Original Article

Problem Based Learning: Are Our Entry Level Medical Students Ready

Musarrat ul Hasnain, Tanzila Khalid, Abid Bashir, Tasneem Ahmad Cheema, Anila Umber

ABSTRACT

Objectives: To assess the self-directed learning readiness of entry level medical students in public and private medical colleges of Faisalabad. **Study Design**: Cross sectional study. **Place and Duration of Study:** All three Medical colleges of Faisalabad (One public and two private) during March, 2010. **Methodology:** A questionnaire based on 58 items Guglielmino scale for self-directed learning readiness was distributed to Year I students of Medical Colleges in Faisalabad. The forms contained a demographic data portion at the end. The questionnaires were distributed at the end of regular lecture and completed by students in 30 minutes. Incomplete questionnaires were excluded from the analysis. **Data Analysis**: Analyzed by using statistical software SPSS version 15. **Results:** Out of received 307 questionnaires 220 contained complete fields. These included 150(50% of the class) students from Punjab Medical College (PMC), 43 (43% of the class) from University Medical College (UMC) and 27(54% of the class) from Independent Medical College (IMC). The mean score at Guglielmino scale was 203. While there was no statistical difference in the mean scores of the colleges (PMC=205, UMC=208, IMC=196) the score was in Category "Average" for PMC and UMC and "Below Average" for IMC as described in "Guglielmino scale". There were 16 out of 58 items which showed significant statistical difference among colleges. **Conclusion:** The self-directed learning readiness of entry level medical students as assessed by Guglielmino scale is shown to be border-line. This factor needs consideration before adoption of the problem based learning. Addition of a component for enhancement of this skill appears to be required in the reformed curriculum of undergraduate medical education for maximizing learning. **Key Words:** Problem based learning (PBL), Self-directed learning readiness (SDLR), Undergraduate Medical Education, Pakistan.

INTRODUCTION

Most of the Medical schools in developed and developing countries have either revised the curriculum or are in the process of transformation and they have moved from traditional, discipline based curriculum with lecture based instructional design, to integrated curriculum having Problem based learning as an important mode of information transfer. In Pakistan the curriculum for undergraduate medical education remains mostly the same as it was at the start and has not been revised as yet.[1]The medical knowledge base is under continuous change; new technologies have been introduced and so are public awareness with heightened accountability in health care. Therefore it is essential to create relevance between medical education/training and medical practice in order to introduce an effective healthcare system. Save for very few institutions with adoption of student centered curricula; Medical Education in Pakistan is trying to catch up with the rest of the world by reforming undergraduate medical curriculum. Realizing this situation, in 2008 Pakistan Medical and Dental Council decided that the undergraduate medical curriculum should be modular and integrated. All the medical colleges were directed to train the faculty for the adoption of new curriculum. An important instructional method in integrated curriculum is Problem based learning (PBL) and Self-directed learning (SDL) is considered as one of the cornerstones of PBL.[2,3]

Defining in simple way Self –directed learning is a process of determining what to learn along with its

depth and Breadth.[4,5] There is a growing acceptance of the relationship between SDL and learners' ability to cope with changing knowledge and technology. Medical graduates work in variable contexts and situations during their professional services so they have to be lifelong learners and self-directed learning is an essential strategy for lifelong learning. It can be used to prepare students to adapt with changing knowledge and technology.[6] Implementation of new curriculum is resource intensive, needs proper planning and demands evaluation of whole system taking into serious consideration of skills and attitude of faculty and students. A lot of work has already been done in this direction and literature suggests that "Self-directed and adult learning principles do not, however, appear miraculously. It should be recognized that not all students become independent learners, and may require a more directed learning environment".[7] In the setting of Pakistan as well as in many other developing countries a frequently asked question in faculty development workshops and informal discussions is about our students' status of self-directed learning readiness duly required for formulating learning issues; selecting learning resources; and obtaining wheat from the sheaf. This is based on the fact that most of our entry level students have completed 12 years of school as compared to 14 years in USA and some other countries. Besides, traditional schools and institutions train the students in a prescriptive way. It is also clear from the research work that students vary in the self regulation and scaffolding is essential in the process of transition from teacher-centered system to evolve self reliant learners who have the ability to reach the desired level: a point which accounts for or depends on the students' cognitive ability as well as their emotional maturity.[8] This study aims at assessing the self-directed learning readiness of our entry level students in order to determine their status of learning when exposed to student centered approach. This will eventually help to design effective induction programmes for PBL and integrated curriculum.

METHODOLOGY

The study was conducted in all the three medical colleges situated in Faisalabad. These included Punjab Medical College (PMC-a public sector college with male and female students), University Medical College (UMC-a private college with only female students) and Independent Medical College (IMC-a private college with both male and female students). The students admitted in PMC coming through central admission process at Provincial level and the student score in premedical examination is usually around 82%(no marks for interview) and in other two colleges the admitted students have variable score in premedical examination (Interview scores are considered). Only first year medical students were included. Approval from ethical review committee was obtained. A well validated scale developed by Guglielmino was selected due to its high reliability and validity.[9] This scale has been used now for years and it has .94 reliability coefficient. Test-retest reliability coefficient has been reported as .82 and .79, in two different studies.[11] The scale consists of 58 questions for determining self-directed learning readiness. Responses are ranked on 5 point Likert scale

Responses

1 = Almost never true of me; I hardly ever feel this way.

2 = Not often true of me; I feel this way less than half the time.

3 = Sometimes true of me; I feel this way about half the time.

4 = Usually true of me; I feel this way more than half the time.

5 = Almost always true of me; there are very few times when I don't feel this way.

Table 1:

Maximum score on the scale is 290 and score is interpreted

SDLRS score	Readiness for self-directed learning
58-201	Below average
202-226	Average
227-290	High

Persons with high SDLRS scores usually prefer to determine their learning needs and plan and implement their own learning. This does not mean

that they will never choose to be in a structured learning situation. They may well choose traditional courses or workshops as a part of a learning plan. Persons with average SDLRS scores are more likely to be successful in more independent situations, but are not fully comfortable with handling the entire process of identifying their learning needs and planning and implementing the learning Persons with below average SDLRS scores usually prefer very structured learning options such as lecture and traditional classroom settings Permission for time and study was dully requested and received from the respective heads of departments of each college. The questionnaire was distributed in the class by researchers after briefing them about the study. The participation was voluntary. The completed questionnaires were collected after 30 minutes. In the questionnaire a part printed at the end was about demographic information of the participants. It contained fields for roll number, gender, urban/rural background, educational system (Metric and FSc or 'O' level and FSc or 'O' Level and 'A' level). All the students belonging to first year of the medical colleges in Faisalabad duly present in the class at the time of study were included as none of them declined to participate. The students were not required to show their identity on the form in order to maintain the confidentiality. The questionnaires with incomplete fields (even one field) were excluded from the study. Data were analyzed using statistical software SPSS for Windows (release15.0.0; SPSS Inc.). Total mean score was calculated as well as mean for each college. The score of each item was compared between the colleges.

RESULTS

Total number of participants was 307, which included 210/300(70%) from PMC, 58/100 (58%) from UMC and 39/50 (78%) from IMC. After the exclusion of incomplete questionnaires the number came down to 220 (average of48.8% of total class and 71.6% of the respondents). Out of these 74.5 % (n=164) were female and 25.5% (n=56) were male students. Urban background students were 88.1% (n=194) and rural as 11.9% (n=26). The students from traditional local educational system i.e. Metric and FSC consisted 96.3 %(n=212) and 3.7% (n=8) were from 'O' and 'A' level educational system. Analysis of the complete questionnaires revealed a total mean self-directed learning readiness (SDLR) score as of 203 (n=220). The score for PMC was 205 (n=150=50 % of the class), for UMC 208 (n=47=47% of the class) and 196 (n=27=54%% of the class). There was no statistical difference in the mean college scores. Nevertheless analysis showed statistical difference in 16 items when compared among colleges.

COMPARISON OF THOSE QUESTIONS WHICH ARE SIGNIFICANTLY DIFFERENT AMONG THREE INSTITUTES

Question # 9: (I don't work very well on my own.)

PMC & UMC are significantly different (p-value= 0.001)

IMC & UMC are significantly different (p-value= 0.038)

Question # 17: (There are so many things I want to learn that I wish there were more hours in a day)

PMC & IMC are significantly different (p-value= 0.004)

IMC & UMC are significantly different (p-value= 0.001)

Question # 18 :(If there is something, I have decided to learn, I can find time for it no matter how busy I am)

PMC & UMC are significantly different (p-value= 0.015)

Question # 23 :(I think libraries are boring places)

PMC & UMC are significantly different (p-value= 0.003)

Question # 24 :(The people I admire most are always learning new things)

PMC & IMC are significantly different (p-value= 0.005)

Question # 30 :(I have a lot of curiosity about things)

PMC & IMC are significantly different (p-value= 0.006)

IMC & UMC are significantly different (p-value= 0.017)

Question # 31(I'll be glad when I am finished learning)

PMC & IMC are significantly different (p-value= 0.032)

IMC & UMC are significantly different (p-value= 0.016)

Question # 32(I am not as interested in learning as some other people seem to be)

PMC & UMC are significantly different (p-value= 0.006)
Question # 39 :(I take problems as challenges not as stop signs)
PMC & UMC are significantly different (p-value= 0.012)
Question # 43(I enjoy discussing ideas)
PMC & IMC are significantly different (p-value= 0.034)
Question # 45 :(I have strong desire to learn new things)
PMC & IMC are significantly different (p-value= 0.015)
Question # 46 :(The more I learn, the more exciting the world becomes)
PMC & IMC are significantly different (p-value= 0.00001)
Question # 47 :(Learning is fun)
PMC & IMC are significantly different (p-value= 0.022)
Question # 49 :(I want to learn more so that I can keep growing as a person)
PMC & UMC are significantly different (p-value= 0.01)
IMC & PMC are significantly different (p-value= 0.022)
Question # 52 :(I will never be too old to learn new things)
PMC & UMC are significantly different (p-value= 0.033)
IMC & PMC are significantly different (p-value= 0.009)
Question # 53 :(Constant learning is bore)
PMC & UMC are significantly different (p-value= 0.011)

DISCUSSION

Our study reveals that mean Self-directed learning readiness score of our entry level medical students in medical colleges of Faisalabad i.e. 203 is lower than the national adult average score in USA which is 214.[12] It is placed at the starting point for "average" category, which, starts from score 202. Other studies in USA report even higher means for different groups. A meta-analysis shows mean score as 227.7[13], while, average for Entrepreneurs is 248.6[14] and female executives as 257.8.[15] In a study on students of occupational therapy pre-test mean score was 223.58.[16] However, a study in Open University of Hong Kong pre-test mean score of students enrolled in business course was 199.3.[17] In an Indonesian study Darmayanti found a mean score for 391Indonesian Open University students of 215.5.[18] All these mean scores are higher than our result except one in Hong Kong. There is no significant difference among students of under study colleges for 42 out of 58 items on the scale showing almost homogenous level among three colleges. Nevertheless, 16 items have statistically significant difference, considering comparison in individual items of the scale. If we look at broad categories of the scale these are eight in number listed as follows:

a) Openness to learning opportunities
b) Self-concept as an effective learner
c) Initiative and independence in learning
d) Informed acceptance of responsibility for one's own learning
e) Love of learning
f) Creativity
g) Positive orientation to the future
h) Ability to use basic study and problem solving skills

A total number of 5 out of 16 belong to Category D, which, is about responsibility of own learning. In this Category University medical college differs in score with other two colleges and gender difference can be a possible explanation as UMC has only female students. Second category with 4 statistically different items is about "love for learning" being Category D. This contains marked difference between PMC and IMC which may relate to the premedical exam score as high scorers in premedical examination are admitted in PMC. Remaining statistically different items are each from different category. The readiness can be enhanced by training to a large level. Exemplary elementary principals project in Florida, USA was an initiative with special emphasis on measures enhancing SDLR. After the course, the study showed a mean of 267.8 which is extraordinary but proves the concept that SDLR can be enhanced to a high level. [19] Some other scales for measuring SDLR have been developed and used in some of the studies. These include Oddi's 24-item Continuing Learning Inventory (OCLI) [20] and Fisher's scale originally developed for Nurses and validated later on in Medical Students.[21] Some questions have been raised in the result of a study by Delahaye and Smith about the Guglielmino

scale for use under the age of 20, but, this finding was not confirmed by other studies. In the absence of data against the scale it is dependable to be used for assessment of SDLR. There are obvious limitations in our study as regards generalizing the results. The study was conducted in one city and data are to be collected from other parts of the province as well as other provinces of Pakistan for more authenticity. There is very little representation of 'O' level and 'A' level background students. The students had already spent four months in Medical Colleges therefore the result may not reflect the true status of just graduated students from pre-medical group and factor can be corrected by conduction of study on students just admitted in Medical Colleges.

DECLARATION OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

CONCLUSION

The mean self directed readiness score of Our entry level medical students is less than optimum thus requiring introductory instructions and training to enhance their readiness for self-direction, which, is on one side a necessary skill to gain more from student centered curriculum with PBL as instructional strategy and on other side for life-long learning to become a competent physician. More studies are required in other medical colleges to determine level of readiness of their students for evaluating need assessment of the students in their context. An exploration of pre-medical education to identify the factors responsible for this status will help us formulate the recommendations for our educational system for adopting strategies to enhance SDLR before admission to higher education.

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AUTHORS

- **Dr. Musarrat ul Hasnain**
  Director, Department of Medical Education
  Punjab Medical College, Faisalabad
- **Dr. Tanzila Khalid**
  Assistant Professor Dermatology
  University Medical and Dental College, Faisalabad
- **Dr. Abid Bashir**
  Associate Professor, Surgery
  Independent Medical College, Faisalabad
- **Prof. Dr. Tasneem Ahmad Cheema**
  Professor of Physiology,
  Punjab Medical College, Faisalabad
- **Dr. Anila Umber**
  Assistant Professor Gynaecology and Obstetrics,
  University Medical and Dental College, Faisalabad