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CONTENTS

Aspiring for Excellence in Health Professions Education (HPE)

Rehan Ahmed Khan

The question is, why should we aspire for excellence in HPE? Are the current standards of medical education not par excellence? What is excellence in medical education? To understand this, we need to understand the historical narrative of health professions education.

Flexner presented a report in 1905 which brought a major change in the delivery of medical education.[1] Before Flexner, teaching and learning were decentralized. Learning was based on apprenticeship. Flexner report brought the centralized system of teaching in universities and hospitals. It promoted a system which was teacher centred, emphasized factual knowledge, autonomy of the disciplines and hospital based teaching. This approach was challenged, when medical educationists presented new theories and strategies of learning. Benjamin Bloom presented the taxonomy of cognition[2] and attitude and Dave[3] gave the taxonomy of psychomotor skills. In early 1986 Harden published the SPICES model of learning strategy[4] which was in total contrast to the teacher oriented strategy. In the 80's, Burrows presented the idea of problem based learning.Newer teaching methods, assessment tools and instruments have since been devised. Newer curricula have emerged. Problem based learning, competency based curriculum, OSCE, OSLER, OSTE, miniCEx , DOPS, CBL, CBD; the list is very exhaustive.

There is a tremendous change occurring in medical education globally. Geographic distribution of many diseases is changing. There have been dramatic shifts in the health care delivery and healthcare professionals are more accountable now.[5] The effects of this global change are evident in the national scenario as well. There is a need to produce health professionals that provide better care to patients.This has led to rapid increase in the educational institutions for health professionals, and hence for the curricular changes and adoption of newer teaching learning methodologies to equip the graduates with desirable outcomes.

Medical education is an on-going process which must adapt to the profession's changing dynamics with respect to technology, patient needs, and service-delivery. To produce medical graduates that provide excellent health care, we need defined standards of excellence in delivery of medical education to these professionals. This needs change in curriculum, in assessment methodology and requires intensive faculty development. Implementing these changes is an uphill task. Change management is a science. In case of health professionals, it requires changing the mind-set and training them in these new methods and techniques. In the good old days, a doctor would get a basic degree in his profession and could join academia on these grounds. He would then, with passage of time, learn the art of teaching and assessment. But in this era and age, this seems difficult without formal training in the art of teaching. This need was recognized long ago, when in formal education, a graduate had to have a licence to teach, that is to obtain a degree in teaching which could be a certificate, diploma or master in education. But in health professions, this need was recognized a little late. The first medical education department was set up in Chicago Illinois in 1950's. Till 1997, only 7 MHPE registered programs were delivering masters in medical education. This number went up to 76 in 2012.[6] According to the data available on FAIMER's website, the number has reached up to 113.[7] In addition to that, 24doctoral programs are now offering PhD in medical education.[8] This is leading to the concept of Professionalization of Health professions education defined as the process of giving a professional character, identity, or status to HPE as a profession. It involves establishing a suitable and accreditable qualification, satisfying both

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national and international needs of medical education.[9]

It is very important to understand how the change was brought in Flexner's time. Teaching and training were based on apprenticeship system before Flexner. The system was not centralized and there were no uniform standards, to give a doctor the license to treat a patient. This change took few decades to be fully implemented. It was difficult for the apprenticeship system to be completely abolished. Now, when we are moving away from the traditional system to integrated system, with learning and assessment methods more suitable for student centred learning, the history is repeating itself. Medical education is a continuing process. Curriculum is a race track by definition, which needs to be revisited regularly. To achieve excellence we have to move forward and accept the change.

Pakistan has also seen the impact of this global change. Before 2009, there were only few medical schools, who were delivering their curricula according to the global demands and changing international accrediting standards. However as a test run, PMDC awarded the responsibility of designing and implementing an integrated curriculum according to the changing needs of medical education. Islamic international medical college stands out in this respect to be one of the few medical schools to develop MBBS curriculum which it has successfully implemented. The process needs to be understood nationally. It has been discussed in numerous meetings and conferences of medical education that after 2021 medical schools will be accredited based on delivering medical education according to the newer philosophies and demands of the professions which target excellence.

Till not very late, only CPSP (College of Physicians and Surgeons) was awarding a diploma in HPE. Now there are 07 programs in Pakistan which are delivering masters in HPE. The change is written very clearly on the wall. We have to move from traditional to integrated curriculum with the newer learning strategies and assessment tools across the national front. The clock is ticking fast. The world accrediting bodies are aiming at excellence in medical education.WFME, FAIMER and ASPIRE are setting the standards globally. We need to realize this and adapt to the new system in time.

In the beginning of the article we asked, what was excellence? Excellence is defined as "the quality of being outstanding or extremely good."Excellence in medical education aims at producing best health professionals, so excellent health care is provided to the patients and eyes are no more set on standards of minimal acceptable quality.[10] In essence, we have to realize that we cannot provide our patients the best healthcare, if we don't aspire for excellence in medical education.

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ORIGINAL ARTICLE

Ideal Mentor- Perceptions of Faculty and Students

Shamsunnisa Sadia, Rehan Ahmed Khan, Raazia Rauf, Asma Shaheen, Fareesa Waqar

ABSTRACT

Background: Mentoring implies a 2-way relationship between the mentor and the mentee. A successful partnership can lead to the professional development of both individuals. Although the significance of mentoring programs has been realized in the developing countries, its role in the holistic development of our students is still not given its due importance. There are important questions to be answered; who should be a mentor? What are the qualities students look for in an ideal mentor? These gaps in research are especially significant in our part of the world, where robust mentoring systems have yet to be established.

Objective: To compare the perceptions of our faculty and students regarding the qualities of an ideal mentor as measured by Ideal Mentor Scale (IMS).

Study Design: Cross-sectional study.

Place and Duration of Study: At Pakistan Railway Hospital, Rawalpindi, Pakistan during July 2013 to August 2013.

Materials and Methods: Seventy participants (faculty members:26, students:44) participated in the survey using the "Ideal Mentor Scale" (Gail Rose, The University of Iowa, 1999) to identify the relative importance of integrity, guidance and relationship in a potential mentor using a 5-point rating scale.

Results: Integrity (average sum of means: 58) was considered to be the most important attribute of an ideal mentor followed by guidance (40) and relationship (35) by all the participants (undergraduate: postgraduate: faculty member). However, in the scale of relationship the undergraduate students gave higher score than the postgraduates and faculty members (3.8: 3.5: 3.3).

Conclusion: Successful mentoring most importantly requires a mentor who can be emulated as a role model due to his/her principled behavior and integrity.

Keywords: *Mentoring, mentor, mentee, ideal mentor scale.*

Introduction

Mentoring is a core component of the duties of medical school faculty to facilitate successful fulfillment of the academic mission.[1] It is the process whereby an experienced, highly regarded, empathic person (the mentor) guides another individual (the mentee) in the development and re-examination of his or her own ideas, learning and personal as well as professional development.[2] The mentor, who often, but not necessarily works in the same organization or field as the mentee, achieves this by listening or talking in confidence to the mentee.[3]

Mentoring is to support and encourage people to manage their own learning in order that they may maximize their potential, develop their skills, improve their performance and become the person they want to be.[4] This is a two way process. A successful partnership can lead to the professional development of both individuals. Mentors could feel professionally stimulated and perhaps rejuvenated with a feeling that they are giving back to their

professions.[3] Mentees by feeling supported are able to orient themselves faster to the organizational structure, goals and policies and develop confidence in navigating the maze and politics of a medical organization. Mentorship is reported to have an important influence on personal development, career guidance, career choice and research productivity including publication and grant success.[1]

Two main types of mentoring are recognized. Informal mentoring is a voluntary mentorship program in which mentor[5] is selected by mentee while formal mentoring[6] is assigned relationship, associated with organizational program designed to promote mentee's development. The mentor's role is pivotal in this process.

Studies have identified the important qualities of outstanding mentors as described by their mentees' letters of nomination for a prestigious lifetime achievement award in mentorship.[7] The physician-researcher as mentor has at least seven roles to fill: teacher, sponsor, advisor, agent, role model, coach, and confidante.[8]

Although the significance of mentoring programs has been realized in the developing countries, its role in the holistic development of students is still not given

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its due importance.

The newly introduced system of group mentoring in our institute is integral to the induction and supported development of students. Mentors are selected from the institute's faculty who adopt non directive styles concerned with personal and professional change through reflection on experience maintaining a balance of formal and informal arrangements. But there are important questions to be answered; who this person should be? What are the characteristics students look for in a person who they can nominate as their mentor? And do the perceptions of faculty and students regarding an ideal mentor match in our institute?

This study was conducted with the aim to compare the perceptions of our faculty and students regarding the qualities of an ideal mentor as measured by Ideal Mentor Scale (IMS).

Materials and Methods

This cross sectional study using "the Ideal Mentor Scale" (Gail Rose, The University of Iowa, 1999)[9] was carried out at Pakistan Railway Hospital, Rawalpindi, Pakistan from July 2013 to August 2013. Approximately 130 questionnaires were distributed and 70 were completed. Out of these 70 participants, 26 were faculty members, 27 postgraduate and 17 undergraduate students.

IMS is a measure designed to help students identify the relative importance of qualities they as individuals most value in a potential mentor. It has 34 structured close ended items generated and refined using the empirical and theoretical literature on mentoring. However in our study the term 'research problem' in the questionnaire was replaced by 'course work.'

The items measured 3 broad attributes or scales of a mentor namely; integrity, guidance and relationship. All items were scored on a 5-point rating scale ranging from 1 (not at all important), 3 (moderately important) to 5 (extremely important). Fourteen items referred to the attribute of integrity while 10 each to guidance and relationship.

Integrity indicates a mentor who exhibits virtue and principled action and can be emulated as a role model. Guidance indicates helpfulness with assignments and learning. Finally, relationship involves addressing personal issues.

To calculate the score for each scale or attribute, the scores for each item on that particular scale were added together and the count thus acquired was divided by the number of items referring to that scale. Score regarding the attribute of integrity was considered low if it was in the range of 14-28, average: 29-42 or high: 43-80. Similarly for the attributes of guidance & relationship scores were labeled as low: 10-20, average: 21-30 or high: 31-50, respectively.

Data was analyzed using SPSS v.17 statistical package (SPSS Inc., Chicago, IL).

Results

All the participants in our study including the faculty, postgraduate and undergraduate students, regarded integrity (average sum of means: 58) as the most important attribute of a mentor followed by guidance (average sum of means: 40) and then personal relationship (average sum of means: 35) (Table: I)

Table I: Sum of means of items Measuring an Attribute

Attribute	Faculty (FM) (26)	Post graduate (PG) (27)	Undergraduate (UG) (17)
Integrity (14)	58.04	57.52	59.29
Guidance (10)	40.23	38.52	40.29
Relationship (10)	33.27	34.96	37.82

Although the three groups gave equal relative importance to the three attributes, the undergraduates gave relatively higher score (3.78 vs 3.3 & 3.5) among the 3 groups in the scale of relationship (Figure 1).
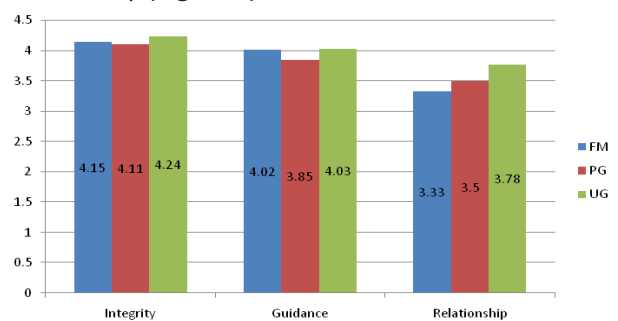

Fig 1: Relative importance of attributes

In the scale of integrity, item 5 referring to the 'preference to cooperate with others than compete with them' was regarded as the most important attribute of a mentor by the faculty members as against the postgraduates who considered this

to be the least important attribute (Table II).

Table II: Integrity items with highest and lowest scores in the three groups

	Item	Score	Importance
FM	5:prefer to cooperate with others than compete with them	4.42	High
	19:advocate for my needs & interests	3.65	Low
PG	10: be calm & collected in times of stress	4.48	High
	3:give proper credit to students	3.96	Low
	5:prefer to cooperate with others than compete with them	3.96	Low
UG	3: give proper credit to students	4.65	High
	21: generally try to be thoughtful & considerate	3.53	Low

As evident from Table: III and IV, the faculty and students generally gave the highest and lowest scores to the same items in the scale of guidance and relationship.

Table III: Guidance items with highest and lowest scores in the three groups

	Item	Score	Importance
FM	34: be generous with time & resources	4.23	High
	27:meet on a regular basis	3.81	Low
PG	34: be generous with time & resources	4.33	High
	2: give specific assignments related to course work	3.48	Low
UG	9: brainstorm solutions to a problem concerning course work	4.47	High
	2:give specific assignments related to course work	3.59	Low
	27:meet on a regular basis	3.59	Low

Table IV: Relationship items with highest and lowest scores in the three groups

	Item	Score	Importance
FM	22:cheerful, high-spirited person 30:help me to realize my life vision 20:talk to me about his/her personal problems-low	3.92	High
PG	22:be a cheerful, high-spirited person	4.22	High
	20:talk to me about his/her personal problems	2.37	Low
UG	22:be a cheerful, high-spirited person	4.53	High
	20:talk to me about his/her personal problems	3.06	Low

Discussion

Scholars have demonstrated that one of the most important factors that students use to ascertain the quality of their educational experience is their relationship with faculty.[10] Without a doubt, research on faculty-graduate student relationship has provided extremely valuable insights about effective practices that foster the success of students.[11] Research indicates strong agreement among candidates that the ideal mentor would exhibit attributes such as being experienced in their discipline, intellectual curiosity, effective communication, belief in student's capabilities and honest feedback. While these attributes are central to an ideal mentoring relationship, often such relationships can encompass a wider variety of functions. Furthermore, there are individual differences among candidates with respect to the type of mentoring functions they prefer. The Ideal

Mentor Scale helps students identify the relative importance of several mentor functions and characteristics.

High scores in the scale of integrity indicate a preference for a mentoring style characterized by respectfulness for self and others and empowerment of protégés to make deliberate, conscious choices about their lives.

High scores in the scale of guidance indicate a preference for a mentoring style characterized by helpfulness with the tasks and activities typical of graduate and postgraduate study.

High scores in the scale of relationship indicate a preference for a mentoring style characterized by the formation of a personal relationship involving sharing such things as personal concerns, social activities, and life vision or world view.

Mentoring is very complex.[12] It varies from one situation to another. It is interpreted in different ways by different people.[13] Studies have indicated that medical students characterize mentoring in terms of the interpersonal dynamics of the relationship emphasizing personal connectivity and advocacy.[14] In the same line, a review endorses that successful mentoring requires commitment and interpersonal skills not only of the mentor but also the mentee.[15] Though, relationship was significantly related to student satisfaction with their mentor in literature, in our study not only students but faculty as well considered relationship to be the least important of the three attributes in a mentee-mentor interaction.

A recent study in North America found that successful mentoring relationships were characterized by reciprocity, mutual respect, clear expectations, personal connection, and shared values. In the same study, failed mentoring relationships were characterized by poor communication, lack of commitment, personality differences, perceived (or real) competition, conflicts of interest, and the mentor's lack of experience.[16] However, though the faculty members in our survey gave the highest importance to the attribute of 'preference to cooperate with others than compete with them', the undergraduates did not which indicate differing mentoring needs at various stages of professional life. Other studies also recognize the changing need for precepting and

mentoring with time.[17]

Among the three attributes of an ideal mentor explored by IMS in our study, all the three groups considered relationship to be the least importance. However, within the scale of relationship undergraduate students rated relationship higher than postgraduates and faculty members. This is supported by other studies as well.[18] Evidence confirms that the relative effect of mentoring on the mentor and protégé outcomes differs by the types of mentoring functions.[19]

Development of criteria for choosing a mentor should be done in the light of the perceptions of medical students along with that of the faculty as this knowledge will foster more meaningful discussion and assist in developing mentoring programs in our part of the world.

Conclusion

Successful mentoring most importantly requires a mentor who can be emulated as a role model due to his/her principled behavior and integrity.

The mentor's commitment to guide the mentee through the maze of academic challenges of a medical organization is more important than his/her interpersonal skills.

Faculty and students have similar perceptions regarding the relative importance of integrity, guidance and relationship in an ideal mentor.

Educating and empowering students along with faculty education regarding students' needs may improve mentoring.

Acknowledgement

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ORIGINAL ARTICLE
Patients' Attitude towards Medical Students in a Teaching Hospital of Pakistan

Muhammad Nadim Akbar Khan, Noor Mah Khan, Saadia Sultana

ABSTRACT

Objective: To study patient's attitude towards medical students on clinical clerkship rotation in a hospital

Study Design: Descriptive Cross Sectional Study.

Place and Duration of Study: Medical, Surgery and Gynae/Obs Departments of Pakistan Railway Teaching Hospital, Rawalpindi from March 30, to May 30, 2013.

Materials and Methods: Two hundred and seventy five patients were included in the study through non probability purposive convenient sampling. A questionnaire was prepared to interview the patients participating in the study. Data collected was entered into Statistical Package for Social Sciences (SPSS Version 17). Descriptive statistics were applied for all the variables to present the frequencies and percentages.

Results: For history taking, a larger preference was shown by the patients to the students' involvement irrespective of the gender; 55% patients recommended the presence of both male and female students, 50% patients were willing to allow medical students of either gender to take their medical history in the doctor's presence and 43% patients were willing to permit without a doctor's supervision. For medical examination by the medical students, patients were more inclined to the presence of a doctor but much more patients became gender conscious. 36% preferred the presence of both male and female students, 31% patients were willing to allow medical students of either gender in the doctor's presence and only 22% to permit medical students to carry out their examination without a doctor's supervision. Patients' preference to students' involvement while a medical procedure is carried out on them, in general, around 50% of the patients were reluctant; 48% patients would not allow medical students to be present as observers, 57% were reluctant to allow the students to carry out a procedure on them in the presence of a doctor and 68% patients were unwilling to let medical students to carry out a procedure on them in the absence of doctors.

For gender conscious patients, a significantly larger preference was shown towards female students over male in all the three situations.

Conclusion: It is concluded that the attitude of patients' towards the involvement of medical students in their clinical health care is related to the extent of students' involvement, the presence of a doctor(s) and the gender of the students and the patients.

Key Words: *Attitude, Students, Clinical clerkship rotation, History taking, Medical examination.*

Introduction

Clinical education of medical students is a vital part of their medical training. Therefore, it is essential for them to undergo bedside teaching and experience handling of patients, be it first hand or through witnessing the doctors' demonstrations. Such a teaching is done by enabling the students to undergo clinical rotations in the hospitals. These rotations provide a context-based learning environment that enables medical students to obtain not only optimum clinical skills but also the fundamental, decision making power, crisis handling techniques, communication skills and ability to overcome socio-ethical challenges. All these characteristics are

essential to establish the foundations of a functioning patient-doctor comradeship, thus, further highlighting the vitality of clinical teaching.[1,2,3] However, cooperation and accommodating behavior of the patients is as imperative to this relationship as the teaching itself. It is often observed that when large numbers of students visit the patients frequently, the patients may feel that their privacy is being compromised. This may lead to the patients' resentment, hence arising non cooperative attitudes from them. Such a situation can badly hinder the medical students' bedside teaching.[4] Moreover, since the patients are becoming increasingly aware of their basic rights, in case they do not approve the involvement of medical students, they may exercise their freedom to object to the presence of medical students altogether, be it during history taking, examination or procedure demonstrations on them by the students themselves or by the doctors. Such situation leads us to the ever present dilemma of

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choosing between the patients` rightful comfort and optimum clinical training of medical students.[5]

An early study conducted in 1974 concluded two fifth of the patients as unwilling "to discuss their personal and family problems in the presence of medical students."[6] However, with the passage of time, a decline was observed in the patients' reservation to medical students because, according to subsequent studies, the patients developed a cooperative behavior towards the students. They were also keen on contributing their part in the clinical education of medical students by willingly participating as 'study subjects'. According to the aforementioned studies, this accommodating response of the patients is due to their acceptance and open mindedness to the fact that the students' clinical education was greatly dependant on their encounter with patients in teaching hospitals.[7,8,9,10] A similar observation was obtained from conducting such studies in the Middle East. In spite of the conservative religious, cultural and social atmosphere in Arab, the patients were greatly willing to allow the presence and participation of students in their medical care.[11,12,13] However, till now, no such study has been conducted in our part of the world to assess the patients' perception and understanding of medical students, hence, our study being the first one.

The following study was designed with the objective to study the patients' attitude towards medical students who come for clinical clerkship rotation. The obtained results will assist us to formulate guidelines and protocols for the interaction of medical students with the patients and the development and implementation of undergraduate curriculum with prime clinical training components while also upholding patients' rights and requirements.

Materials and Methods

A descriptive, cross-sectional quantitative study was carried out over a period of three months from March 01 to May 30, 2013 in Pakistan Railway Teaching Hospital, Rawalpindi, where 5th Year MBBS students of Islamic International Medical College attend clinical clerkship rotation at different departments. Two hundred and seventy five patients were included in the study. Non-probability convenient sampling technique was adapted for the collection of data to include the indoor as well as outdoor patients of Medical, Surgical and Gynae/Obs Departments of Pakistan Railway Teaching Hospital. Patients from the Pediatric Department were not included due to the high probability of biased answers since most of the parents would interview on behalf of the child patients, who would, more often than not, have a negative reaction towards students' involvement in their child's treatment.

Data Collection Procedure

A questionnaire was prepared in English for the purpose of collecting the data. Later on it was translated into Urdu. It comprised of 15 questions, the subject matter of which was divided between the patients' socio-demographic details and the patients' response towards the involvement of medical students in three different situations; medical history taking, examination and carrying out procedure(s) on the patients. Three different scenarios were highlighted for each of these situations, students involved as observer, actively participating in the presence and absence of doctors. Gender preferences by the patients were also taken under consideration. The questioner was piloted for its reliability and validity by getting the response of 15 patients.

The purpose of the study was explained to the patients and those not willing to participate were not required to do so. For assurance purposes each willing patient was asked to document their agreement to participate in the study. Medical officers and post graduate trainees were assigned the responsibility of getting the questionnaires filled from the patients in their respective departments. They were thoroughly explained the objective of this research beforehand and were instructed to explain the purpose of this research in detail to the patients as well, answering any queries, questions or reservations that the patients had before starting the interview. The research protocol was submitted to the Institutional Review Committee of Islamic International Medical College, Riphah International University, Islamabad, for its approval.

The collected data was entered into Statistical Package for Social Sciences (SPSS version 17.0).Descriptive statistics were applied to all the variables to quantitatively represent the obtained results in the form of frequencies as well as

percentages of the total sample space.

Results

Table-I summarizes the socio-demographic characteristics of the patients partaking in the study. It reached a total of 275 five patients, out of which 36% were from the Gynae /Obs, 36% from the Surgery Department and 28% belonged to the Medical Department. The average age of a questioned patient was calculated to be 39.78 years, with a range of 13 to 87 years. Seventy percent patients constituted females while only 30% were males. According to the patients' literacy data obtained, 31% of them were completely uneducated, 52% had studied up to 10th grade, only 12% possessed a graduate degree and none of them had a postgraduate level of education. Marital status findings showed that majority of them were married or widow (80%), and only 20% were unmarried. According to the employment status information, most of the patients, that is, 71% were unemployed or, in case of females, house wives. Most of the patients belonged to poor socioeconomic class with monthly income of less than 20000 PKR/month.

The patients' response to medical student involvement was divided into three situations; medical history, examination and carrying out procedure(s) on the patients. Three different scenarios were highlighted for each of these situations, students involved as observer when the doctors are active, students also actively participating in the presence of doctors and finally, students actively participating in the absence of doctors. Gender preferences by the patients were also taken under consideration.

According to the results collected for the patients' preferences to student's involvement during history taking, in general, an over 50% acceptance was observed. A larger preference although by a small margin was shown to the students' involvement during the presence of doctors, irrespective of the gender. When asked whether they were willing to allow medical students to be present as observers while the doctor takes their medical history, 55% patients recommended the presence of both male and female students, while 50% patients were willing to allow medical students of either gender to take their medical history in the doctor's presence. On the other hand, 43% patients were willing to permit medical students to take their medical history without a doctor's supervision. For gender conscious female patients, a significantly larger preference was shown towards female students over male with a preference ratio of roughly fourteen female over one male student. Patients' acceptance to the presence of students as mere observes for either male students or female students only, were 3% and 34% respectively. Only 2% of the patients were willing to allow only male students to take their history in the presence of a doctor while 32% allowed only female students. Only 1% patients would allow male students to take their history without a doctor's supervision while 26% patients would allow female students. (Table II)

Similarly, according to the results collected for the patients' preferences to students' involvement during the patient's examination in the hospital, in general, an over 50% acceptance was observed. Again, the patients were more inclined towards the students' involvement during the presence of a doctor. When asked whether they were willing to allow medical students to be present as observers while the doctor carries out the examination, 36% patients preferred the presence of both male and female students. Thirty one percent patients were willing to allow medical students of either gender to examine them in the doctor's presence. On the other hand, only 22% patients were willing to permit medical students to carry out their examination without a doctor's supervision. For gender conscious patients, a significantly larger preference was shown towards female students over male with a preference ratio of roughly forty females over one male student, a much larger difference than the one observed for history taking. Patients' acceptance to the presence of students as mere observes for either male students or female students only, were 3% and 48% respectively. Only 1% of the patients were willing to allow only male students to examine them in the presence of a doctor while 43% allowed only female students. Only 1% patients would allow male students to examine them without a doctor's supervision while 40% patients would allow female students. Another interesting point to be observed for these results is the fact that during examination, much more patients become gender conscious. While the general acceptability of patients to

medical students' involvement, irrespective of the gender, revolves around 30%, overall 40% patients prefer the students to be exclusively females. (Table III). On the other hand, according to the results collected for the patients' preferences to students' involvement while a medical procedure is carried out on them, in general, around 50% of the patients were reluctant. Forty eight percent patients would not allow medical students to be present as observers while a doctor carries out a medical procedure on them. Fifty seven percent were reluctant to allow the students to carry out a procedure on them in the presence of a doctor. Sixty eight percent patients were unwilling to let medical students to carry out a procedure on them in the absence of doctors. For the patients acceptable to the involvement of medical students, once again, a preference was shown to the presence of a doctor. When asked whether they were willing to allow medical students to be present as observers while the doctor carries out the procedure, 28% patients preferred the presence of both male and female students. Twenty three percent patients were willing to allow medical students of either gender to carry out a procedure on them in the doctor's presence. On the other hand, only 18% patients were willing to permit medical students to carry out the procedure without a doctor's supervision. For gender conscious patients, again, a significantly larger preference was shown towards female students over male. Patients' acceptance to the presence of students as mere observes for either male students or female students only, were 1% and 24% respectively. Only 1% of the patients were willing to allow only male students to carry out a procedure on them in the presence of a doctor while 19% allowed only female students. Only 1% patients would allow male students to handle the procedure without a doctor's supervision while 13% patients would allow female students. (Table IV)

Discussion

In our study an interesting variance was observed in the patients' preferences towards student involvement in clinical health care for different situations and scenarios.

For the patients' preferences to students' involvement during history taking, more willing responses than unwilling could be due to the fact that history taking is a verbal business, with

minimum to none physical aspect involved. Some internationally conducted studies and the study conducted by Sayed-Hasan RM et. al., also deducted a similar conclusion, with "minimal direct contact" being a key cause of high acceptability.[4,14,15] A larger preference however, although by a narrow margin, was shown towards the students' involvement during the presence of doctors. This may be due to the patient's perspective of medical students as to lacking in professionalism or experience to alone perform the task. Some may even feel that the entire situation is altogether irrelevant since the student will not be the one treating them, hence the need of the doctor's presence. Lastly, the reluctance may have formed on the basis of the patient's concern that the student might not take them seriously or perform the task with as vigilance and required accuracy as needed, unless they do so in the presence of their clinical instructors—the doctors. Similar reasoning was deducted by other studies.[4, 14, 15,16]

For the patients unwilling to allow the involvement of medical students in even in the presence of the doctors, may feel so due to the relation of their problem to some sensitive or personal aspects, especially the patients with problems regarding

Table I: Demographic Data of Patients Interviewed in Different Departments of Hospital (N=275)

Characteristic	Frequency	Percent
Ward		
Gyna/Obse	99	36
Medicine	78	28
Surgery	98	36
Age(Years)		
Mean Age	39.78	-
Range	13 - 87	-
Gender		
Male	85	30
Female	190	70
Education level		
Un-educated	84	31
Primary/Middle	102	37
Matriculate	56	20
Graduate	33	12
Post graduate	Nil	00
Marital Status		
Married	203	74
Unmarried	56	20
Widow	16	06
Monthly income in PKR		
<10,000	117	42
10,000 _ 20,000	139	51
>30,000	19	07
Employed/Business	82	29
Unemployed/House wife	195	71

Table II: Patients` response towards medical students during medical history taking (N= 275)

Question No.1: Are you willing to allow medical students to be present while doctor takes your medical history?		
Patients` Response	Frequency	Percentage
Male Students Only	8(3%)	3
Female Students Only	94(34%)	34
Both Male & Female Students	151(55%)	55
Neither male nor female students	22(8%)	8
Question No. 2: Are you willing to permit medical students to take your medical history in the presence of doctor?		
Male Students Only	6(2%)	2
Female Students Only	88(32%)	32
Both Male & Female Students	137(50%)	50
Neither male nor female students	44(16%)	16
Question No. 3: Are you willing to permit medical students to take your medical history in the absence of doctor?		
Male Students Only	3(1%)	1
Female Students Only	72(26%)	26
Both Male & Female Students	118(43%)	43
Neither male nor female students	82(30%)	30

Table IV: Patients` response towards medical students during medical procedure carried out on them in the ward (N= 275)

Question No. 1: Are you willing to allow medical students to be present while doctor carries out any procedure on you?		
Student`s Response	Frequency	Percent
Male Students Only	2(1%)	1
Female Students Only	66(24%)	24
Both Male & Female Students	77(28%)	28
Neither male nor female students	130(48%)	47
Question No.2: Are you willing to allow medical students to carry out any procedure on you in the presence of doctor?		
Male Students Only	2(1%)	1
Female Students Only	52(19%)	19
Both Male & Female Students	63(23%)	23
Neither male nor female students	158(57%)	57
Question No.3: Are you willing to allow medical students to carry out any procedure on you in the absence of doctor?		
Male Students Only	2(1%)	1
Female Students Only	36(13%)	13
Both Male & Female Students	50(18%)	18
Neither male nor female students	187(68%)	68

Table III: Patients` response towards medical students during examination in the ward (N= 275)

Question No. 1: Are you willing to allow the medical students while the doctor examines you?		
Patients` response	Frequency	Percent
Male Students Only	9(3%)	3
Female Students Only	131(48%)	48
Both Male & Female Students	99(36%)	36
Neither male nor female students	36(13%)	13
Question No. 2: Are you willing to allow medical students to examine you in the presence of doctor? (N= 275)		
Male Students Only	4(1%)	1
Female Students Only	119(43%)	43
Both Male & Female Students	85(31%)	31
Neither Male nor Female Students	67(24%)	24
Question No. 3: Are you willing to allow medical students to examine you in the absence of doctor? (N= 275)		
Male Students Only	3(1%)	1
Female Students Only	109(40%)	40
Both Male & Female Students	60(22%)	22
Neither male nor female students	103(37%)	37

the presence of a doctor. This may be due to the fact that there may be less chances of damage or harm done by the students'—if they carry out the examination—while under proper experienced supervision. Again, for the patients unwilling to allow the students' involvement either as observers, or as the examiner even in the presence of doctors may be due to the discomfort and privacy issue, although this time the concern is not only verbal exposure, but also visual. This may also include the students' contact with the patient's body, which many, especially patients with examination of the sensitive regions of the body, may be uncomfortable with. Moreover, the patients may feel the lack of experience of the students as a sign of their incompetency as examiners, hence decreasing chances of the students carrying of a secure or successful examination of what the patient's problem may be. These findings are consistent with some previous studies.[18,19,20]

On the other hand, patients' preferences to students' involvement while a medical procedure is carried out on them, a significantly large reluctance was observed. This reaction is slightly expected since the patients would want the most experienced and immensely trained professional as the one carrying out the procedure or them. Therefore the patients may feel that the students' involvement while a procedure is carried out on them may not only hinder the proper execution of the procedure, but may also disrupt the desired goal of it.[18] They may also feel that the doctor may get more involved with the students' teaching than the procedure, which can prove to be

Obs/Gynae, hence making them uncomfortable to reveal their history in front of the students.[17]

Similarly, patients' preferences to students' involvement during the patient's examination in the hospital again a significantly larger acceptance was shown, although comparatively lesser than that observed for history taking. This may be due to the fact that now a physical aspect has been involved, and the patients may be concerned about the students' lack of experience as potentially harmful to them.[18] Additionally, it could also be due to their hesitance to allow physical contact with non-professional.[18] Again, the patients were more inclined towards the students' involvement during

harmful for the patients comparable to the finding of Price et al .[15] Another interesting observation made through the result is that in all situations and scenarios, for gender conscious patients, female students are the popular choice. A similar finding was also observed in the study by Sayed Hassan et al.[4] It should be noted, that, as was mentioned in the demographic results, 70% of the patients consisted of females. Therefore, the females may not be comfortable with the presence of males as they may find it embarrassing to discuss their personal, especially sensitive and private medical problems with male patients. Moreover, they may be increasingly uncomfortable, hence reluctant to expose their private body parts in front of the male students if the examination or procedure requires them to do so. Moreover, as a Muslim country, it is socially, culturally and religious unacceptable to most woman to interact with males, especially in reference to visual exposure of body or physical contact, which the male students' involvement in examination or procedure may demand. Therefore, they highly prefer that the students that they come across be female. Moreover, majority of the patients were unemployed. This may also negatively affects the open mindedness of the patients, hence encouraging their hesitance towards medical students' involvement in their clinical care. The reasons of those patients who were acceptable to the involvement of the students regardless of the doctors' presence and irrespective of the involved students' genders should also be highlighted upon. This generous acceptability may be due to the open mindedness of the educated portion of the patients. They may be excited over the prospect of assisting the doctors in clinical training. They may also feel that if the doctor involves his/her students more time, thought and effort will be spent over their diagnosis and treatments, hence producing better outcome for them. Similar reasoning was drawn by Sayed-Hassan et al that highlighted the same reasons from other studies including "desire to contribute to medical education, the extra time spent with the patient, and the opportunity to learn more about their medical problem".[4,10-12,14,17]

Conclusion

The attitude of patients' towards the involvement of medical students in their clinical health care is related to the extent of students' involvement, the presence of a doctor(s) and the gender of the students and the patients. Some additional yet not as dominant reasons may be the socio economic background of the patients. The more practical the work, the more reluctant the patients' are to the students' involvement.

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ORIGINAL ARTICLE

Vicarious learning during Simulations: is it more effective than hands-on training?

Fareesa Waqar, Shamsunnisa Sadia, Tabinda Khalid

ABSTRACT

Objective: This study aimed to investigate whether the type of simulation-based learning (learning by doing versus vicarious learning) and the order in which these activities are carried out (learning by doing → vicarious learning versus vicarious learning → learning by doing) have any effect on the acquisition of knowledge on effective doctor–patient communication strategies.

Study Design: A descriptive study.

Place and Duration of Study: At Obstetrics & Gynecology Department, Islamic International Medical College Trust, Railways Hospital, Rawalpindi from April 2013 to June2013.

Materials and Methods: The sample consisted of 33 undergraduate medical students of 3 batches (25 female, 8 male). They participated in two separate simulation sessions, each of which was 30 minutes long and was followed by a collaborative peer feedback phase.

Results: Vicarious learning led to greater knowledge of doctor–patient communication scores than learning by doing. The order in which vicarious learning was experienced had no influence. The inclusion of an observation script also enabled significantly greater learning in students to whom this script was given compared with students who were not supported in this way, but the presence of a feedback script had no effect.

Conclusion: Students appear to learn at least as much, if not more, about doctor–patient communication by observing their peers interact with SPs as they do from interacting with SPs themselves.

Key words: *vicarious learning, hands on training, communication skills.*

Introduction

Simulations with standardized patients (SPs) have been broadly used in medical education to facilitate communication skills training.[1] With respect to knowledge of doctor–patient interactions, such training is usually targeted at two main areas[2] process-centred knowledge e.g. communication during emergency situations, teamwork[3] and patient-centred knowledge e.g. history taking, breaking bad news, doctor–patient communication in the context of a physical examination.[4] Usually it is expected that knowledge acquisition in these areas occurs through learning by doing.[5] Learners apply their current knowledge to understand and act in a situation. If the activities lead to success, the probability of the application of the activated knowledge in future similar situations should be increased. If the resulting behavior leads to failure, modification of the activated knowledge may be a consequence.[6] Learners may be less likely to apply knowledge that led previously to failure in a similar situation or they may modify the applied knowledge itself. Learners, however, may also vicariously learn how to act in specific situations by observing other

learners.[7,8,9] Studies have shown that not only can physical skills that are overtly modeled be learned through observation, but so can interpersonal skills such as those required for collaboration.[10] One study, argue that vicarious learning through observation requires a process of active observing.[11] If vicarious learning is supported by instructional means that facilitate active observing, skills might be acquired similarly to those acquired in learning-by-doing contexts.[10] Similarly, in another study showed that observational learning could be supported through the provision of additional collaborative peer feedback.[12]

Materials and Methods

In a pre-post design, the order of simulation-based learning activities (learning by doing → vicarious learning versus vicarious learning → learning by doing) during a simulation of breaking bad news. A total of 33 medical students (25 female, 8 male) at Pakistan railway hospital, from April 2013 to June 2013; were randomly assigned to one of the 2 conditions. The learning sessions took place weekly during a whole clinical rotation (4 weeks). Each student had two learning sessions within 1 week of the rotation. The specific observation script and the feedback formulation script were varied randomly among weeks, but not within a single week. All students within a specific week had the same combination of scripts. All students were assigned

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randomly to a specific week. The students within each specific week were randomly assigned to a specific order of simulation-based learning activities. The study was approved by IRC.

This study investigated whether the type of simulation-based learning (learning by doing versus vicarious learning) and the order of these activities (learning by doing → vicarious learning versus vicarious learning → learning by doing) affect the acquisition of knowledge related to doctor–patient communication.

The encounter was formative after the simulation (i.e. history taking and counseling), the SP provided feedback. Four female doctors volunteered to act as SPs. Each SP worked for 2 hours, which included four simulation sessions.

In a briefing session, all SPs were instructed about the reasons why the patient was seeing her doctor (intrauterine fetal demise) and were given a checklist outlining the performance expected of students. Furthermore, details of the diagnostic findings were specified. The SPs received training with special focus on the role-play and on the provision of feedback to students.

Statistical analyses used a Ancova procedure, the estimated mean (EM) and standard error (SE) are reported instead of the mean and SD. The EM and SE were computed using a mean value of knowledge at t1 of 17.58. A p-value of < 0.05 was used in all statistical tests as indicative of statistical significance. Effect sizes are reported with partial η^2.

Results

Participants ranged in age between 21 years and 24 years (mean = 22.31 years, SD = 2.76). On average, students identified a mean of 6.58 (SD = 5.81) features at t1, 3.42 (SD = 7.37) features at t2 . The reliability of the knowledge test was sufficient (Cronbach's $\alpha > 0.7$ for each time-point). Simulated patients ranged in age between 20 years and 39 years (mean = 24.31 years, SD = 2.76). The examination coders demonstrated good agreement with one another (Cohen's κ = 0.93) regarding whether or not specific aspects of good communication were mentioned by individual learners. On average, students identified a mean of 17.58 (SD = 5.81) features at t1, 20.13 (SD = 7.37) features at t2 and 18.81 (SD = 10.07) features at t3. The reliability of the knowledge test was sufficient (Cronbach's $\alpha > 0.7$ for each time-point). To examine the effects of the order of simulation-based learning activities and collaboration scripts on knowledge acquisition, we compared knowledge at t3 and controlled for prior knowledge by using t1 scores as covariate. The covariate prior knowledge explained

7% of the variance in knowledge after the second learning session ($F_{1,192}$ = 14.81, $p < 0.001$, η^2 = 0.07).

Discussion

This study employed a collaborative learning scenario, namely scripted peer feedback, to increase the effectiveness of simulation-based learning with SPs. Its results regarding the type of simulation-based learning activity showed that vicarious learning (especially if supported by an observation script) was unexpectedly more effective than learning by doing. Whereas previous research[13] has shown that learning by doing is often superior (or at least equal) to vicarious learning, our results show that vicarious learning can even outperform learning by doing.[14]

The results of our study also provide[15] evidence that merely offering an opportunity for collaboration is often not enough to effectively facilitate knowledge acquisition through interaction (i.e. during the collaborative peer feedback phase). Learners in groups provided with the observation script acquired substantially more knowledge than learners in groups without the observation script. The observation script might enable learners to deeply elaborate the relevant aspects of the currently observed simulated session without the stress undergoing it. The more general conclusion therefore is that observers of complex simulations need to be supported with information regarding the aspects of performance on which they should focus.[16]

The larger effect of the observation script on the knowledge acquisition of observers compared with examining students might be partly explained by the fact that the observer was supported by the script during the observation and feedback phase, whereas the examiner could benefit from the script only during the peer feedback phase.

In conclusion, our study showed that simulation-based learning can be derived not only from learning by doing, but that learners can substantially benefit from observing others perform. Employing a collaborative learning scenario, namely peer feedback, clearly increases the efficiency of learning that occurs in simulations with SPs by using the simulation as a resource for vicarious learning. The benefits of learning together can be even greater when peer feedback is structured. Directing the observing learner's focus to crucial aspects of the activity of the observed peer seems more helpful than helping the peer by structuring the process through which more elaborate feedback is provided.[17]

Conclusion

Students appear to learn at least as much, if not more, about doctor–patient communication by observing their peers interact with SPs as they do from interacting with SPs themselves.

Ethical approval

This study was approved by the Riphah International University, Islamabad, Institutional Review Committee (FHMS/IRC/13/0021)

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ORIGINAL ARTICLE

Does PBL Make Medical Students Life long learners?

Khalid Farooq Danish, Rehan Ahmed Khan

ABSTRACT

Introduction: our medical school has switched from traditional to integrated modular spiral outcome based curriculum. Problem based learning has been introduced as one of the main teaching/learning strategies. One of the major benefits of PBL mentioned in the literature is to make student a lifelong learner. However it is not easy to assess that PBL imparts this basic feature of adult learning in students. PBL is used as learning strategy in the first 02 years of medical curriculum, so that the lifelong learning capability can be assessed in the last three years of medical school.

Objective: To determine the role of PBL in developing lifelong learning ability among medical students.

Study Design: A quantitative cross sectional co-relational study.

Place and Duration of Study: The study was conducted in Islamic International Medical College in April 2012.

Materials and Methods: Three hundred students from 3rd to final year MBBS were distributed Revised Jefferson scale of Physician Lifelong learning (JeffSPLL) at the start of the lecture. The questionnaire was collected at the end of the lecture.

Results: Data was collected from JeffSPLL inventory. This was entered into SPSS 18. Both non parametric and parametric analysis were done. Non parametric analysis included mean, median and mode of ages and gender of the participants.

Parametric analysis was based on Pearson Co relation analysis to find a relationship between the PBL and developing the capability of Lifelong learning.

Conclusion: Lifelong learning is multidimensional idea. Factors associated with lifelong learning include need recognition, undertaking research, self-motivation, practical abilities and personal motivations. The discussion will be based on the relationship between the development of lifelong learning skill and the process of Problem based learning. The process of PBL makes the students lifelong learners.

Keywords: *lifelong learners, Jefferson's scale, PBL.*

Introduction

The field of medical education has witnessed a galloping progress in last few decades.[1] Outcome based medical education and outcome based medical curricula evolved as a result of these progresses. One of the characteristics of these curricula is the explicitly stated outcomes of the education that they intend to achieve at the end of the instruction period. A commonly stated outcome is to make the learner an independent, self-directed and lifelong learner. It is quite pertinent that the learner becomes a lifelong learner as a result of instruction. This process makes him an independent problem solver, who is able to learn without instruction and improve his knowledge skills and attitudes that he has acquired through instruction. It appears that out of all the outcomes it is one of the most important ones to become a lifelong learner. The factual knowledge that he acquires during his stay in the medical school is very short lived as a

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consequence of the ever expanding field of knowledge. Similarly by the advent of new technologies his skills and use of medical technology in practice are likely to require continuous improvement with the passage of time. It is here that lifelong and independent learner ship can spell the difference between one and the other doctor.

Whereas many medical curricula state lifelong and independent learning as one of the intended outcomes of their instruction, they do not appear to possess a tangible and deliberate attempt to assess it through valid and reliable assessment tools.[2] It is important to assess whether, as a result of a given course of study, the learner has become an independent learner or not.

The present study is aimed at finding out the proportion of students of final year MBBS in a Pakistani medical college who show evidence of being an independent learner as assessed by JFPLL.

Materials and Methods

Pertinent questions from the standard Jefferson's scale for physician's lifelong learning proforma were selected and distributed among the students of 3rd through final year MBBS, at Islamic International Medical College. The questions selected were the ones which were pertinent to medical students of

undergraduate level. They were given time to respond and then the proformas were collected. A total of 300 respondents were selected to participate in the study. Three subscales for measurement of lifelong learning were selected namely motivation, scholarly activities, and attention to learning opportunities. Third, fourth and final year students were separately rated according to the subscales. The data was compiled and analyzed with SPSS.

Results

Revised Jefferson's scale for physicians' lifelong learning proforma was distributed among a total of 300 students of 3rd, 4th and final year MBBS students of Islamic International Medical College. A total of 218 students responded with a response rate of 72%. There were 62 male and 156 female students. The overall aptitude of medical students towards lifelong learning is shown in Table I.

Table I: Orientation towards lifelong learning in Medical Students

	High Aptitude	Average Aptitude	Low Aptitude
3rd year MBBS	85/92 (92%)	7/92 (8%)	0/92
4th year MBBS	54/59 (92%)	5/59 (8%)	0/59
Final year MBBS	62/67 (93%)	5/67 (7%)	0/67

Discussion

The learning process of a medical student does not end at the graduation from the medical school. Instead it continues throughout life as a lifelong process.[3] this lifelong learning has been an important attribute of all health professionals for a long time and has been a part of physicians oath.[4] It is important that teaching learning strategies incorporated in the medical curricula should ensure development of the self directed learning attitudes in the medical graduates.[5] Several studies have been done on the development of self directed learning in undergraduate medical students using various instruments.[6,7,8,9,10,11] Different instruments used for the purpose include the self-directed learning readiness scale (SLDRS)[12], the effective lifelong learning inventory (ELLI)[13] and the Jefferson's scale for physicians lifelong learning.[14] Our study utilizes the Jefferson's scale for physicians' lifelong learning as the instrument adapted for assessment of lifelong learning in medical students. The teaching learning strategy in our curriculum recognized to foster lifelong learning attitudes is the problem

based learning which is used up to second year in our curriculum.

Prior studies have substantiated Jefferson's scale for physicians lifelong learning as a reliable and valid instrument for measuring lifelong learning of academic and learning physicians.[15] A three factor subscale was also used by Wetzel et.al. to establish the same attributes of JeffSPLL adapted for medical students.

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ORIGINAL ARTICLE

Our Lectures: What do the Students Think?

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ABSTRACT

Objective: The objective of the study was to reveal the perceptions and experience of our students regarding the lectures taken in our medical school.

Study Design: It was a cross-sectional descriptive study.

Place and Duration of Study: This study was conducted among second year MBBS students of Islamic International Medical College.

Materials and Methods: A questionnaire was developed, validated by piloting among faculty members and then was distributed to the students of MBBS year 2 from June to July 2013.

Results: The response rate was 100 %. Questions were grouped under various headings and categorization was done (i.e., Excellent, Very Good, Good, Fair and poor) according to responses. Lecture as an instructional strategy and the presentation of lectures was regarded as "Good" by 39% and 42 % of students respectively. 36% of students commented the Multimedia preparation of lectures as "very good". Only 23% of students have mostly gone through the learning outcomes of a lecture before coming to attend it.

Conclusion: Most of the students regarded lectures as a good instructional strategy. Students were also satisfied with the Multimedia presentations and delivery of lectures.

Key words: *Perception, Experience, Lectures.*

Introduction

One of the oldest forms of teaching is lecturing. They have a centuries long history.[1] Lectures are an efficient way of knowledge and concepts to large groups. They can be used to stimulate interest, explain difficult concepts using examples, images, flowcharts etc. They provide core knowledge and direct students learning.[2]

In recent years, usefulness of lectures as an instructional strategy has been questioned. Lectures are not considered an effective way of teaching/Learning due to many reasons. The most important being one way didactic teaching. Another reason is that students do not actively process the knowledge and just become passive learners of the information presented to them. So the students have little opportunity to process the knowledge.[3] Still with all the drawbacks, owing to its utility, they are going to stay in our curriculum .Their utility lies as they are economical and convey information to a large group of learners in a very short time.[4] In our medical college, apart from lectures, we have got multiple teaching strategies to deliver cognitive information to our medical students like Case Based

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Discussions, Problem based learning etc. We conducted this study in our medical college to know the experience of students about their lectures. The aim was to get students' perception and their experience about lectures as instructional strategy. We also wanted to know their view about whether our Lecturers come well prepared for the lectures or not. The question was also asked about the multimedia presentation used in the lectures. They were asked regarding the students preparation for the lectures; whether they knew the topic or the learning outcomes beforehand or not. They were also asked their view whether the number of the lectures should be increased or not.

Materials and Methods

It was a Cross sectional Descriptive study. A questionnaire was developed based on the above questions. The questionnaire was validated after piloting by circulating among five Senior Faculty Members. The questionnaire was then distributed to students of 2nd year MBBS (Class of 2016). The questionnaire is annexed at the end. There were Sixty students in that class (n=60). The responses to each of the question were taken against a Likert scale (Strongly disagree =1, while strongly agree =5). 'Neither agree nor disagree' option was not counted. The responses were then categorized as excellent, very good, good, fair and poor if the sum of the responses were 21-25, 16-20, 11-15, 6-10, and 1-5 respectively. The results were finally analyzed using

Microsoft Excel 2007.

Results

The result gathered after this study is being described here:

I. Lecture as an instructional strategy

Under this heading five questions were asked. The questions were (1) whether an individual student regards lecture as the best teaching modality, (2) whether lectures were helpful in understanding difficult concepts, (3) whether the lectures were more useful than SGD and PBL to gain knowledge and understanding difficult concepts. Finally, whether the lectures help them in solving real life problems.

The sum of the responses against the likert scale by individual student could range from 1 to 25 for the above five questions. We categorized the cumulative response to this group of questions, from an individual students as poor (sum responses 1-5), Fair (sum responses 6-10), likewise Good, very good, excellent the sum responses being 11-15, 16-20 or 21-25 respectively.

The results , as shown in table I , revealed that for the sub questions as regards their perception: Lecture as an instructional strategy, it was responded as Excellent, very good, good, fair and poor by 8 %, 15%, 38%, 35%, and 3% of students respectively.

Table I: Students' Response towards Lecture as an Instructional Strategy

Categories	Total of responses	No of students	Percentage
Excellent	21-25	5	8.33
Very Good	16-20	9	15
Good	11-15	23	38.33
Fair	6-10	21	35
Poor	1-5	2	3.33

II. Multimedia/Power Point presentation in Lectures:

Second group of questions (from question 6-10) were about Multimedia presentation in Lectures. In this group their opinion was taken about the suitability of multimedia presentation. They were asked whether learning outcomes were stated at the start of the presentation. They were also asked whether flowcharts and diagrams were liberally used or not and whether the topic was summarized at the end or not. For questions 6-10: the sum of the responses, against the likert scale, could range from 1 to 25.The cumulative response to this questions was categorized as poor (sum of responses = 1-5), Fair (sum responses= 6-10), likewise Good, very good, excellent (11-15, 16-20 or 21-25 respectively).The results, as shown in table II , revealed that adequacy of multimedia presentation was regarded as Excellent, very good, good, fair and poor by 18% ,37, 30, 13 and 1.6 % of students respectively.

Table II: Students' Response towards use of Multimedia during Lectures

Categories	Total of responses	No of students	Percentage
Excellent	21-25	11	18.3
Very Good	16-20	22	36.6
Good	11-15	18	30
Fair	6-10	8	13.3
Poor	1-5	1	1.6

III. Teachers Methodology of Lectures' Delivery

Third group of questions (from question 11 -17) was about teachers' delivery of Lectures. They were asked whether teachers' enthusiasm, their grasp of the topic presented while they came to their class for a Lecture. They were also asked whether the teachers starting their lecture activated students' prior knowledge so that the students do not feel any knowledge gap. Questions were asked about the lecturer and students interaction. In this context they were inquired about the behavior of the teacher if he/she asks a question and the student does not have the answer. At the end of this section they were asked what do they feel whether the lecture is one way teaching or seems like a two way discussion. The sum of the answers were categorized in a similar fashion as for the previous section and mentioned above. The results, as shown in table III, revealed in the students view the delivery of lecture by the teachers was good, Very good, Fair, Excellent and poor (42%, 32%, 18%, 5%, and 3% respectively).

Table III: Students' Response towards lecturing Styles

Categories	Total of responses	No of students	Percentage
Excellent	21-25	11	18.3
Very Good	16-20	22	36.6
Good	11-15	18	30
Fair	6-10	8	13.3
Poor	1-5	1	1.6

IV. The Students Approach to Lectures:

The fourth section (question No. 18-22) was about the students' approach to the lectures. In this section they were asked: whether they as an individual knew the topic beforehand, whether before coming to the lecture they have gone through the learning outcomes of the lecture. They were also asked whether attending a lecture increases their interest in the topic to study more. They were asked whether the lectures elaborated the topic to an extent that the understanding becomes clear.

Finally in this section they were asked whether they came to lectures only for attendance otherwise they feel no attraction in the lectures.

The sum of the responses against the likert scale by individual student could range from 1 to 25 for the above five questions. Again, we categorized the cumulative response to this group of questions, from an individual students as poor (sum responses 1-5), Fair (sum responses 6-10), likewise Good, very good, excellent the sum responses being 11-15, 16-20 or 21-25 respectively).

The analysis of result, as shown in table IV, showed that the students approach to lectures was Good (53%), Fair (25%), Very Good (10%), Poor (7%), and Excellent (5%).

Table IV: Students' approach towards Lectures

Categories	Total of responses	No of students	Percentage
Excellent	21-25	3	5
Very Good	16-20	6	10
Good	11-15	32	53.3
Fair	6-10	15	25
Poor	1-5	4	6.6

V. Students View about Number of Lectures:

In the last question students opinion was taken whether the number of Lectures in the curriculum was deficient and needed to be increased. As shown in Figure 1, although less than 1/3rd of the students were unclear (30%), 40% agreed (strongly agreed =16.6%, Agreed = 23.3%, total = 40%) while another 30% disagreed (15% strongly disagreed, 15% disagreed).

Fig 1: Students view about the number of lectures

Discussion

The results of an Indian study on perception of students regarding lectu6res show that the lectures are essential for the undergraduate medical education.[5] There are many benefits of lectures the most important being economical, time and space wise. A Single Lecturer can interact with a class to convey information. Since the major learning is still through lectures it seemed imperative to seek students view point through lecture.

Students' perception about lectures has been sought before in different studies.

In one study, 74% students did not consider lecturing sessions useful.[6] In another study didactic lecture was least preferred by medical students.[7] The lectures are often quoted by medical students as boring.[8] This was a reason of not attending the lecture.[9] We wanted to know our students view point regarding lectures since they convey about half of cognitive information. Taking students feed-back is always helpful since it helps to improve the curriculum.

In our study, regarding "lectures as a teaching modality" the students who regarded it excellent were as low as those who regarded it as poor (8 and 3% respectively), the majority, however, regarded the lectures as good, fair or very good instructional strategy (38%, 35% , 15% respectively). In another study about 20% students regarded lecture as boring and lecture schedule tiring.[10]

Since multimedia design significantly effects the learning of medical students[11], we asked the students view the questions regarding the suitability of style and content of Multimedia presentation in our lectures 36 % regarded them as very good.

Teachers' style of lecture is very important. About 1/3rd of students in a study mentioned 'better lectures' to be the source of improving examination

results.[12] As Shown by Miller and McNear in their study, when students attend a lecture which is more engaging then on an average their performance in the exams improve.[13] We asked our students whether the teachers used principles of adult learning or not. This was assessed by asking whether students prior knowledge was activated or not, for example, which remains a useful tool to start a lecture.[14] Majority of the responses to these questions came under the category of 'Very Good' or 'Good' (31.6% and 41.6% respectively).

It is suggested that if the students have some knowledge of the content before coming to lecture this will increase their understanding. Moravec and colleagues found that pre-class assignments resulted in increased learning.[15] Dobson used online quizzes before a lecture to engage students in learning and think critically about the course content. This increased the learning significantly in the group.[16] We just asked the students whether they knew the learning outcomes before coming to the class or not or at least if knew the topic before hand. 36% of the students that they sometimes know the learning outcomes beforehand, while only 6 % of students always knew the learning outcomes before coming to attend a lecture. It seems important to mention here that all of the students in our institute are issued with a Module Guide before the start of module. This module guide contains the learning outcomes of the upcoming lectures.

Finally the role of attendance marking is a major external motivatory factor to attend a lecture. In a study conducted 74% students mentioned teacher strictness in marking attendance as an influencing factor for attendance.[17] In our study when we asked the students if they come to the lectures merely for attendance otherwise they are least interested: 1/3rd students said it is never so while the remaining 2/3rd said it is sometimes, mostly or always so (15% ,21% and 8% respectively).

Conclusion

To conclude our study gives some insight about the students' perception regarding lectures while reflecting their own attitudes towards lectures. Most of the students regarded lectures as good instructional strategy.

This study reflects only one class at one time , so it seems important that further studies need to be conducted in the light of the current study so that a more substantial data is attained reflecting all the classes and college as a whole.

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ORIGINAL ARTICLE
Identifying and Comparing the Different Learning Styles of Health Professional Students

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ABSTRACT

Objective: To compare the learning styles of first year MBBS, BDS and DPT students.

Place and Duration of Study: This study was carried out at Islamic International Medical College Rawalpindi (IIMC), Riphah College of Rehabilitation Sciences (RCRS), Islamic International Dental College Islamabad (IDC), Pakistan between February 2013 and June 2013.

Materials and Methods: It was a descriptive cross sectional study. A sample of 83 first year MBBS, 81 first year DPT and 36 BDS were recruited. Kolb's inventory (1985) was used for collection of data. It was analyzed by using SPSS 20.p value of <0.05 was considered significant. A confidence interval of 95 was maintained.

Results: Frequency of learning style showed that 38.2% of MBBS students are assimilators, 59.7% of DPT students are Accommodators and 15.2% of BDS are Converger.

Conclusion: It is concluded that the majority of students of the different disciplines have different learning style. So teacher must be aware of this fact and plan according to the learning styles of the students.

Key words: *Kolb's inventory, Accommodator, Diverger, Assimilators, Converger*.

Introduction

The acquisition of knowledge or skill is a process of acquiring new or modifying existing knowledge through practice.[1] The learning style is a person's consistent way of perceiving and processing the new information.[2] Undergraduate health professionals identify and prefer learning style and methods which can enhance learning.[3] As health care educators, it is our responsibility to be aware of the learning styles of our students.[4] Base on affinity to the different dimensions of learning, different learning tactics is suggested. These can be used by teachers and lecturers to direct, design and delivery of courses and solve learning problems among students.[5] Knowing the learning style of the students can decrease the distance between teacher and learners and can promote learning.[6]

To assess different learning styles numerous instruments were made. One of the well-known instruments concerned with the learning is the Kolb learning style model.[7] According to Kolb's model, an individual perceive the information either by Concrete Experience or Abstract Conceptualization, and process this information by Reflective Observation or Active Experimentation. The learning style of a person depends on combination of one method of each from information perceiving or perception. Persons tend to build up authority in one experience grabbing way and one experience transforming way. Converges are demonstrated by abstract thinking and ideas. They are excellent at formulating practical applications of ideas and using deductive analysis to unravel problems. Accommodators use solid experience and vigorous experimentation. They are fine at actively involving with the world and truly doing things instead of only reading about and studying them. Diverges tend toward actual experience and reflective scrutiny. To see the things from different angle, they are imaginative and are excellent at coming up with ideas. Assimilators are illustrated by abstract conceptualization and reflective observation. They are capable of generating theoretical models by means of inductive interpretation.[8]

The learning should change the whole personality of the students instead of only giving new information or knowledge. It requires a lot of time because it is dealing with changes in core beliefs, behaviors, and attitudes.[9] Such a change may take time possibly a few weeks, perhaps until the end of the term, or even longer so the teachers should be passion.[10]

This study was carried out to determine the learning style of first year MBBS, BDS and DPT students and to compare them with each other.

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Materials and Methods

This was a descriptive study and a sample of 200(male 35, female 165) students from first year DPT, BDS and MBBS from Riphah College of Rehabilitation Sciences, Islamabad were randomly selected. Data was collected by using Kolb's LSI version- 2 (1985). This study was completed between February 2013 and June 2013. All efforts were made in this study to fulfill the ethical considerations in accordance with the 'Ethical principles for medical research involving human subjects' of Helsinki Declaration.[11] Ethical approval was obtained from the ethical review committee of Riphah international University Islamabad. Written informed consent was taken from the students. The students were free to withdraw at any time without giving any reason. Strict confidentiality was maintained throughout the process of data collection, entry and analysis.

There were two parts of learning style questionnaire (LSQ). The First part was concerned with information perceiving by concrete experience or abstract conceptualization and the second part was concerned with information processing by active experimentation or reflective observation. The A response stand for the concrete experience B for abstract conceptualization, C for active experimentation and D for reflective observation. The final score of the learning style of the students was got by adding up scores of first and second part. If the scores of B and C were high it meant the Converge, if A and D were high it meant Diverge, if B and D were high it meant Assimilator and if A and C were high it meant Accommodator as shown in table I. The data were analyzed using SPSS v. 20

The data shows the frequency of four learning style in three disciplines, 16% and 11.5 % 7.5% students were converging, assimilating and diverging respectively. According to discipline DPT student's dominant learning style is accommodators (59.7%),

Table I: Learning Style Questionnaire (LSQ)

Part 1: Concrete Experience VS Abstract Conceptualization

1. I prefer:
    a. Hands-on learning experiences
    b. Learning through thinking and reasoning

2. I tend to:
    a. Rely on feeling when making decisions
    b. Rely on logical reasoning when making decision

3. I learn more effectively from:
    a. My peers
    b. My teacher

4. I like learning through:
    a. Simulations
    b. Lectures

5. I lean well by:
    a. Practical experience
    b. Applying theories to hypothetical situations

6. I am best at learning:
    a. Facts
    b. Concepts

Part 2: Active Experiment Vs Reflective Observation

1. I learn best through:
    a. Active involvement in projects
    b. Observation

2. I would rather:
    a. Do volunteer work with disadvantaged youth
    b. Read about disadvantaged youth

3. I prefer assignment that:
    a. Require me to work examples
    b. Require me to think about situations.

4. I learn well through:
    a. Participation in a discussion
    b. Listening to what other have to say

5. I tend to:
    a. Jump right in and do something new
    b. Think about possible outcome before trying something new.

6. I learn best:
    a. By doing
    b. Watching and then reflecting

Table II: Learning Style of Health Professional Students

Learning style	Number	Percentage (%)
Accommodating	30	15
Diverging	15	7.5
Converging	**32**	**16**
Assimilating	23	11.5
Accommodating/ Diverging	13	6.5
Accommodating/ Converging	27	13.5
Diverging/ Assimilating	18	9
Converging/ Assimilating	25	12.5
All	17	8.5
Total	200	100

MBBS student's dominant style is assimilating (38.2%) and BDS students' have no dominant style as shown in table II.

According to gender there was no single dominant learning styles with males preferably are accommodators and female are Converger.

Discussion

Learning never becomes a burden on the students if it is done in the preferred learning style of the students. If students start enjoy learning than it has positive results on student's progress in examination. The responsibility is on the teacher to realize the

Table III: Comparison of Learning Style of Health Professional Students by Discipline and Gender

Learning Style	Male (Percentage)			Female (Percentage)		
	DPT	BDS	MBBS	DPT	BDS	MBS
Accommodating	**40**	0	13.6	**19.7**	6.1	11.5
Diverging	20	0	4.5	12.7	12.1	1.6
Converging	0	0	**18.2**	14.1	15.2	18
Assimilating	0	0	13.6	4.2	6.1	**24.6**
Accommodating/ Diverging	0	33.3	4.5	12.7	6.1	0
Accommodating/ Converging	0	0	13.6	11.3	**21.2**	14.8
Diverging/ Assimilating	10	33.3	4.5	9.9	12.1	6.6
Converging/ Assimilating	10	33.3	**22.7**	8.5	12.1	13.1
All	20	0	4.5	7	9.1	9.8
Total	100	100				

students' learning style and adjust rather than to look forward to the students to get used to his/her style of teaching.[12]

The model anticipated by David Kolb illustrates four types of learning styles.[13] It is one of the extensively used learning model.[14] His inventory is the frequently used instrument for evaluation of learning style evaluation.[13]

In our study, there is a large variety in learning styles among students irrespective of the gender, with bulk of the students' converger and accommodators. These results are different to the studies carried out by Khalid Farooq Danish in IIMC which showed a great majority of learners in IIMC clinical classes are accommodators; followed by converges, diverges and assimilators in that order.[15] this may the due to reason that previous study was carried out in students of clinical classes and in our study the students are of first year classes and the system of teaching in our study is modular and at that time it was conventional system of teaching. May be due to these reasons that most of the students in our study are Converger and than Accommodators.

In comparison by gender of MBBS, DPT and BDS students in our study it is interested to find out that most of the male are Converger while most of the female students are assimilators in MBBS, in DPT both genders mostly are accommodators while in BDS there is a mixed learning style. Previous studies showed majority of students were Accommodators

who is the mixer of concrete experience and active experimentation and is totally based on hands on practical learning.[16] This difference may be due to the reason that previous studies were carried out in students of conventional schooling system and now there is modular system in IIMC which have more problem based learning and small group discussions. Compared to its most of the DPT students are accommodators while BDS students do not have a single learning style and these two disciplines have conventional teaching system depending on large lecture format.

When we compared the learning styles by gender, male students are mostly accommodators and convergent while female students are mostly assimilating and convergent. These results are similar to results of the study carried out by Waleed Hamad Al BuAli in Saudi Medical students.[10]

Conclusion

Learning style comparison of the students of Riphah University showed that it is not same for the different discipline. It is different in the MBBS, BDS and DPT students. The MBBS has Modular system of teaching while DPT and BDS have conventional teaching system. The learning style by gender was also different. So there is need to translate these finding into teaching methodologies to improve the learning of the students.

Study Limitations

This study was carried out by administering questionnaire which students themselves filled. Student mood, feeling, and own personal perspectives are the limiting factors.

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ORIGINAL ARTICLE
The Relationship between Physical Activity Levels, Sleep Habits and Academic Performance in Physical Therapy Students of Riphah International University, Islamabad

Furqan Ahmad Siddiqi, Rahila Yasmeen, Asghar Khan

ABSTRACT

Objective: The objective of this study was to determine the relationship of physical activity level, sleep habits and academic performance of Physical Therapy students.

Study Design: Descriptive Cross Sectional Survey.

Place and Duration of Study: The study was conducted from 1st January 2013 to 1st March 2013 in physical therapy institute of Rawalpindi/ Islamabad.

Materials and Methods: A sample of 190 from first year and final year were taken by using systemic probability sampling. A self administrated questionnaire, Epworth Sleepiness Scale (ESS) & Rapid Assessment of Physical Activity (RAPA) was used to collect data.

Results: The Epworth Sleepiness Scale score 25 % and 42% students were categorized in the level 6-8 and 9-11 respectively. The average score of students 33% and 21% were 71-75% and 66-70% marks respectively. 41% students having marks 71-75% lie in 9-11 Sleep score.

The total 33 out of 83(39%) students do light physical activities and get 71-75% marks in exam. Only 2 out of 9 (22%) students who do not do any activity were in 71-75% marks category.

Conclusion: It is concluded that students having good grades have less chances of dozing in day. The complete sleep has good effects on concentration of students towards study. It is also concluded that the students who indulge themselves in light activities get good grade in examination.

Key Words: Epworth Sleepiness Scale, Grades, Physical Activity.

Introduction

There is very limited literature accessible regarding the activity level, sleep habits and academic performance. Understanding of the students always improves by physical activity.[1] The academic performance has some affiliation with physical activities of the learner.[2] There is positive association of fitness and educational performance in students.[3] Primary role of sleep is to provide relaxation and reinstate body energy level and tranquil the mind. Quality of sleep in young adults can be affected by irregular bedtime habits. Precise memory retention is very much linked with proper sleep habits.[4] Proper cognitive learning capability is adversely affected by bad sleep practice and poor sleep.[5] Literature supports the relationship between academic performance and sleep.[6]

Quality and quantity of sleep in medical students is decreased due to their busy and hectic schedule.

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Poor educational routine, road traffic mishap, cardiovascular episodes and psychosomatic suffering is reported to be linked with reduced sleep quality. It has been reported that female students have considerably more number of naps as compared to male's students.[7] Studies have shown that behavioral /problems like tension, irritability, confusion, depression and generally low life satisfaction results from deprivation of sleep in students.[8] Student attitudes to examine each other have been explored by many other studies. Unexpectedly, consequences of changes have been downplayed by the students. Also unpredictably, some students preferring friends for examination and others were preferring strangers.[9] Another study compares the Hong Kong adolescents with other countries about the prevalence of sleep withdrawal and sleep commotion. Every training institute should consider intervention programs for sleep problems.[10] It has been found that students who have academic difficulties do not realize that poor sleep habits and sedentary life style may have effect on their poor academic progress. Poor sleep quality was associated with behavioral changes in students. Poor quality sleep was linked with poor academic progress

and is related to health, well being and emotional feelings in medical students. This study was carried out in the first year and final year Physical Therapy students of physical therapy institute (Margalla, ISRA and Riphah) of Rawalpindi and Islamabad with the objective to determine their sleep habits and physical activity level and its effect on academic performance.

Table I: Marks in Percentage * Rapid Assessment of Physical Activity Cross Tabulation

		Rapid Assessment of Physical Activity					Total
		I rarely or never do any physical activity	I do some light or moderate physical activities, but not every week	I do some light physical activity every week	I do moderate physical activities every week, but less than 30 minutes a day or 3 days a week	I do vigorous physical activities every week, but less than 20 minutes a day or 3 days a week	
Marks in Percentage	60 % and below	3	14	9	1	0	27
	61% -65%	0	13	13	2	0	28
	66%-70%	4	12	19	6	0	41
	71%-75%	2	8	33	19	1	63
	76%-80%	0	2	7	12	4	25
	81% and above	0	0	2	1	3	6
Total		9	49	83	41	8	190

Table II: Independent Samples Test

|		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std.Error Difference	Lower	Upper
Epworth Sleepiness Scale	Equal variances assumed	9.647	.002	1.045	188	.297	.13886	.13283	-.12318	.40090
	Equal variances not assumed			.981	124.046	.328	.13886	.14155	-.14130	.41903
Rapid Assessment of Physical Activity	Equal variances assumed	.811	.369	.505	188	.614	.06873	.13607	-.19969	.33715
	Equal variances not assumed			.503	153.688	.616	.06873	.13658	-.20109	.33856
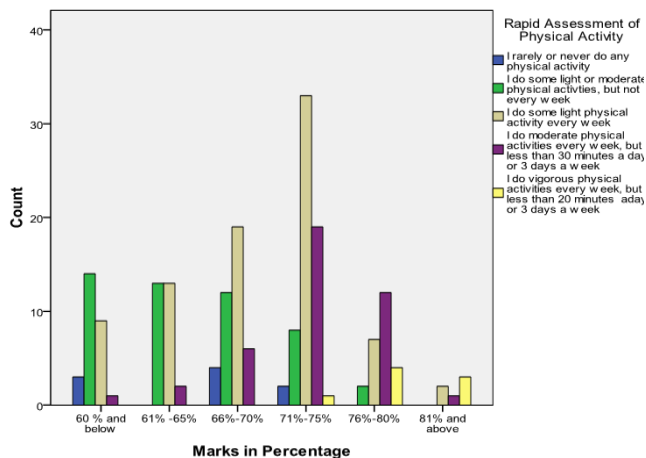
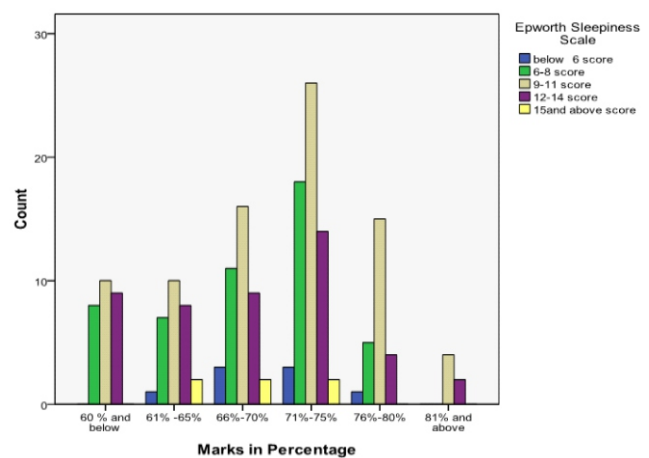Fig 1: The students who have slight chances of dozing get good grades

Fig 2: The students who indulge themselves in light activities to moderate physical activities get good grades in examination

Materials and Methods

A descriptive cross sectional study was conducted and a sample of 190 from first year, and final year was taken by using systemic probability sampling. A self administrated questionnaire, Epworth Sleepiness Scale (ESS) & Rapid Assessment of Physical Activity (RAPA) was used to collect data. The Epworth Sleepiness Scale score was 0 for would never doze, 1 for slight chance of dozing, 2 moderate chances of dozing, and 3 for high chance of dozing. The Rapid Assessment of Physical Activity (RAPA) from 1 to 7 means no activity to vigorous activity. The academic performance (CGPA) was drawn from record of students. The 4/4 will be Excellent, 4-3/ as Good and below 3 Satisfactory. The data was analyzed through SPSS 20 and a descriptive analysis was documented.

The total 190 students were recruited and 116 from first year and 74 from final year.

The Epworth Sleepiness Scale score 25 % and 42% students were categorized in the level 6-8 and 9-11 respectively. The average score of students 33% and 21% were 71-75% and 66-70% marks respectively. 41% students having marks 71-75% lie in 9-11 Sleep score. The students who have slight chances of dozing get good grade.71-75% lie in 9-11 Sleep score. The students who have slight chances of dozing get good grade.

The total 33 out of 83(39%) students do light physical activities and get 71-75% marks in exam. Only 2 out of 9 (22%) students who do not have any physical activity were in 71-75% marks category. The students who indulge themselves in light activities get good

grade in examination.

The p value (0.297) for Epworth Sleepiness Scale for first and final year means that there is no difference in the chance of dosing for first and final year students.

The p value (0.614) for Rapid Assessment of Physical Activity (RAPA) for first and final year means that there is no significant difference of level of physical activity between first and final year students.

Discussion

The results of this study are evident from many other studies in literature which supports the relationship academic performance, physical activity and sleep habits. The results of one study is in difference with other studies that concluded sleep duration is greater in Europe as compared to Asia, girls wake up notably earlier than boys, and that the gender and grade level is associated with incidence of sleep latency.[11]

Reasonable to energetic physical activity programs of 30 to 45 minutes duration under supervision are used by many interventional studies. The researchers alleged that greater amount of physical activity would be necessary to achieve beneficial effects on health and behavior. Developmentally appropriate and enjoyable 60 minutes or more of moderate to vigorous physical activity is necessary for youth.[12]

According to some studies physical and mental characteristics of older adults always have beneficial effects by famous methods of exercise like Pilates and Taiji quan, but more studies are in samples of

older participants. It has been also reported that college-age individuals are also get benefited by these mode of exercises to improve their mental parameters.[13]

Many of the mechanisms of greater expert performance serve the dual rationale of mediating experts to informative feedback during practice activities in response to current performance and of allowing continued improvement of this performance.[14] A combination of research findings in physical fitness and exercise is presented to general public with insight to provide and establish individualized exercise program. These findings also indicate the demand for exercise and fitness and how it is an essential part of preventive medicine programs.[15] Another study highlights the association between mental health and physical activity and its relationship to depression and other mood state. Results of the growing literature continue to support the effects of physical activity on physical and mental health outcomes. Usually, better and desirable health outcomes are showed by the participants involved in regular physical activity. Similarly, according to the results of the RCTs regarding physical activity interventions participants' show, good quality of life, better health outcomes, better functional aptitude and better temper state.[16]

Increasing frequency of obesity among adolescents and adults in the United States can be reversed to its maximum following balanced diet and regular physical activity. It is recommended by many studies that there should be implementation program related to healthy weight management and to increase students awareness encompassing importance of healthy diet combined with physical activity.[17]

Serum lipid levels, dietary intake and physical activity of college students living on and off campus were compared. Reported percentage of energy from protein was considerably higher in subjects living off campus. It is recommended that nutrition and physical education is important for all students because their lifestyle may prompt them to develop different chronic diseases.[18]

There are many physiological benefits of regular physical exercise and has been characterized as a positive health factor. Psychological remuneration may also capitulated. The rationale of the current study was to investigate the relationship between number of measures of psychological comfort and physical exercise frequency in a large population-based sample. The results point out a reliable correlation between enhanced psychological well-being, as measured using a regular physical exercise parameters and psychological inventories.[19]

In another article, researchers review the demonstration and causes of student distress, its expert penalty, and potential unfavorable personal and proposed institutional approaches to reduce student distress.[20] So these many studies and the results of present study clearly indicate the importance of physical activity and proper sleep habits and its effects on student academic performance.

Conclusion

It is concluded that students having good grades have less chances of dozing in day. The complete sleep has good effects on concentration of students towards study. Physical activity always has profound effect on overall physical fitness, mood state and attention level. So it is concluded from this study that the students having good grades have good sleep habits and they are involved in various types of light to moderate physical activities.

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ORIGINAL ARTICLE

Measuring students' perceptions about educational environment of an under graduate rehabilitation sciences curriculum in Riphah College of Rehabilitation Sciences- Pakistan by means of DREEM's inventory

Arshad Nawaz Malik, Rahila Yasmeen, Asghar Khan

ABSTRACT

Objective: The objective of the study was to establish the perceived strength of educational environment of Riphah College of Rehabilitation Sciences Islamabad Campus.

Study Design: A Descriptive Study.

Place and Duration of Study: Riphah College of Rehabilitation Sciences, during May and June 2013.

Materials and Methods: The descriptive study was conducted in the Riphah College of Rehabilitation Sciences, during the month of May, June 2013.The 50 items inventory was selected for analyzing and assessing the educational climate and a sample of 142 students from first and final year of Doctor of Physical Therapy were recruited.

Results: A total of 142 questionnaires were completed, 85 from first year, 57 from final semester. The mean score of inventory was 130/200 and overall mean was 2.60. The mean score for "perception of learning" was 2.70; "Perception of course organizers" was 2.58, "Self perception about Academic" was 2.76, "Perception of atmosphere" was 2.58 and "Social self perception" was 2.36.

Conclusion: It is concluded that overall environment of Riphah College of Rehabilitation Sciences is more positive. There is span for improvement and augmentation of existing educational environment to provide a sound platform for proper learning.

Key Words: Educational environment, Study perception, Learning perception, Social self perception.

Introduction

There is important and vital role of educational environment for valuable student's learning. The perception of students about the learning environment has significant role in the attitude and progress in academic performance.[1] The curriculum has major impact in the perception of students and also has dynamic effect on the growth of students.[2] The inventory will judge the different areas of weakness and strength of educational environment.[3] It also emphasizes the first year student attitude towards the new setup and also determines the relationship of teacher and students.[4] The student's perception about the existing curriculum and role in the educational environment will determine the strength of environment.[5]

The role of DREEM in indentifying the educational environment is important and this instrument is valuable for the measurement of educational environment of institution.[6] The educational environment of first year and final year is also measured and a difference in both classes discussed in perspective of students perception about teacher and social environment.[7] Before entering in a new system the parents and students should be aware of the educational environment other than the social climate of institution.[8] The effective environment also determines the level and importance of curriculum of the institution. The curriculum has significant importance in the development of a proper learning environment and the update curriculum plays an effective and crucial role in learning.[9] The role of learning and the level of educational climate changes for students, so it is also important to note down the changes in curriculum and learning style of students.[10]

The DREEM inventory measure the change in the perception of students regarding the complete educational environment including the teachers, course, atmosphere and social factors. It also highlights the areas of weaknesses and strength and provides a logical evidence to make a plan of enhancement. It also used to detect the changes in the existing educational environment from time to time and point out the areas of improvement. [11] The main objective of this research work was to find out the student' perceptions about the environment of education of Riphah College of Rehabilitation Sciences through DREEM inventory.

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Materials and Methods

The descriptive research work was executed in the Riphah College of rehabilitation Sciences, during the month of May, June 2013. The 1st year and final year semester DPT students were asked to spare 20 minutes to fill the technique. The DREEM was chosen for collection of statistics to evaluate the educational climate of Riphah College of rehabilitation Sciences.[3] The inventory has 50 items regarding the analysis of educational environment. The criteria used for scoring was "4 to 0 from Strongly Agree to Strongly Disagree. However 9 of the 50 items number ("4: 8: 9: 17: 25: 35: 39: 48 and 50") are negative questions and must be scored for 0 to 4 from Strongly Agree, Strongly Disagree. The following is the guide to interpret: "0-50= Very Poor, 51-100= Plenty of Problems, 101-150=More Positive than Negative and 151-200=Excellent". The Mean criteria: 3.5 to 4= Real Positive points, 2-3= Climate that could be enhanced and Below 2= Problems areas. There are five domains of inventory which measure the perception of learning, teachers, academic, atmosphere and social perceptions. After data collection a descriptive analysis was done on SPSS 17.

Results

The total 142 questionnaire were completed 85 from first year, 57 from final semester. The total mean score of DREEM was 130/200 and overall mean was 2.60. The highest mean 2.76 for academic self perceptions, 2.70 perception of learning, 2.59 for perception of course organizers, 2.58 for perception of atmosphere and the lowest one are 2.36 for social self perceptions. Table I shows the mean of different subscales of DREEM. The table II shows the mean score and the criteria of measurement. The criteria of Mean is 3.5 -4 = Real Positive points, 2-3= Climate that could be enhanced, below 2= Problems areas.

Table I: Mean score of different sub Scales

Scales	Mean	Criteria
Students' perceptions of learning	2.70	2 3= Climate that could be enhanced
Students' perceptions of teachers	2.58	2-3
Students' academic self-perceptions	2.76	2-3
Students' perceptions of academic atmosphere	2.58	2-3
Students' social self - perceptions	2.36	2-3
Full DREEM inventory	2.60	2-3

Table II: Average Score of different sub scales

Scales	Score	Status
Students' perceptions of learning	4534/140=**32.38**	<u>25-36= A more Positive Perception</u>
Students' perceptions of teachers	3856/140=**27.54**	<u>23-33=Moving in the Right Direction</u>
Students' academic self-perceptions	3022/140=**21.58**	17-24=Feelings more on the positive side
Students' perceptions of academic atmosphere	4522/140=**32.3**	<u>25-36=A more positive attitude</u>
Students' social self-perceptions	2321/7= **16.57**	15-21=Not too bad
Full DREEM inventory	**130/200**	More positive

Discussion

The overall result of the educational environment at Riphah College of Rehabilitation Sciences is positive that can be enhanced. It shows that there is room for enhancement in all sub domains of educational environment. The total score was 130/200 which is better than Nigerian medical school 118/200 and equal to Nepalese health professional 130/200 [3] and one of study in UK score 132.5/200.[7] the result shows the positive perception about the learning context and these are associated with the learning outcomes discussed Meyer and colleagues.[12] the findings of the study identified that there is a positive climate of education and all components of DREEM have shown almost positive values. Although some individual components have different level of score, these finding correlate with the finding of Pimparyon et al. for academic achievers. The academic achievers have extensively good score on teacher's perception, academic perception of atmosphere, perception about society and total DREEM score.[13]

There is some difference observed in the perception of different sub domains of DREEM in first and final year students. There is slight change in the critical attitude when the students progressed to final year.[14] The overall level of perception about the faculty members were positive in the students, although in detail some individual item there is some perception about the authority of teacher were negatively skewed.[15]

The complete analysis described that the all properties of DREEM have significant role in the

educational environment and in this study all components were skewed towards positive but these can be enhanced through increasing the quality of educational climate.[16]

Although the perception about the teacher was positive and teacher are knowledgeable and competent but one of the components of

authoritarian was negatively skewed. Such evidences can create some problem in the learning process and educational environment and should be resolved with the faculty training. Teaching must be promoted as the learner center and it should be some reward oriented.[7] The score of social perception is to some extent at low level in the finding of study, the stress, boring and the tiredness was some factors that decrease the scores of sub domains. The same finding were reported in Greek dental school which have lowest score on social perception.[17]

A study on Malaysia faculty of nursing the total DREEM score was 120/200 and the overall results were more positive, the same results were identified in our study. They have eight items having the mean score less that 2 shows they need special care. The total 6 item that have less the 2 mean score in this study, they should be planned to be manage on priority basis.[18]

Conclusion

The educational environment of Riphah College of Rehabilitation Sciences Islamabad Campus is more positive. There is room for improvement and enhancement of existing educational environment to provide a sound platform for proper learning. More emphasis and importance should be given to weak points to improve the educational climate. The results of this study can be used to guide strategic planning and implementation according to available resources. Proper feedback is necessary to maintain the climate positive so data should be collected on annual basis.

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ORIGINAL ARTICLE

Impact of Bilingual Approach in Undergraduate Education of Health Sciences

Shahina Yasmin, Masood Anwar, Kosar Firdous, Wajiha Zafar

ABSTRACT

Objective: The study aims to evaluate the effectiveness of English only and bilingual approach with additional use of Urdu as medium of instruction for facilitating students' learning and communication in academic and clinical interactions, in undergraduate education of health sciences.

Study Design: Survey based quantitative study.

Place and Duration of Study: The study was carried out at Islamic International Medical College, Islamic International Dental College and Riphah College of Rehabilitation Sciences belonging to Faculty of Health and Medical Sciences, Riphah International University Islamabad, Pakistan from May to September 2013.

Materials and Methods: A survey was conducted by administering two structured questionnaires using ordinal scale. Questionnaire A was filled by 600 students and B by 60 teachers. The collected data was processed and analyzed by SPSS version17.

Results: Thirty five percent students came from institutions using only English medium of instruction. 55% received education in both (English and Urdu) and 10% in other languages. The students speaking Urdu with parents and patients were 63% and 79% respectively. 50% and 61% students talk in both languages with friends and teachers respectively because of comfortable communication and expression. 62% students prefer to be taught, 54% prefer to give viva voce and 55%understood viewpoints better using both languages. 87% students and 91% teachers admitted that use of Urdu enhances learning. 84% students confirmed that teachers used both languages during lectures and 72% teachers admitted it. Considering p<0.05 the nonparametric test applied shows significant value of 0.0499.

Conclusion: Bilingual approach in medium of curriculum using English and native languages is an effective tool for better learning, expression and communication.

Key words: *Dual medium education, Higher education, Bilingual approach.*

Introduction

The continuous efforts with development of various strategies and tools, to improve learning and teaching with aspiration for excellence, are evident in the history of educational research. In addition to role of students and teachers, the impact of medium of instruction or language of curriculum demands further exploration. The medium may be mother, local, national or any foreign language. Cummins highlights two levels of language proficiency. The basic interpersonal communication skills represent language of informal conversation. The cognitive academic language proficiency (CALP) requires higher levels of language and cognitive processes needed for success.[1] The lack of command on language and CALP result in lack of learning leading

to deterioration in educational competency and development of rote memorization.

The local and international literatures highlight the importance of local/mother language and effects of foreign language in education. The local language as integral part of an individual's philosophy, promote comprehension and accuracy of expression. The learning would be faster with enhanced participation.[2,3] It is the most effective and natural mean of mutual understanding, because of more familiarity with words, script, synonyms and formalities.[4] The concepts are grasped rapidly. The foreign language is felt as barrier for interaction. The ease in expression and development of command is not possible. Learning requires more effort and time.[5,6] It may also pose conceptual, linguistic and psychological problems.[6]

The vigilant nations like Europe, USA, China, Japan and Russia etc. that achieved academic excellence and progress use vernacular medium from primary to higher education. The states having local language other than English teach it as second alternate. The foreign students learn local language but now the

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option of English medium shows bilingual inclination. Many countries like Uganda, Nigeria, Turkey, Arizona and Vietnam etc. are switching to native languages through immersion phases of mother tongue based bilingual education or multilingual approach. [2,3,6,7,8]

The national language Urdu is most commonly spoken in multilingual Pakistan. When English was declared as medium of instruction in 1835 in sub-continent, Medical colleges of Calcutta and Agra, Engineering College Rarki and Veterinary College Poona had Urdu medium. [5] Jamia Usmania (Haideraabad Dakkan1917) and Jamia Milia Islamia (Ali garh 1920) were recognized for post-graduate admission in European universities. Urdu was allowed at primary level in 1887, matriculation in 1930 and intermediate and BA levels after 1947. [9] The country has both Urdu and English medium institutions but higher education is still in English.

Baker defined Bilingual Education as learning in more than one language often encompassing more than two. The use of native and curriculum languages transforms translanguaging into useful resource to teach and integrate content in two languages. It improves learning and ability to function across cultures. The resultant impact is not linear sum of 2 but multiple trajectory of $1+1=11$. [10] Weak Parallel bilingualism implies that instructions and some of study materials are provided in both languages. The strong or perfect Parallel bilingualism requires provision of tuition, course material and text books in both. [11] In USA, Bilingual Education Act 1968 combined with Supreme Court decision 1974 requires instruction in native language of students for education in all subjects. The National Association for Bilingual Education (NABE) was established to ensure educational excellence and equity for all students. [12]

The reluctance to participate and express in English only during academic interactions and additional use of Urdu is observed in many students of health sciences including those who studied throughout in English medium. Dissatisfaction about clinical communication is also felt within community. Bilingual interactions to students and professionals are suggested to address these issues. This study aims to evaluate the effectiveness of English only and bilingual approach with additional use of Urdu as medium of instruction for facilitating students'

learning and communication in academic and clinical interactions, in undergraduate education of health sciences.

Materials and Methods

The research was conducted in Islamic International Medical College, Islamic International Dental College and Riphah College of Rehabilitation Sciences belonging to Faculty of Health and Medical Sciences (FHMS), Riphah International University Islamabad Pakistan from May to September 2013. A survey based research design with quantitative approach was used. To access the participants, written approval was obtained from Institution Review Committee. Population included all students and teachers. Random samples of students from all classes and teachers (lecturers and above) were taken. The purpose of research and instructions were explained to all the participants. Two self designed structured Questionnaires, A for students and B for teachers, using ordinal scale and approved validity, were administered to investigate their opinions about language/s and bilingual approach as medium of instruction and communication. The disclosure of identity was

optional. After discarding the incompletely filled ones, data of Questionnaires from 600 students and 60 teachers were processed and analyzed by SPSS version 17.

Results

The data revealed that 35% students came from institutions using only English as medium of instruction, 55% students received education in both (English and Urdu) languages and 10% in only Urdu or other language. Figure 1 shows Student feedback and Figure 2 shows Teacher feedback about languages used in academic interaction. The student feedback about languages used in clinical interaction is shown in Figure 3 and for social interaction in Figure 4. During lecture, in addition to English, Urdu is used always by 25%, more frequently by 20%, less frequently by 50% and never by 5% teachers. The students and teachers understand the point of view of others better in English were 12% and 8%, in Urdu 29% and 12% and both languages 59% and 80% respectively. The percentages of students and teachers who think that people understand their point of view in English were 6% & 8%, in Urdu 38% & 16% and in both 56% & 76% respectively.

The reasons for using language/s in descending order of frequency were feeling comfortable to interact, ability to express fully and understanding of language. Mostly the students give viva and patients use the language in which they can express better. The enhancement of learning by use of Urdu was agreed upon completely by 63% students and 55% teachers, to some extent by 24% and 38% respectively. About 6% students and 2% teachers
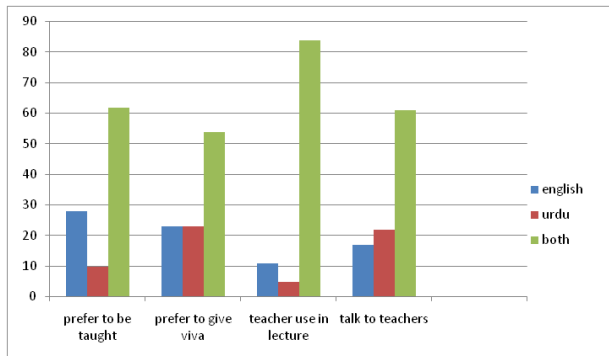
disagreed and 7% thought that it would not matter. The reasons of enhanced learning were mostly comfortable communication and command over both languages. Considering $p<0.05$ the nonparametric test applied shows value of 0.0499 which is significant and further enhances our result. The 100% validity of questionnaires and 98.3% reliability were confirmed by SPSS.

Figure 1: Student feedback about language used in Academic interaction
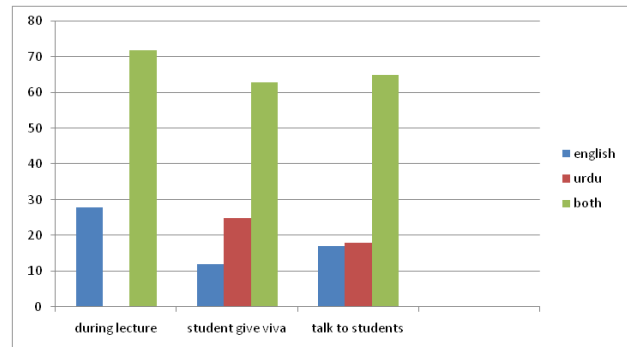
Figure 2: Teachers' feedback about language used in academic interaction

Figure 3: Students' feedback about Language used in clinical interaction
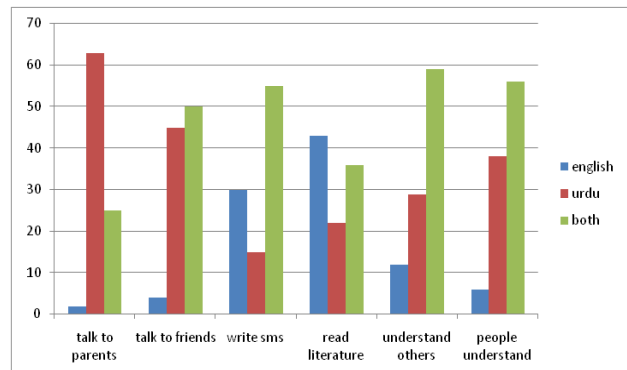
Figure 4: Languages used for social interaction by students

Discussion

The practice of Bilingualism exists at secondary, intermediate and even under graduate health sciences levels of education in our setup. Most of the participants admit the enhancement of learning and use it for academic, clinical and social interactions. Similarly international research conducted at various levels of education highly applause its effectiveness for language minorities and majorities to achieve command on subject.[7,8,13,14,15] Charles L Gleen considered educational settings that use two languages for significant intellectual and cultural achievement as the best. Two ways bilingual programs in California State up to 12th grade showed great promise for academic excellence for all

students.[2] The meta-analysis at Arizona demonstrated effectiveness of bilingual education more than English only alternative and development of ability in students to engage academic content in two languages.[7] In Vietnam Mother tongue based bilingual education proved positive results in terms of increased access and equity, improved learning outcomes, reduced repetition and dropout rates, socio-cultural benefits and lower overall costs.[8] The switching from one to another language heightens ability to monitor the environment, improves cognitive skills, executive function of brain that direct the attention processes and shields against dementia in old age.[16] Ofelia Garcia considered bilingual approach as the best choice to improve students'

learning in the 21st century.[10]

Purser pointed out the inevitable and universal use of more than one language in higher education.[17] The University of Puerto Rica has been promoting Spanish/English bilingualism for more than 100 years requiring proficiency in both languages.[18] Free university of Bolzano/Bolzan offer bilingual and trilingual studies with the motto of "Dare to be multilingual".[19] The Afrikaans medium universities in South Africa repositioned themselves as bilingual with flexible policy on medium of instruction and allowed various deviations of bilingualism. Other bilingual universities around the globe include University of Ottawa (1848), University of Fribourg/Freiburg (1889), National University of Rwanda and Istambol Technical University etc.[11]

In addition to the reasons that led to prevailing bilingualism for teaching and viva in our set up, the changing landscape in higher education in Europe contributed to its growth.[20] Other reasons include preservation or development of minority language and culture, bilingual context, market driven forces and changing student demographics.[11] Bilingual higher education could be established through principle of bilingual parallelism. The difference of our teachers' opinion about frequency of Urdu use justifies suggested application of weak Parallel bilingualism to undergraduates and continuation of monolingual instruction at post graduate level.[11]

There is limited research exploring language awareness in medical teaching, health education and care and also factors influencing language choice for a certain language speaker. The significance of an effective interpersonal communication between doctor & patient and student & teacher in multilingual societies and universal drive for culturally and linguistically appropriate healthcare practice demands that the students and health professionals should develop better proficiency in languages predominantly used by patients along with English. The predominant use of national language by our patients automatically requires language awareness training as recommended for enhanced healthcare delivery.[21] In Taiwan, medical discourse is carried on mainly in Mandarin and English. The communication problem for health education to the monolingual illiterate public speaking Southern Min was addressed by the speaker's preference of Southern Min in the spoken discourse which provided comprehensive and easy-to-access medical knowledge for the lay audience.[22] Encouraging results of self management were found in diabetics who were provided instructions and guidance by bilingual Mexican American nurses, dieticians and community workers.[23] Institute for Spanish Language Studies California offers medical Spanish training including medical terminology, patient interviews and anatomy to help medical students and professionals in dealing patients.[14] Multilingual interactions in internationalized academic dentistry are suggested to address the issues of language and culture in clinical communication and education.[15]

Peih-ying Lu and John Corbett contributed towards establishing sub-discipline of medical linguistics. They addressed the developments in medical and language education and perceptions of medical educators about medical language. The methodological shifts towards 'task-based' and 'problem-based learning' in both fields have broadened their focus on clinical expertise and linguistic skills to address issues of cultural competence, understand spoken discourse in medical settings, use of tasks and problems in language education for medics, the development of critical skills and use of literature and visual media in language education for doctors. These changes are responded by re-imagining the language classroom in medical settings as an arena for the exploration of values and professional identity. The medical educators have to broaden their understanding of the challenges faced by non-native speaker medical students or doctors to address the issues of professionalism.[24]

The world is aiming to have bilingual education re-conceptualization and practices are becoming more popular.[3,10] However multi-dimensional extensive research in health education is needed to confirm the benefits of bilingualism as medium of instruction and academic and clinical communication in order to recommend official implementation. The survey can be extended to other public and private health institutions at local and national level for further verification. The patients' opinion in this regard should also be explored.

Conclusion

Admitting the importance of native language and English to access latest developments in knowledge and research, bilingual approach is an effective tool for better learning, understanding and verbal or written expression. The approach can be employed for command on the subject and its application leading to creativity and innovation in undergraduate education of health sciences. To serve the community effectively through accurate diagnosis, better management and patient compliance, health professionals should also be trained in medium of communication prevalent in society.

Acknowledgement

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ORIGINAL ARTICLE

Quality of Clinical Feedback: Perceptions of Final Year BDS Students Versus their Supervisors

Alia Ahmed, Muhammad

ABSTRACT

Background: Clinical supervision can be defined as an activity in the clinical setting as a source of learning and assessment and problem solving for the student at an undergraduate or post graduate level.

Objective: This study aimed to see if various aspects of clinical feedback received by the students are perceived as the same by both students and supervising faculty.

Study Design: Cross-Sectional Study.

Place and Duration of Study: Islamic International Dental College, Islamabad, from January to June 2013.

Materials and Methods: An 18 item questionnaire was administered to former final year students and faculty which supervised them. The responses from each group were analysed and compared for differences in perception to the same measure of quality of clinical supervision and feedback.

Results: Items which involved communication were rated quite differently by the student and supervisor. Conflicting feedback was accepted by both, but supervisors thought that it was dealt with while students did not think so. Significance was set at a p value of 0.05

Conclusion: Exclusive availability of the supervisor and ability to see the task from the student's point of view by listening and taking time is very important. Supervisors cannot judge the quality of feedback they provide. They must receive feedback about the feedback they give.

Keywords: *Clinical feedback, Quality, Supervisors, Students.*

Introduction

"Clinical supervision" can be defined as a process of transferring knowledge and skills in the area where patient diagnosis and treatment takes place. It may also be used for assessment and practicing problem solving for the student at an undergraduate or post graduate level. It includes a procedure done by a learner and evaluated by a teacher who also gives meaningful feedback about the process to enhance the entire experience.[1]

Direct observation is essential to give feedback of an adequate standard, but this is not always possible. Attestations on quota sheets are often done without enough observation of the procedure while it was being performed.[2] The supervisor must exercise his best efforts to become a dedicated teacher, establish effective communication between patient, student clinician and himself, and also solve problems as they arise in a clear-headed way that is easily understood by the student. It demands tolerance and a willingness to take out enough time from a very busy

clinical department. Students can be very critical about the instruction they receive. Karibe et al. reported that one fifth of Japanese dental students included in their study said the tutoring they received was not to their satisfaction.[3]

"Clinical feedback" is a composite of different parts such as overall quality, focus on detail, problem solving, coping with conflicts of opinion, the construction of new clinical knowledge upon that already possessed by the learner, how to present criticism without arousing negative feelings and stress in the learner, clarity of feedback, re-explaining if necessary and knowing the skills of the learner who requires feedback. A major challenge for dental educationists is to assess professionalism and clinical skills accurately.[4]

The objective of this study is to determine if the quality indicators of various aspects of clinical feedback are similarly perceived by students and supervisors and to see if some areas have greater difference of opinion than others.

Materials and Methods

A questionnaire was formulated according to currently held beliefs about the effectiveness and quality of clinical feedback. It consisted of 18 questions with five descriptive options each. One was drafted for students and the other having the

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same questions but drafted from a supervisor's point of view. For example in question 6 the student is asked if she can understand the feedback given. For the supervisor, this question would be if he felt that his feedback was understood by the student. Each question stem was followed by five options. Therefore, the questionnaires filled by the student reflected the evaluation of their supervisors' feedback while the questionnaires filled by the supervisors would be a form of self-evaluation.

All questionnaires were filled in anonymously. No coding system was used which meant that there would be no way to trace who said what at any stage of the study. In addition questionnaires were handed out after the result of the professional examination had been released so that answers could be given as honestly as possible without any fear of reprisal.

In final year BDS, according to the present PMDC curriculum, the clinical rotation lasts for approximately two months. During this time, the students are required to perform a variety of direct restorations using dental amalgam, composite resin and glass ionomer cement and endodontic treatments on patients. This was preceded in second and third year respectively by pre-clinical operative and endodontics to prepare the students for the clinical phase.

At the time of this study, clinical supervision was carried out by first and second year residents of the FCPS program as an adjunct to their time in the clinic. Some unofficial supervision would also have been provided by house officers during their three month rotation in the Operative Dentistry Department.

Data entry and analysis was done by SPSS version 17. Difference in results between students and clinical supervisors was analysed using the Mann-Whitney U test.

Results

Out of 95 former final year BDS students from two consecutive sessions, 71 returned the feedback forms. This gave a return rate of 74.7% for the students. Out of 12 supervisors, all returned their forms. This gave a return rate of 100%. Overall, this came to a return rate of 77.4%. Two reminders were given at an interval of one week each. Return of the form was considered as consent to use the information in the study.

All questionnaires were required to be returned anonymously with no coding system for retracing the person who filled the form. Names of the respondents were, however, ticked off as they received the forms, so that reminders could be given to those who had not yet returned the questionnaires. Demographics such as age, gender, income level and level of education were not noted as all students were in the same age group, income and educational level and were predominantly female. Questionnaires were filled by students after graduating from final year, during their house job so fear of consequences in the examination as a confounding factor was removed.

Discussion

Accurate self evaluation of clinical work leads to a competent dentist. According to this argument, accurate self evaluation of skills as a supervisor leads to better supervision in the dental clinic for the undergraduate students. This self evaluation was compared with the opinions of students. Since the aim of this study was to compare the perceptions of students and supervisors, no peer evaluation of individuals was done. The supervising faculty as a group was analyzed. Our study revealed many important similarities of perception of "quality indicators of clinical feedback" between students and supervisors but even more important and eye-opening were the differences.

Five questions out of 18 showed differences in opinion between students and faculty significant at a p value <0.001. These were amount of time without feedback (Q1), improvement of feedback skills of the faculty over time (Q5), if the supervisor asks when the feedback is not understood (Q12), re-explanation of the feedback if not understood (Q13) and receiving feedback by faculty behaving professionally without favoritism or grudges (Q15).

Three questions out of 18 showed differences in opinion between students and faculty significant at a p value of less than 0.01, i.e. at a confidence interval of more than 99%. These were understanding the feedback given (Q6), dealing with conflicting feedback (Q8), and characterization of criticism as constructive or destructive (Q11).

Three questions out of 18 showed differences in opinion between students and faculty significant at a p value of less than 0.05, i.e. at a confidence interval of more than 95%. These were seven questions out

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Table I: Results from each question item showing the distribution of answers from students and supervisors
   (For explanation of a, b, c, d & e, see the appendix)

No	Question		a	b	c	d	e	variance	mean	significance
1	Amount of time you had to do without supervision or feedback	Student	2	8	23	36	2	.048	<.001	Yes
		Supervisor	0	4	8	0	0			
2	Has your personal dignity ever been compromised by the supervisor when requesting feedback	Student	20	17	26	7	1	.028	.055	No
		Supervisor	4	6	2	0	0			
3	Rate the overall proficiency of feedback given by those who supervised you in the Operative Department	Student	5	35	24	7	0	.016	.063	No
		Supervisor	2	9	0	1	0			
4	Are you comfortable with when requesting feedback	Student	2	13	23	17	16	.212	.021	Yes
		Supervisor	0	0	3	3	6			
5	Do you feel that your supervisors attempt to improve their feedback skills over time	Student	10	23	13	23	2	.026	<.001	Yes
		Supervisor	0	1	8	2	1			
6	Can you understand the feedback given to you	Student	2	4	24	30	11	.003	.001	Yes
		Supervisor	0	0	0	10	2			
7	How often have you received conflicting feedback	Student	4	10	44	16	0	.467	.853	No
		Supervisor	0	2	8	2	0			
8	How well does the supervising faculty deal with this conflict to your satisfaction	Student	2	27	33	19	1	.158	.005	Yes
		Supervisor	0	0	6	6	0			
9	When requesting feedback does the faculty make generalizations or focus on the problem you present	Student	3	18	30	18	2	.790	.013	Yes
		Supervisor	0	1	3	7	1			
10	Do you consider yourself a safe dentist as a result of the positive feedback you have received	Student	1	4	19	37	9	.029	.283	No
		Supervisor	0	1	0	10	1			
11	The criticism you received was constructive or destructive	Student	0	3	30	34	4	<.001	.006	Yes
		Supervisor	0	0	1	10	1			
12	Do your supervisors ask if they feel you have not understood the feedback they gave	Student	8	14	34	12	3	.410	<.001	Yes
		Supervisor	0	0	1	5	6			
13	If you have not understood, does your supervisor attempt to reexplain in another way	Student	4	11	35	13	8	.832	<.001	Yes
		Supervisor	0	1	1	2	8			
14	Have you ever shown disrespect towards the faculty member giving you feedback	Student	46	31	3	1	1	.322	.836	No
		Supervisor	5	7	0	0	0			
15	Do you receive feedback in a professional manner without favouritism and personal grudges	Student	1	13	23	19	26	<.001	<.001	Yes
		Supervisor	0	0	0	3	9			
16	Is the environment conducive to acquiring the correct clinical skills due to the accurate and timely feedback you have received	Student	4	22	28	16	1	.858	.019	Yes
		Supervisor	0	2	3	6	1			
17	Does your supervisor start by asking you for your assessment of the clinical situation	Student	2	15	37	14	3	.237	.131	No
		Supervisor	0	3	1	8	0			
18	How well does the supervising faculty know about your strengths and weaknesses as a clinician	Student	13	30	24	2	2	.159	.098	No
		Supervisor	0	4	7	1	0			

of 18 showed opinions of students and faculty which were not statistically significant (p value > 0.05). These were compromise in personal dignity when receiving feedback(Q2), overall proficiency of feedback(Q3), receiving conflicting feedback(Q7), consideration of oneself as a safe dentist as a result of positive feedback received(Q10), showing disrespect towards the supervisor(Q14).

When asked whether the student was comfortable while requesting feedback, 33/71 replied in the negative. This may not only be because of a personal shyness or a fear of negative behavior on the part of the supervisor but also because the supervisor has his own duties with patient care and may not be free at that particular point of time. Thus the student hesitates to ask the supervisor for feedback in the interest of the patient being treated.[5] This raises the ethical question of number of faculty members required to deal with educational and patient needs. World over, there is a shortage of dental faculty due to greater earning as a private practitioner.

Human qualities such as respect and integrity are often differently assessed between different groups of critics.[6] In our study, we found that the respect for students was similarly perceived by students and faculty while there was a statistically significant difference between the perceptions of respect given by the faculty to students. This is may be partly due to the fact that the students are under stress because of academic and quota requirements and have needs in excess of the normal everyday interaction.

It is interesting to note that all categories of question stem which require communication skills, especially listening came out as significantly different between supervisor and student. Questions 5, 6, 12 & 13 were all significant with students claiming that supervisors were not doing enough. Clarifying conflicting feedback, giving specific feedback, giving feedback that can be understood, and asking when the student seems not to be understanding were all cited by students as inadequately performed and by supervisors as adequately performed. Positive reinforcement and hearing the students views instead of instructing and speaking has been perceived as a better method of clinical supervision.[7]

Strengths of our study include the anonymity of the questionnaire and the fact that the students questioned had passed the Final Professional examination and would have had no fear of repercussions. Therefore more honest opinions would be expected and reporting of negative experiences towards the supervision would be not be lessened.

Weaknesses include a relatively small sample size. Further intervention is required by training faculty acting as clinical supervisor to see if any of these perceptions come closer together.

Conclusion

Supervisors may think they are doing a good job but students may not be satisfied about every aspect of the feedback they receive. Training for clinical supervision duties should be made mandatory. Supervisors should be more attentive and empathetic towards the students being supervised. Time devoted to supervision and focus of concentration on the problem at hand should be improved. The PMDC should have a mandatory requirement of faculty in the clinic exclusively to supervise in order to increase availability of the supervisor.

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ORIGINAL ARTICLE

Assessing the Long Case in Undergraduate Medical Students: Development of Structured, Feasible, Valid and Reliable Tool.

Rehan Ahmed Khan, Fahd Mudassar Hameed, Masood Anwar

ABSTRACT

Objective: To develop structured, feasible, valid and reliable tool in assessing long case in undergraduate medical student.

Study Design: Qualitative Action Research.

Place and Duration: IIMCT, Aug, 2012 to Oct 2013.

Materials and Methods: An action research approach was used. Problems of un-structured examination in long case were identified. Delphi technique with the senior faculty was used to identify the components of the assessment tool. Final draft of the tool was sent to medical educationists for their input.

Results: A structured tool (SLICE) for examining the holistic approach of student towards managing a patient was developed and was found to be reliable (Cronbach alpha 0.87) and valid.

Conclusion: SLICE is a feasible, valid and reliable tool to assess long case in undergraduate medical students in our setup.

Key words: *long case, assessment, reliability, clinical competence.*

Introduction

The origins of long case can be traced back to mid-19th century in Cambridge, when it was first used to assess the clinical skills. According to Pilgrim, the long case is integral to the bio-psychosocial approach, which has had a significant influence on British psychiatry since the 1970s when it became established as psychiatric orthodoxy.[1]

In the traditional long case, candidates are given uninterrupted and unobserved time, usually 30±45 minutes, to interview and examine a patient, selected from the wards or outpatients and untrained for examinations.[2] Long case assessment is used for assessing history taking skills, general physical examination, and relevant regional examination, making a provisional diagnosis and defending it. It then involves suggesting the relevant investigations and appropriate treatment for the patient, concluding with follow up. The whole exercise is done on a single patient. This provides the examiner with the opportunity to assess a candidate holistically on single patient from the diagnosis to the treatment of the patient. In reality, this is the actual situation which is faced by the doctor.

It is not an easy task to find an appropriate tool to assess a skill. Long case is arguably a valid and educationally valuable test.[3] There is now certain evidence that in all measurements of clinical competence, candidates perform variably across tasks.[3, 4] The long case attempts to assess the integrated interaction between the doctor and a `real' patient. This is in contrast to OSCE where different stations may check all these skills for different diseases or problems, but still lack the practical scenario, where a doctor has to diagnose and treat a single patient and not different components of management in different patients.

Long case assessment is considered by many of the medical educationists as a talk of the past. Due to the subjectivity, poor validity and feasibility, the unstructured long case went out of favour and has been taken over by OSCE. OSCE is being used for assessment of clinical competence[5], however to assess a student holistically[6] about the management of a single patient, as in real life, a more real clinical encounter is required.[7]OSLER (objectively structured long examination record) is a valid and reliable tool to assess a long case. Osler has been used for more than over a decade for both undergraduate and post graduate examinations. The standard time to assess a student with this tool is 25-30 minutes. In our setup, a class in a medical college consist of 100-200 students. These students in final year MBBS are usually examined by 2 examiners (an internal and external).Using OSLER, either less number of students are examined in a day by 1-2 examiners or many examiners are needed to test same number of students. This is a considerable feasibility issue. We also observed that converting the grades to scores was a cumbersome activity by the faculty. To address the time, learning curve and add direct observation of clinical skills in a single test, there was a need for a tool that is objective, easy to learn and score and time bound. For this purpose, structured long

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interview and clinical examination was designed.

Materials and Methods

An action research approach was used. In this approach, the current issues or problems faced at the workplace are addressed. The study was carried out at IIMC-T from August 2012 to October 2013. The issue was first recognized at the platform of the assessment committee of IIMC-T, where it was pointed that all clinical departments were using different formats for assessing the long case. This was resulting in lot of subjectivity and dissatisfaction among students. The time to assess students in a long case was also variable. The assessment time varied from 5-20 minutes. Moreover due to lack of a structured format, the examiner was at free will to inquire the examinee according to his likes and dislikes leading to bias in assessment.

To design the tool, Delphi technique was used. Serial meetings were held with the senior clinical faculty members who were involved in conducting the long case examination. Common themes were identified. The final draft of the tool which was designed by the authors was sent to 05 medical educationists and 20 students of medical education pursuing masters in medical education to highlight deficiencies in the tool. Eventually the tool (SLICE) was finalized. Initially it was used at the end of clinical rotations before employing it at the end of Final year MBBS which is a high stakes examination.

Results

The developed instrument is attached as Annex 1 and Annex 2. The instrument was used in both formative and summative Assessment. In case of formative assessment, it was used to assess long case of final year students at the end of their surgical rotation and immediate feedback was provided based on this tool.

As a part of summative assessment, it was used at the end of complete rotations in Surgery and Allied, Medicine and Allied, Gynaecology and Obstetrics and Paediatrics to assess long case.

It was found to be feasible, valid and reliable tool. Mean completion time of assessment was 12 minutes. It was also found to be easier to be taught to the examiners. Face validity was considered high whereas content validity was rated low by the examiners. Cronbach alpha was found to be 0.87.

Annex 1:

STRUCTURED LONG INTERVIEW and CLINICAL EXAMINATION (SLICE)

Student Name: **Student Roll No:**

MARKS AND TIME DISTRIBUTION

Task	Marks	Time in minutes
HISTORY PRESENTATION	20	3
EXAMINATION	15	4
DEFENDING PROVISIONAL DIAGNOSIS	15	2
DEFENDING RELEVANT INVESTIGATIONS	15	2
DEFENDING MANAGEMENT	35	5
Total	100	16

Please use the following format to award marks to the students:

HISTORY PRESENTATION			
Component to be assessed	Marks	Marks obtained by the student	
Presenting complaints in chronological order with relevant, comprehensive, history of presenting complaints in orderly manner	15	Excellent 15	Follows the sequence as mentioned
		Good 12	Orderly manner is not observed
		Fair 9	Presentation is not comprehensive
		Borderline 6	Presentation is not relevant
		Un satisfactory 3	Presenting complaints not in chronological order
		Poor 0	Completely disordered without any logic
Presentation skills 1. Correct medical terminology 2. Assertive, 3. Audible , 4. Paucity 5. Eye contact	5	Excellent 5	Observes all five
		Very Good 4	Observes all four
		Good 3	Observes all three
		Average 2	Observes all two
		Un satisfactory 1	Observes only one
		Poor 0	Observes none

DEFENDING PROVISIONAL DIAGNOSIS			
Making a provisional diagnosis and providing relevant points to defend it	10	Excellent 10	Confidently defends all the relevant points
		Good 8	Confidently defends most of the relevant points
		Fair 6	Defends most of the relevant points but lacks confidence
		Borderline 4	Is not able to defend some points relevant to diagnosis
		Un satisfactory 2	Contradicts himself in cross questioning
		Poor 0	Is not able to make a provisional diagnosis
Providing a list of relevant D/D and excluding them logically	5	Excellent 5	Confidently provides a list of all relevant D/D and excluding them logically
		Good 4	Confidently defends most of the relevant D/D and excludes them logically
		Fair 3	Defends most of relevant D/D and excluding them logically but lacks confidence
		Borderline 2	is not able to defend relevant D/D and excluding them logically
		Un satisfactory 1	Contradicts himself in cross questioning
		Poor 0	is not able to defend relevant D/D and excluding them logically

EXAMINATION			
Performs General Physical Examination 1. Takes consent 2. Check Vital signs 3. Check e yes for (pallor/jaundice) 4. Palpate Lymph nodes 5. Checks Oedema (Ankle/Sacral)	5	Excellent 5	Performs all the mentioned tasks
		Good 4	Performs only four
		Fair 3	Performs only three
		Borderline 2	Performs only two
		Un satisfactory 1	Performs only one
		Poor 0	Performs none
Performs specific examination on Patient Relevant regional examination Orderly Pain free examination, Correct clinical methods, Narrates the positive findings	10	Excellent 10	Performs according to the mentioned criteria
		Very Good 8	Examination is not orderly
		Good 6	Does not narrate positive findings
		Borderline 4	Examination is not pain free
		Un satisfactory 2	Clinical methods are not correct
		Poor 0	Does not examine the relevant regional examination

Discussion

Deciding a tool which is ideal to assess clinical competence of medical undergraduate students is an arduous task and still very debatable.[9]

Gleeson developed the objective structured long examination record (OSLER) where the presentation is structured to increase the observations made by examiners on the candidate's approach to the case.[10,11] However in a scenario, where an examiner cannot give more than 10-15 minutes to a student, it difficult to use OSLER. Here either a modification of the existing tool or development of new tool is required.

Reliability of the long case is as good as an OSCE[12] or short case[13], if it is done on the principles of assessment. These principles are good validity, reliability, feasibility, acceptability and educational impact. Structured Long Interview and Clinical Examination has been developed keeping these principles in mind. It has an easy learning curve. It has better acceptability for students. It has a good educational impact. Its face and predictive validity is high, however its content validity is low.

SLICE has been designed keeping in view the ease of assigning marks to student. Each segment from history taking to follow up of the patient has been compartmentalized and rubrics added. This has been done to structure the assessment. However the marking has been kept easy as compared to other similar tools available.[6,8] The complexity of grading the student in an individual segment and then decoding it, has been avoided.[8] The time factor has also been taken into consideration. The SLICE has been developed to assess a student in duration of 16 minutes; however, we have found the mean time to be 12 minutes. This is in contrast to other tools which required 20-30 minutes to complete the assessment.[8] For the ease of examiners, SLICE has been divided into main components; the main marking sheet (annex 1) and the detailed assessment sheet (annex 2). Once the examiner has mastered the tool from the detailed assessment sheet, he can easily grade or mark the student using the main sheet only.

The reliability of a tool which is reproducibility of the test scores is an important pillar of the assessment tool. The reliability of the SLICE has been found to 0.87 which is at par with OSLER and OSCE.[14,15]

Observation of history taking in a long case appears to measure a useful and distinct component of clinical competence over and above the contribution made by the presentation. This has not been added at this stage but suggestions have been made to incorporate asking relevant questions in history from the patient under observation. The deficiency of direct observation has been overcome by observing the relevant general physical and regional examination and explaining the diagnosis and follow up to the patient by the examinee.

The tool is still in its infancy. It has been employed for both formative and summative assessment and low and high stakes examination in our university, but further evaluation of the tool is required at national and international level. Detailed statistics on concurrent and construct validity are needed to further validate the tool.

This has to be kept in mind that it will always be difficult to achieve an ideal tool to assess holistic approach of a student in managing a patient. As said by Mr. Gleeson, "The perfect method for long case clinical assessment has yet to be established"[8], however the efforts should go on and till then SLICE represents a suitable tool, modified and developed according to the contextual needs in assessing long case.

Conclusions

Pros:

- Well Structured
- Feasible, valid and Reliable
- Easy to conduct and score
- Examiner training easy

Points which need improvement:

- Validity and reliability to be tested at national and international level
- Electronic SLICE to be designed

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ORIGINAL ARTICLE

Identifying Learning Styles Among Medical Students: Does Our Assessment Favors Certain Learning Style?

Fahd Mudassar Hameed, Rehan Ahmed Khan, Masood Anwar

ABSTRACT

Background: Learning Style is usually identified as an individual's pattern for acquiring information.[1] This study was used to identify the learning style of Medical students and comparing the individual Learning Styles with the Result of Annual Summative Assessment to ascertain any link.

Objective: Objectives of the study were two-fold: First, to identify the learning style of Medical Students for their sake and for the sake of faculty so that adequate planning in the curriculum could be done. The second aim was to search whether our Curriculum is oriented towards a particular learning style in students through comparison of learning styles with Annual Assessment Result.

Study Design: It was a Cross-Sectional Descriptive Study

Place and Duration of Study: The study was conducted among students of 3rd year MBBS, Islamic International Hospital.

Materials and Methods: The 80-item Honey and Mumford Learning Style Questionnaire[2] was distributed to a class of 100 students .The result was compiled on MS Excel and compared with the results of Summative Assessment of the students.

Results: In our study, Majority of the students were Reflectors (35.5 %) (n=32), followed by Reflector-Pragmatists (13.3 %) (n=12). Theorists (12.2%), Pragmatists (11%), Reflector/Theorists (8.8%) and Activists (6.6 %) 34% of the students (n=31) had a combination learning style. One student had all four learning styles. Comparison of Assessment result with the result of the Questionnaire was done: on an Average Reflectors have scored higher (73%) as compared to Pragmatists (72%), Theorists (71.5%) and Activists (66%).

Conclusion: Although no gross difference, the Assessment result on an average, was a bit higher for reflectors. This study also shows that most of the students learn more effectively from lectures, project works and independent study.

Key Words: *Learning Styles, Assessment, Honey and Mumford.*

Introduction

Though there is no single universal definition of "learning".[3] Learning is defined as "the activity or process of gaining knowledge or skill by studying, practicing, being taught or experiencing something."[4]

Individuals have been studying ways in which different persons learn. A number of learning related concepts have been circulating in the literature when attempts are made to identify performance. Learning style is the concept that has given valuable insights into learning of both academic and other settings. Learning style is the manner in which individuals choose or are inclined to approach a learning situation. Any individual Learning Style influences his performance and achievement of learning outcomes.[5] Learning style is also identified as individual's pattern for acquiring information.[6] Sadler-Smith described it as "a distinctive and habitual manner of acquiring knowledge skills and attitude through study or experience."[7]

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There have been extensive work in the last four decades how individuals gain information and hence their learning style. There are more than thirty different learning style descriptions like Witkin Field's dependence/independence study and Keefe and Monks Learning style profile.

Honey and Mumford learning style Questionnaire was developed by Peter Honey and Alan Mumford in 1992. The description and measurement of learning style was grounded in Kolb's Experiential Learning Model. Kolb proposed in his four stage hypothetical learning cycle that learning is a continuous process.

According to him a learner touches all the four stages while learning: 'Immediate or concrete experiences' provide a basis of 'observations and reflections'. These observations and reflections are used to develop abstract concepts which in turn produce new implications for action and thus can be 'actively tested'. Based upon their learning styles, certain individuals cope better with some stages than others.

Based upon these four stages Kolb explained four-type definition of learning styles:

1) Diverging (Feeling/ Watching):

These people are able to look at issues from different perspectives. They prefer to watch rather than do

and tend to gather information. They use imagination to solve problems. They perform better in situation of ideas generation. They prefer to work in groups with an open mind.

2) Assimilating (Watching/Thinking):

Assimilating learning preference is for concise logical approach. They are more interested in ideas and abstract concepts. They are attracted to sound theories rather than practical value based approaches.

3) Converging (Thinking/Doing):

People with Converging style prefer using their learning issues to solve practical problems. They are more attracted to technical tasks rather than social or interpersonal issues.

4) Accommodating (Feeling/Doing):

People with this learning style prefer to rely on intuition rather than logic. This style is 'hands-on'. They prefer to work in teams to complete their tasks.

Based on the above learning styles Peter Alan and Honey Mumford proposed four learning styles.[8]

Activists: They learn by doing. They are ready to get into any new experience. They are open-minded and unbiased.

Reflectors: Learn by observing and thinking about what happened. They learn more in activities like paired discussions and questionnaires.

Theorists: They like to understand the theory behind actions. They need concepts and models to engage in learning.

Pragmatists: Pragmatists are interested to know how to put theory into practice. They are interested in case studies and problem-solving.[9]

Alan and Mumford developed an 80-item questionnaire that helps identifying an individual's learning style. The four learning styles measured by this questionnaire have been proposed as an alternative to Kolb's Learning Style Inventory i.e.

Activist: Kolb's Active Experimentation,

Reflector: Kolb's Reflective Observation,

Theorist: Kolb's Abstract Conceptualization and

Pragmatist: Kolb's Concrete Experience. Honey and Mumford's learning style questionnaire (LSQ) has been advocated to better than Kolb's Learning style inventory (LSI).

Although it lacks internal consistency, LSQ has better test-retest reliability. It has better face validity than LSI. The students at the end of analysis of their questionnaire can get a score showing their predominant learning style. Its' more of a self developmental tool that makes the student realize the way they learn.[10] At the end of solving the questionnaire one reaches a score with one style predominating having the highest score. Initially developed for management trainees, it has been applied successfully to other disciplines including education.[11] Honey and Mumford Learning Style has not been assessed among our Medical Students. Measuring and identifying learning styles can help the students to appreciate their approach to learning and are encouraged to utilize learning environments that suits their learning style. Conversely, Students can also attempt bringing in modification in their learning style to maximize the use of learning resources. We have tried to search for a link in our study between Learning Style and Assessment result. Assuming that all other factors that can improve Assessment result may be distributed in whole of the class, we have tried to find a link between assessment result and Learning styles of the students.

Problem Statement:

Learning style of the students is not known.

Any association between the assessment result and a particular learning style if present is not established.

Research Question:

What are the learning styles of our students in question (3rd year MBBS)?

Is there any link with their preferred learning style and assessment result?

Materials and Methods

It was a cross sectional descriptive study conducted at Islamic International Medical College, Rawalpindi, Pakistan among Year 3, MBBS students. All students present in the class were first given an introduction of the study, learning styles and Honey and Mumford learning style Questionnaire. Filling in the questionnaire was considered as their consent to participate in the study.

Instrument:

80-item honey and Mumford's Learning style questionnaire was distributed to the students of a class of 100 students. There was place for writing the name and roll no. They had the option of writing their email address if they wished to be communicated

their learning style.

The students were given ample time for filling in the questionnaire. They were required to tick mark the option which they considered best representing them. Each option tick marked was marked one the results were calculated, compiled and analyzed. They were compared with result of Summative Assessment of the students. Individual results were sent to the students who consented by giving their email addresses.

Results

Out of a class of 100 students, 98 students were present. 88 students filled in the questionnaire. So the response rate was 89.7%.The Frequency with which different Learning Styles appear in these 92 students is shown in Table I. The result of the previous final examination of the class was obtained. The average marks of the students in each group were calculated (shown in Table II).

The chart (Figure 1) shows that when the average results of student groups pertaining to predominantly one group compared showed that Pragmatist were having the maximum score.

The above chart show that when the average assessment score of group of students(pertaining to a predominantly one learning style) were compared showed that Pragmatist were having the highest score, followed by reflectors, activist and theorist i.e., 73.12,69.26,68.75 and 65.4 respectively.

Discussion

Learning style of students has been the focus of research in many studies. Honey and Mumford learning style questionnaire that is easily available on the internet. It has been used to identify learning style of undergraduate and Post graduate students as well as nursing students.

In our study about 1/3 of students had 'Reflectors' learning style. Sandra Fleming and colleagues reported the same style being predominant.[12] The most frequent learning style was 'reflector (26%), in another study, followed by Reflector/Theorist (17.2%) and then activist (16.7%).[13] This meant these students occupying a major proportion were those who preferred to observe things from different perspectives. Instead of jumping into conclusions they preferred to collect data and preferred to think thoroughly before coming to a conclusion.[14] When

Irfan Shukr and colleagues found that the predominant learning styles among undergraduate medical students were activists (45%) while the post graduate medical students were mainly reflectors (38%).[15] In our study we had 33% reflectors in undergraduate level while the Activists were only 4.5 %.Majority of the learning styles were mixed learning styles in our study. Similarly a wide range of Learning Styles have been found by Lesmes-Anel J and colleagues.[16] Though this has been suggested in the literature that learning styles do affect performance and that medical teachers should use variety of teaching strategies to cater the need of students with different learning styles[17], no study is found that compares the Honey and Mumford learning styles with the assessment result. When we compared the learning styles with assessment result we found that on an average 'Pragmatists' had a higher score.

Limitation of the study:

The sample size in our study is small .There is a need for a similar study with large sample size to produce a more meaningful link between Learning style of students and assessment result. Having said, this study gives a direction to a more meaningful probing to the effect of learning style on their performance in the assessments.

Annexure

**Table I: The Frequency of different Learning styles.**

Predominant Learning Style	No. of students	Percentage
Activist	4	4.5
Reflector	29	32.9
Theorist	7	7.9
Pragmatist	8	9
Reflector/Theorist/Pragmatist	13	14.7
Reflector/Pragmatist	8	9
Reflector/Theorist	6	6.8
Theorist/Pragmatist	3	3.4
Activist/ Reflector/Theorist	1	1.1
Activist/ Theorist/Pragmatist	1	1.1
Activist/ Reflector	1	1.1
Activist/ Reflector/ Pragmatist	1	1.1
Activist/ Reflector/Theorist/Pragmatist	6	6.8

Table II: Average Marks of Student Groups with a Common Learning Style

Predominant Learning Style	Average Marks of the group
Activist	68.75
Reflector	69.26
Theorist	65.4
Pragmatist	73.12
Reflector/Theorist/Pragmatist	68.54
Reflector/Pragmatist	70.3
Reflector/Theorist	66.83
Activist/ Reflector/Theorist	70
Activist/ Theorist/Pragmatist	61
Activist/ Reflector/ Pragmatist	64
Activist/ Reflector/Theorist/Pragmatist	69.6

Fig 1: Comparison of Average marks of student groups with distinct Learning Styles

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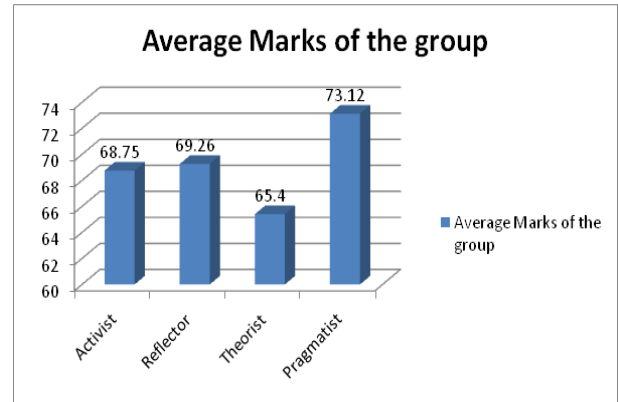
ORIGINAL ARTICLE
Medical Education: A Preference by Parents for their Children in a Private Medical College

Muhammad Ayaz Bhatti, Masood Anwar

ABSTRACT

Background: Occupations which require high educational attainment, are well-compensated and are held in high public esteem such as physicians, lawyers, engineers, scientists and professors are largely considered to be upper middle class. Education serves as perhaps the most important value and also the most dominant entry barrier of the upper middle class. This article examines some of the factors or determinants which enable the parents for choosing medical profession for their children specially the females.

Objective: To see the social determinants (profession, occupation) of parents for choice of medical profession by gender In Private Medical College for their children.

Study Design: A descriptive study.

Place and Duration of Study: This study was conducted from 2009 to 2011 at Islamic International Medical College, Rawalpindi.

Materials and Methods: This was a descriptive study. Sampling was universal as all the students of year 2009, 2010 and 2011 who succeeded in getting admission were included in the study. Data was collected through a questionnaire from the record mentioning Class year' Gender, Fathers Occupation. Data was entered and analyzed in SPSS version 17.0. Tables and graphs were made for data presentation and percentages and cross tabulation was done among variables.

Results: The ratio of female to male students is on continuous increase. The main segments of the society who opted for the private medical education for their children during these three years were, government servants and businessmen i.e., 33.3% each, Doctors 15%, Miscellaneous 10%, Engineers 8% Agriculturist 2.5% and advocates/Judges 1%. There is progressive increase of female students from 2009 to 2011. It was 65% in 2009, 70% in 2010 and 75% in 2011.

Conclusion: Medical profession and medical education is cherished more by the parents for females. All segments of the educated and affording class of society whether government employees' business man, doctors, engineers, are investing in female human resource.

Key words: *Social development, Medical profession, Private medical education.*

Introduction

In the early 1990s a decision was made by the Government of Pakistan that permanently changed the face of medical education in the country. There were limited seats for female students, and the larger proportion of seats was for male candidates.[1]

Social class is sometimes presented as a portrayal of how members of the society have sorted themselves along a continuum of positions varying in importance, influence, prestige, and recompense.[2] As differences in the academic performance and educational attainment of boys and girls continue to decrease in magnitude, increasingly researchers are suggesting that girls and boys may be more similar than they are different.[3] Gender research appears to be moving from assumptions of homogeneity within

the sexes to a more detailed examination of intra gender differences among girls and boys, taking into account profession, Choice, Group, and social class.[4] Despite the great expansion of educational opportunities worldwide during the past thirty years, women in most developing countries still receive less schooling than men. Until now there is convincing evidence that the education of females promotes both individual and national well-being.[5] Education is a key part of strategies to improve individuals' well-being and societies' economic and social development. In the Middle East and North Africa (MENA), access to education has improved dramatically over the past few decades, and there have been a number of cheering trends in girls' and women's education. Primary school enrollment is high or universal in most MENA countries, and gender gaps in secondary school enrollment have already disappeared in several countries. Women in MENA countries are also more likely to enroll in universities than they were in the past.[6]

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Tertiary education (or "higher education") is required for many middle-class professions, depending on how the term middle class is to be defined. Tertiary education is rarely free, but the costs vary widely: tuition at elite private colleges is high for a five-year program. On the other hand, public colleges and universities typically charge much less (for state residents).[7] The barriers and constraints tend to affect girls much more than boys in most countries and they can be found within the education sector as well as outside of education. Girls tend to start school late or not at all because they are more engaged in Household chores and income generating activities than boys.[8]

Across the globe, nearly 70 million children are deprived access to a basic education.[9] A 2008 estimate states that 60 percent of these children are girls. Among developing nations, "the gender gap between boys and girls in primary school completion rates is greater than 10 percentage points.[10] An additional 100 million girls worldwide that begin primary school do not finish.[11] Pakistan is one of the lowest literacy rates in the world, coupled with a gross disparity when broken down by gender. For females, it is about 35% as compared to approximately 62 % for males. In Pakistan, the standard for "literacy" is if one can read a newspaper and write a letter in any language. Given these literacy rates, it's hardly unexpected that a Pakistani girl receives, on average, just two and a half years of education; for boys, its double. If a girl lives in a rural area, she is three times less likely to complete primary school than is a boy in the same area. Similarly, in rural areas, the female literacy rate is 25 percent and only one in five girls is enrolled in school. Secondary education is a luxury in Pakistan for all children, but even more so for girls, for whom enrollment drops by nearly 90 percent from 1st grade to 12th grade. Occupations which require high educational attainment, are well-compensated and are held in high public esteem such as physicians, lawyers, engineers, scientists and professors are largely considered to be upper middle class. Education serves as perhaps the most important value and also the most dominant entry barrier of the upper middle class.[12] This article examines some of the factors or determinants which enable the parents for choosing medical profession for their

children specially the females.

Materials and Methods

The study was carried out in a private medical college from December 2009 to April 2011. Sampling was universal as all the students of year 2009, 2010 and 2011 who succeeded in getting admission were included in the study.

Objective of the study was to see the social determinants (profession, occupation) of parents for choice of medical profession by gender In Private Medical College for their children. Data was entered and analyzed in SPSS version 17, tables and graphs were made for data presentation and percentages and cross tabulation was done among variables. The subjects were selected at the time of admission. The whole class (admission intake) comprising of 100 students during the admission years 2009, 2010 and 2011 were included. The base line data was collected from the record, documents submitted at the time of admission and verified from the original record. Four main variables were studied in addition to others. These were Father's occupation, choice of program, gender of the student and the difference in strength of student both male and female in three years. Data was collected through a questionnaire directly and indirectly from the record mentioning Class year' Gender, Fathers Occupation.

Results

The ratio of females to male students is on continuous increase, it was 65:35 in 2009, 70:30 in 2010 and 75:25 in 2011. The main segments of the society who opted for the private medical education for their children during these three years was, Government servants and business man 33.3% each, Doctors 15%, Miscellaneous 10%, Engineers 8% Agriculturist 2.5% and Advocates/Judges 1%.

During the year 2009 the occupation of the parents of students who succeeded in getting admission in medical college was 32% Government servant, 21% business man, 18 % Doctors, 14% in miscellaneous jobs, 12% Engineers, and 3% from the agriculture sector. Among these admissions the intra professional distribution for the gender is that the government servants opted (21% for males and 79% for females). Businessman's opted (33% for males and 67% for females), Doctors (62.5% males and 37.5% for females). Miscellaneous jobs 42% males

and 58% females, Engineers 20% males and 80% females), and agriculturists 67% males and 33% for females. During this year the Government servants, Businessman Miscellaneous Jobs and engineers were the professions who in majority opted more for the female medical education. Doctors and agriculturist were the professions who mainly opted more for male medical education. During this year the engineers were on top of the list for female medical education i.e. 80%.

During the year 2010 the composition of class was 30% males and 70% females. Among these admissions the professional distribution was 37.5% business man 25% government servant, 18% doctors, 12% miscellaneous professions, 5% engineers and 1% agriculturist. Among these admissions the intra professional distribution for the gender is that the Agriculturists opted 100% for females but the number is only 1. Engineers 80% females and 20% males, Government servants 77% females and 23% males, miscellaneous professions 77% females and 23% males, Doctors 68% females and 32% males and businessman 64% females and 36% males. During the year 2011 the composition of

Table I: Fathers' Professions and number of admissions from 2009-2011

Sr. No.	Profession of Fathers	Males 2009	Males 2010	Males 2011	Females 2009	Females 2010	Females 2011	Total	%
1.	Doctor	10	6	2	6	13	6	43	15
2.	Engineer	2	1	2	8	4	6	23	8
3.	Business man	6	14	6	12	25	28	91	32
4.	Agriculturist	2	0	0	1	1	3	7	2.5
5.	Govt Servant	6	6	7	22	20	30	91	32
6.	Miscellaneous	5	2	1	7	8	7	30	10.5
Total admissions								285	100

Table II depicts the important findings about the gender preference for (female) medical education. On the top of the list for female medical education are the Government servants. 79% of the government servant's opted medical education for their daughters, 78.3% of the engineers' 78% of agriculturists, 60.3% of doctors and 74 % of miscellaneous professions opted Medical education for their daughters

class was 25% males and 75% females. The professional distribution of parents was Government servant 38% Businessman 35% miscellaneous 9% Doctors 8%, engineers 8%, Agriculturist 3%. Among these admissions the intra professional distribution for the preference of gender was doctors 25% males and 75% females, the same distribution was found in Engineers. Business man 82% females 18% males, Agriculturist 100% females though the number is again very small, Government servant 81% females and 19% males and miscellaneous professions 88% females and 12% males.

There is progressive increase of female students from 2009 to 2011. It was 65% in 2009, 70% in 2010 and 75% in 2011. All the professions were more inclined towards the female education (Table I)

Table I depicts the professions of parents, who opted for medical education for their children. Maximum of them were government employees and business man 32% each. Next to that is the businessman 21%, Doctors 15%, engineers 8%, Miscellaneous 10.5% and agriculturist only 2.5%.
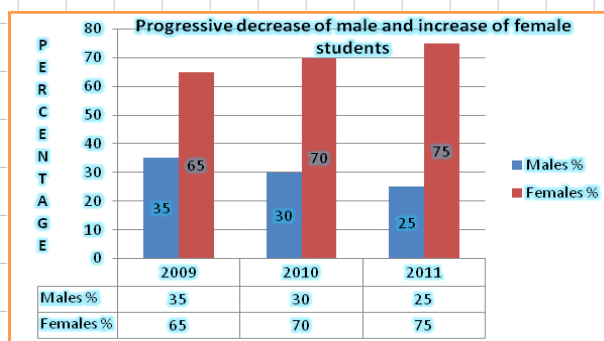

Figure 1: Progressive Increase in the Number of Female Students

Table II: Preference of Medical education for females and Profession of fathers

Sr. No.	Profession of Father	Females % 2009	Females % 2010	Females % 2011	Average
1.	Doctor	38	68	75	60.3
2.	Engineer	80	80	75	78.3
3.	Business man	67	64	82	71
4.	Agriculturist	33	100	100	78
5.	Govt Servant	79	77	81	79
6.	Miscellaneous	58	77	88	74.3

Discussion

Private education is quite expensive and the candidates who secured admission in majority were the children of government employees (32%), business men (32%) and doctors 15%. which reflect that educated and affording people are interested to invest in the human resource. As medical profession is thought to be the noble profession and it also plays important role in improving the social status. It also came into the lime light that the medical profession and medical education was cherished more by the parents for females. Increase in females in medical education is the universal phenomenon among the public sector medical colleges also, this can be seen from the number of candidates who appeared in the entrance test for the year 2013 by the University of Health Sciences (UHS) Lahore as many as 11,094 candidates appeared in the entery test and 7319 (66%) were females and 3775 (34%) males.[13] The same phenomenon is seen in the private medical colleges.

Viewing on the social and economical impact of this phenomenon it is seen that on one hand it is improving the women status in the community but it also reflects that women have limited opportunities in other professions. As the social impact on the society is concerned there are many issues to be addressed. In Punjab and Sind the number of male and female doctors is very close almost equal but in real practice most of the health centers are lacking doctors specially the female doctors.[14] Government needs to evolve strategies for attracting the female health force for the rural areas as well as to increase the number of male doctors. Males are more prone to serve in the remote and rural area as compared to females because of our socio-cultural structure.

Conclusion

Medical profession and medical education is cherished more by the parents for females. All segments of the educated and affording class of society whether government employees' business men, doctors, engineers, are investing in female

human resource. More research is required to find out the benefits and drawbacks of this paradigm shift.

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REVIEW ARTICLE
Trends on The Use of E-Learning in Continuing Medical Education: A Review

Saad Zafar, Bushra Malik

ABSTRACT

Objective: The objective of this study is to present updated trends, gaps and focus areas of e-learning in the field of Continuing Medical Education (CME) as reported in the literature. A total of 59 journal paper published between 2003 and [June] 2013 were reviewed from selected databases. The results show that there is a growing trend of using e-learning for CME. The e-learning interventions range from using online/web-based training modules to mobile learning using a wide range of tools and technologies, which include learning management systems, smart mobile applications, video imaging, virtual patients and video conferencing. Even though majority of reported studies are from the countries that are generally perceived as *technologically advanced* countries, a few studies from developing countries have also been reported indicating a growing interest in the field.

Keywords: *Continuing Medical Education, e-learning, Review.*

Background

E-Learning is now widely used as an effective source of delivering trainings and instructions. It provides the learners the opportunity to construct and confirm knowledge through electronically mediated asynchronous and synchronous communication.[1] Thus, e-learning not only facilitates the traditional teaching through synchronous mode of communication but also augments learning through asynchronous communication. This flexibility makes the learners both part of the learning community and at the same time give them the opportunity to learn at their own time, space and pace. Studies have shown that expending e-learning through Web 2.0 tools and technologies has contributed positively to the motivation and interaction of students in their learning.[2]

The field of medical education is no exception. There is now wide spread use of learning technologies in almost all the disciplines of health sciences.[3] In particular, there is a significant interest in the use of e-learning for the purpose of Continued Medical Education (CME), where medical professionals are required to advance their knowledge while performing their regular duties.[4] Through the integration of digital technologies and the use of Internet the medical professionals can earn their

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CME credits in a learning environment that allows them to not only collaborate but learn from distance at their own time and pace. Due to this reasons, a number of e-learning programs have been initiated across the world to facilitate the medical professionals.[5, 6] The efficacy and the efficiency of such programs have been of interest to many medical educationists and practitioners.[7,8,9]

A review of state-of-the-practice and state-of-the-art in the use of e-learning in the field of Continuing Medical Education has been presented in this paper. The aim of the study is to present updated trends, gaps and focus areas of e-learning in the field of CME as reported in the literature. The literature is reviewed with a broader perspective of e-learning, which not only covers online CME but also other e-learning methods including computer-based learning, computer assisted instructions and web-based learning. This widened scope and updated search differentiates this study from other similar studies.[10,11,12] This study is part of an ongoing project to systematically review the efficiency and efficacy of e-learning in the medical education.[13]

Materials and Methods

The literature on medical education is reviewed for use of e-learning in CME. The journal articles related to medical education published between 2003 and (June) 2013 were searched for e-Learning in medical education. The search of the articles was restricted to PubMed Central, BioMed Central, Wiley Online Library and Springer databases to keep the scope of

the study manageable. The extended time period was selected to clearly identify the trends of use of e-learning in CME. The non-medical databases (Wiley and Springer) were selected to cover articles that may be published in educational and technological journals not related to medical. The keyword 'e-learning' was used to search the medical database, whereas the keyword 'e-learning in Medical Education' was for non-medical databases. The search yielded a total of 249 papers. The papers were classified according to different educational levels in medical education. A total 59 papers were classified in the category of Continuing Medical Education. NVIVO 10 software developed by QSR[14] was used for organizing, classifying and analyzing the studies reported in the papers. The research team for this project compromised of two senior e-learning experts, one medical doctor and two research assistants.

Data Extraction

The full-text of all the 59 papers was downloaded and imported into NVIVO software. The extraction fields included: Health Profession (e.g. Medical, Nursing, Dentistry etc.), Tools and Technologies (e.g., Smart Phones, Podcasting, videoconferencing, CD ROMS, etc.), Study Intervention (e.g. Internet-Based Learning, Computer-Based Instruction, Virtual Schools, etc.), Study Location, Author Country, Year of Publication, Name of Journal. Nodes for all the data extraction fields were created to assist in the organization, classification and analysis of the extracted data.

Results

The review report in this paper covers the analysis of the 59 papers classified in the category of Continued Medical Education. The journal which yielded the most relevant papers was BMC Medical Education (n=8), followed by Journal of Continuing Medical Education in the Health Professions (n=6), BMC Family Practice (n=4) and European Journal of Dental Education (n=4). The journals with less number of publications are Implementation Science (n=3), American Journal of Pharmaceutical Education, ISBT Science Series and Journal of Psychiatric and Mental Health Nursing with two publications each. The list of journal containing one paper each is attached as

Appendix A. The year-wise trend (see Figure 1) show gradual start with one to two papers from 2003 to 2006. In the period between 2007 and 2008 the total number of publication rose from 4 papers to 11 papers. However, the number of publications declined from 8 to 6 in 2009 and 2010, respectively. In the following years the publications increased from 7 in 2011 and 8 in 2012. In the first half of 2013 there were a total of 7 studies reported in the selected databases.
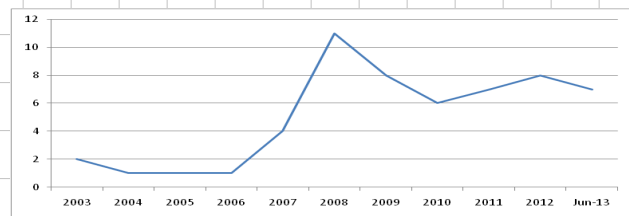

Fig 1: Year-Wise Distribution

To identify the regions active in the research related to e-learning in CME, the data was extracted from two different aspects. The country of the authors was identified in the first category and the study location was identified in the second category. The first category is selected as an indicator of where the research is initiated and the second category is selected as an indicator where the research is carried out. The authors of the selected papers belonged to 18 different countries. The most authors belong to UK (n=16), Canada (n=8), Australia (n=7), USA (n=4) and Germany (n=4). The affiliation of authors to countries with frequency of papers published was three or less is presented in Appendix A. It is noteworthy that in the list attached in Appendix A there are six publications from Asia and two publications from Africa. In the second category 20 different countries are identified where the studies were located. The countries with most studies were UK (n=16), Canada (n=8), Australia (n=6), USA (n=4) and Germany (n=4). The remaining list of countries with three and less publication is provided in Appendix A. Here studies reported from Asia are six and one is from Africa.

The selected papers were also categorized against the health professions to identify those sub-fields that have a keen research focus on e-learning in the domain of CME (see Figure 2). The generic category of 'Medical', which contains all the clinical and basic sciences subject areas, had the most number of studies (n=34). This was followed by Nursing (n=11)

and Dentistry (n=6). There are also some studies (n=5) that did not address any particular field of health profession but reported on CME in general in the health profession. These studies were collated in a field called 'Health Profession in General'. Lastly, there were 3 studies that were categorized for the field of Pharmacy. Within the field of Medical; 18 papers targeted medical field as a whole. Out of the remaining 16 studies, two studies each were for the field of Pediatrics, Surgery and Transfusion Medicine. The rest 10 papers represented the following 10 sub-fields of medical (one paper from each sub-field); Aerospace Medicine, Anatomy, Dermatology, Epilepsy, Genetics, Neurology, Pain Medicine, Physiology, Psychiatrics and Radiology
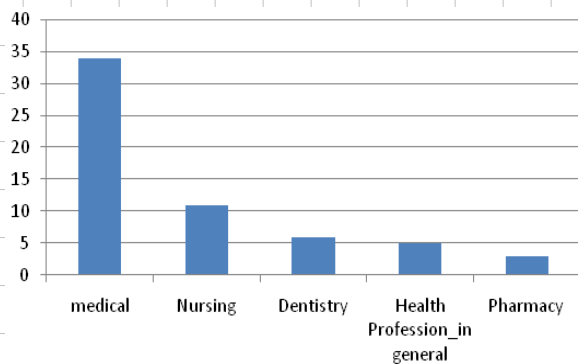

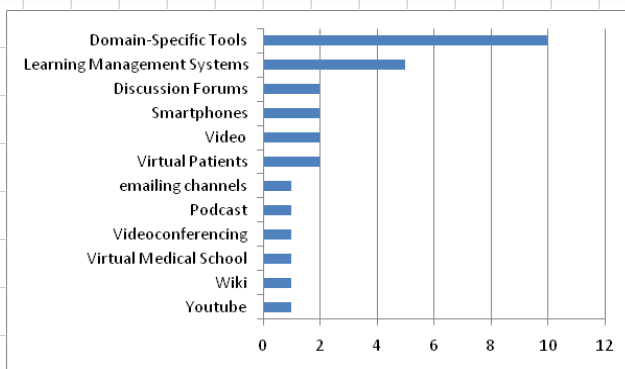**Fig 2: Study Distribution by Health Professional sub-fields**

Fig 3: Specific tools and technologies reported in literature

All of the selected studies reported positive impact of e-learning initiatives. The tools and technologies used in the studies are listed in Figure 3. A total of 10 studies reported positively on the use of domain specific tools in addition to the use of Learning Management System (n=5), Discussion Forums (n=2), Smartphones (n=2), Videos (n=2), and Virtual Patients (n=2). The other tools used included Video

Conferencing (n=1), Virtual Medical School (n=1), Wiki (n=1) and YouTube (n=1). LMS is a popular tool in Healthcare Education.[17] Raynor and Iggulden [18] reported the usefulness of interactive e-book-VLE hybrid in Anatomy and Physiology and also concluded that institutions and publishers need to resolve issues together to improve its effectiveness. Nurses downloaded podcasts from VLE and reported that these tools have added value to their learning.[19] Use of Learning Management Systems, Discussion Forums, Video imaging,Virtual Patients etc., is present in medical education from many years but use of smartphones[20,21], podcasts and YouTube[22] reveal that CME is not lagging behind in the usage of new technologies. These results shows that Medical (n=14), Nursing (n=5), Dentistry (n=2), Pharmacy (n=2) and Health Profession in general (n=2) are using the e-learning tools and technologies to effectively impart Continuing Medical Education.As for 'Domain Specific Tools', Llambi et al.[15] reported the adaptation of the tool; evidoctor, from Canada to Uruguay. The reason for this adoption was to cut the cost of developing a new system from the scratch by adapting already developed systems. Diabetes Needs Assessment Tool (DNAT)[7] was reported to be useful and easy to be used by the Health Professionals. From nurse-anesthetic perspective, one study[16] reported the successful implementation of Pain Management-Decision Support System.

To identify the specific e-learning initiatives in CME, various e-learning interventions used in the study were extracted from the selected studies. In total there were 11 different types of e-learning interventions reported in the studies (see Figure 4). The major focus of the studies was on online learning (n=23). The online education reported included focused online trainings [17], online tools [8, 23], online resources [24, 25], and efforts to increase the use of online CME [10, 12] among some other online education interventions. The next intervention that was reported the most was use of e-Courses (n=13) that were particularly designed and implemented for CME. The e-Courses covered two evidence-based medicine courses among other e-courses. One was occupational physicians [26] and the other for clinical teaching.[27] Some of the e-courses were particularly designed for a specific field of health profession such as for Epilepsy [28], Dentistry [29] and Nursing.[9]
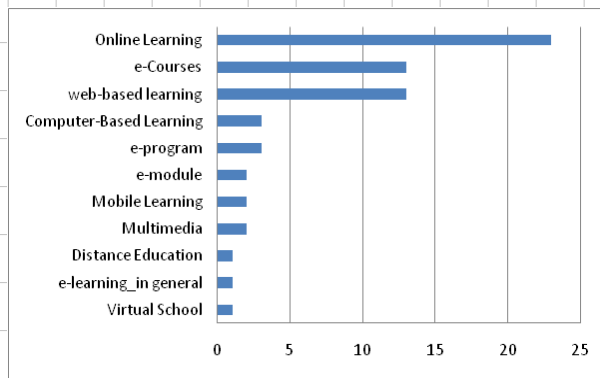
Fig 4: Study Intervention

The focus of studies categorized under Web-based Learning (n=13) ranged from educational websites[30,31], setting quality standards for web-based CME [32], providing web-based resources [33] to web-based learning systems.[34] Yet another category Computer-based Learning (n=3) covered those papers which made use of software along with practical instructions in classrooms[35], computer-based decision support systems [16] and analyzed the use of simulations for nurses.[36] There were 3 different papers which reported on the use of e-Programs. One was the survey which was conducted to analyze the uptake of e-programs among Danish general practitioners [37], the other paper analyzed the effectiveness of an e-learning program in cardiopulmonary resuscitation [38] and the last one was on transferring evidence-based information through an open-access e-learning program in clinical evidence CME.[39]

There were two studies covering 'Mobile Learning'. In the first study, the effectiveness of mobile technology for the trainee doctors during patient care and work-based learning was evaluated.[20] This paper showed that mobile technology augmented their learning during discussions with their colleagues as dialogue is necessary in clinical-decision making. The other study reviewed the efficacy of smartphone apps in prescribing and pharmacology education. One study explicitly covered 'Distance Education' course conducted with the support of University of Calgary, Canada for Uruguay's physicians.[15] This should be a motivational factor for under-developed countries to improve their CME with the support of those countries which have already excelled in this domain. An international virtual medical school (IVIMEDS) [4] reported how CME could be improved by doing virtual practice with virtual patients, self-assessment instruments etc. Lastly, e-learning for CME was reported in the context of self-assessment.[40] Table I lists the outcomes of few particular studies listed against the top three categories of the 'study interventions' as an example.

Table I: Study Outcomes of some of the studies in the top three categories of the study intervention

No.	Category	Study Outcomes
1.	Online Learning	A design for an online inter-professional health science education has been outlined by Luke et al.[41] Their proposed solution has been justified with some existing best practices. Within the context of Saudi Arabia, online CME has been explored.[11] It summarizes the advantages, barriers and lessons learned while using online CME, thus providing a pathway for others how to implement an effective online CME within the context of Saudi Arabia. An evaluative study for an online rural mental health practice program revealed that the program was successful on small cohort of clinicians who appreciated this prog ram as it added value to their practice.[42]
2.	e-Courses	Badidis et al.[5] provided the procedure of designing a SCORM complainte-course for Aerospace Medicine. E -course in Epilepsy showed a positive result towards the learning of physicians in genetics of Epilepsy.[28] However, results of 9 -month follow -up of ' ePsychNurse.Net ' course demanded an improvement in the course to meet the course objectives.
3.	Web-based Learning	A survey indicated the popularity of web content in Radiology teaching for junior doctors.[43] One study presented a case study on the website 'Orthochina.org.'[30] It not only describes the developmental, technical and administrative issues but also gives details of this project's successful results. On the other hand, a web-resource was well-received by health professional preceptors reporting that it has increased their level of confidence in teaching.[33]

Conclusion

In this paper, a review on the use of e-learning in CME has been reported. A total of 59 studies published in reputed journals between the years 2003 to (June) 2013 were selected from relevant debases. All of the studies reported a positive impact of e-learning for CME. Most the studies reported on the efficiency and efficacy of domain-specific tools for e-learning. The use of Learning Management System and Discussion forums has also been reported as effective e-learning tools. The other technologies now commonly used in the field of e-learning like smart phone applications and podcasting have also been reported along with the use of Web 2.0 technologies like YouTube, Wiki and podcasting. The e-learning study interventions covered a wide range from e-programs, e-courses, e-modules, mobile learning to virtual schools and distance education. Most of the studies were reported out of countries that are generally perceived as technologically advanced. However, there are also a few studies now being reported from the developing countries.

Appendix A

List of Journals having one publication, each

BMC Health Services Research, BMC Medicine, British Journal of Clinical Pharmacology, BMC Medical Informatics and Decision Making, British Journal of Educational Technology, Clinical orthopedics and related research, Epilepsia, GMS German Medical Science, Health information and libraries journal, Hippokratia,
Insights into Imaging, International Journal of Nursing Practice, Journal of Advanced Nursing, Journal of dental education, Journal of Evaluation in Clinical Practice, Journal of Medical Systems, Journal of Occupational Rehabilitation, Journal of Pediatrics and Child Health, Nursing & Health Sciences, Performance Improvement, Respirology (Carlton, Vic.), Safety and health at work, The British journal of dermatology, The Clinical Teacher. The Journal of continuing education in the health professions, The Journal of perinatal education, The open nursing journal and The open rheumatology journal.

List of countries (with either three, two or one publication(s)) affiliated with authors of papers

The countries with three publications each were China and Greece. Italy, Netherland and New Zealand had two publications each whereas Africa, Denmark, Finland, Iran, Norway, Saudi Arabia, Spain and Turkey had one publication each.

List of countries (with either two or one publication(s)) where the studies were located

The countries with three publications each were China and Greece and two publications each were Italy and Netherland. While, Africa, Argentina, Denmark, Finland, Iran, New Zealand, Norway, Saudi Arabia, Spain, Turkey and Uruguay had a one publication, each.

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