the majority 89.3% had positive attitude towards EBM and its importance.[24] Another study conducted among medical students of Saudi Arabia showed that their knowledge and attitude towards EBM was low as the majority did not attend EBM workshops.[20] Also, having no journal subscription, the majority accessed internet to reach clinical decisions. Lack of time was also an important factor documented by medical students as a barrier to seeking medical evidence. The current study had similar outcome, where 37.1% participants had never accessed online database journals and 44% participants found lack of time due to packed schedule as the most common obstacle in practising EBM. This unfamiliarity with the term EBM in the study is probably because of lack of formal education and training of this particular approach to science. It further highlights the dire need of conducting teaching sessions and workshops for improvement.

Moreover, the study results showed that only half of those practicing EBM used authentic learning resources, like textbooks, guidelines and online journals, while the rest used Wikipedia and YouTube blogs etc. A study conducted in Sudan showed that majority students were using non-scientific learning resources for seeking evidence.[25] A study conducted in Hungary showed that the students who did not take formal training of EBM relied on printed books for seeking evidences, while those who had taken formal training used professional guidelines.[11] The PMC encouraged SDL and seeking evidence-based information from databases in undergradate curriculum a few years ago.[26] Many institutions worldwide have incorporated EBM in their curricula, but no standard teaching strategy has been defined.[27] The institutions that are conducting teaching sessions are not following standard recommendations of achieving goals and objectives.[28] Most medical students of the present era have personal smartphones in hand and they can easily access online standard guidelines and medical journals at their convenience. Albeit, students might not have access to some very useful resources where heavy subscription is required. The institutions are expected to provide them as is already the case with several medical institutions in Pakistan.[23] A study conducted in Ethiopia showed that EBM training and use of electronic database as source of information were positively associated with EBM knowledge.[29] This factor is, hence, a limitation to some extent which hampers academic growth of students. Moreover, students are not encouraged to attend any related workshop or online course. This could also be the possible reason for not having focussed awareness and learning opportunity for practising EBM.

Despite having not attended formal training of EBM, a majority of the participants considered practising EBM important for serving and benefitting patients in the best possible way. They also understood that patient's views and perspectives are extremely important in delivering optimum health services. This ideology gives hope for the establishment of better learning systems.

The current study also showed that the attitude of medical students towards SDL was associated, though not significantly, with their approach to EBM. To the best of the investigators' knowledge, this interesting relation has not been explored before. The current study planned to evaluate this association because students with better attitude towards SDL are assumed to be more prepared to invest their time searching for evidence related to what they have been taught. Since this skill is central to train medical professionals for adapting to new information, it is important to nurture them for lifelong learning which is much needed in the profession. Hence, the study results will help in planning to achieve the purpose.

The current study has certain important limitations. Firstly, being a single-centre study with a moderate sample size, the generalisability of the findings is limited. Secondly, the findings may suffer from limitation of recall, which is an inherent weakness of the cross-sectional design.

As a way forward, focussed training sessions followed by mandatory assessment need to be established in all medical universities and postgraduate institutions for developing the core competence of EBM among healthcare professionals. Training of teaching faculty is mandatory in the first place as EBM is a higher intellectual skill to be taught to medical students. Our national and institutional libraries should be well stocked with latest national and international journals so that seeking medical evidence may be facilitated.

Conclusion

A majority of students scored above average on SDLI and showed satisfactory approach towards EBM. Medical students were found to be keen on adopting SDL and to practise EBM though they had not been formally exposed to it. Students with better attitude towards SDL were more likely to have satisfactory approach towards EBM.

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