ORIGINAL ARTICLE

IMPACT OF ACADEMIC INTERVENTIONS ON STUDENTS PERFORMANCE IN ELECTIVES

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ABSTRACT

Background: Elective clinical rotations have become a significant part of most of the medical educational curricula. Evaluation of electives is imperative to assess their usefulness in achieving the objective of improving the competencies of graduating students. Results of these evaluations can be used to guide future academic developments.

Objective: The purpose of this study was to assess the change in the performance of medical students after academic intervention based on the results of evaluation of previous year electives.

Methods: Students' performances in elective rotations were evaluated in the year 2012 and again in 2013 after bringing modifications in teaching / learning program. The data collected was from 60 students. Students consisted of two sets, those who completed their electives in the country while the other completed their electives abroad. Scores were calculated in three distinct domains of education i.e knowledge, attitude and ethical behavior. Independent Sample T test was applied to compare the scores.

Results: Findings suggest that as a result of the academic interventions carried out in 2013 in the educational program by the combined efforts of the faculty and students, the scores for all the three educational domains in both the local and abroad groups improved considerably.

Conclusion: Study findings conclude that active curricular interventions play important role in improving the outcomes of teaching programs.

KEY WORDS: Knowledge, attitude, participatory action research, ethical behavior

INTRODUCTION

Since the last century, traditional medical curricula for bachelor's degree programs were mostly prescribed and students found minimal opportunity to select courses of their own choice. Hence cohorts of medical students were exposed to similar learning opportunities and experienced the same learning settings.

Medical education being a dynamic field has witnessed revolutionary changes in its curricula throughout its long history. Harden et al. presented the concept of SPICES Model of medical curriculum in 1984 which represented a spectrum of curricula ranging from standard programs to those having elective courses.[1]. Another model of medical curriculum designed for the twenty-first century was conceptualized by Bligh, Prideaux, & Parsell. It has the acronym PRISMS which suggested multisite learning experiences for medical students. These changes in curriculum were proposed with the aim to develop physicians for the 21st century who possess the knowledge, skills, and attitudes that satisfy the societal expectations and meet the requirements of national and international health care systems. [2,3,4,5].

Presently, most of the Medical education institutions are providing some dedicated time to the students to experience medicine in a diverse clinical setting. [6] The objectives for providing electives in medical curricula vary from institution to institution; the most common one being to improve the clinical skill and knowledge of the students [7] . Electives can be internal or external. Internal electives are the ones in which students gain firsthand experience in their selected disciplines within their parent institution while in external electives learning takes place in a clinical/ research set up outside the parent institute. Due to internationalization of medical education, it is becoming increasingly important for the medical schools and residency programs to provide opportunities for learning other than the ones in the local/community settings. Students are also realizing the need to improve their professional competence by working at other health care facilities. In this wake, students from developing countries are making efforts to travel abroad and gain experience in technically advanced countries offering highly sophisticated learning environments. [2] Most often these electives are unilateral arrangements made by the students and result in improvement of professional competence and effect career choice. [3, 4, 5,6,7,8]

At Ziauddin Medical College the students of fifth year are provided a dedicated one month's duration to pursue medical electives. In most of the medical education programs, electives are placed in the later clinical years so that the students have a better opportunity to improve academically as well as clinically. Four weeks time for electives is enough to enable the students to get used to the change in culture and environment and assimilate new learning. 10 Selection of elective is totally a self directed activity at the college so students have the freedom to choose and decide for the training site themselves. Almost all the ZMC students opt for external electives; some manage for electives outside the country while a large number take elective clinical rotations in medical institutions within the country. Evaluation being essential to establish the reliability of any educational activity, student's performance in electives at Ziauddin Medical College is evaluated externally by the supervisor or the incharge of elective rotation in the host institution.

METHODS

Participatory Action Research was carried out on the basis of analysis report of elective evaluation forms submitted by the final year students of 2012 batch and was used to find out the weaknesses in their performance in order to guide the future. [11]

At Ziauddin Medical College fifth year medical students going for electives are mandated to get Elective Evaluation forms filled and signed by the supervisor/ incharge of elective rotation at the host institute and submit them to their clinical coordinator. These evaluation forms are designed on Likert scale and evaluate medical student's core competencies under the subdivision of knowledge & skills, attitudes and ethical behavior [12]. Every year, analysis is done and reports are generated which are used to identify the weaknesses in the afore mentioned domains and improvements are planned accordingly.

Keeping in view the findings of the elective evaluation report of 2012, following steps were taken to improve the future performance of the students in the electives:
1. In the beginning of the year 2013, a meeting was organized with the 5th year students and the clinical faculty involved in their teaching. Elective evaluation report of the year 2012 was shared and discussed at length.
2. Didactic teaching sessions were reduced in number and lectures were scheduled strategically to cover the core curriculum only.
3. Emphasis on teaching of clinical skills was increased and sessions for clinical examination were increased in number.
4. Major changes in clinical rotation schedule were carried out and more time was dedicated for rotations in high density units and Emergency Rooms.
5. Frequent student teacher meetings were carried out throughout the year. These were aimed to provide feedback to the students.
6. It was decided by the Board of Studies of Ziauddin Medical College that student assessment will be carried out at the end of each clinical rotation in the 3rd and 4th year and weightage of 5% and 10% respectively, will be carried forward to the result of summative assessment at the end of 5th year.

In 2013, after the completion of elective rotations, evaluation forms were collected from the students and data analysis was done.

The primary purpose of this study was to assess the effectiveness of academic interventions carried out in the educational program of final year after identifying the weaknesses in the previous electives evaluation report.

DATA ANALYSIS

Data from the evaluation forms was based on scores secured by students who had completed their electives and were evaluated by their supervisors in three different educational domains for two different years i.e in 2012 and 2013.

Analysis of data was carried out using Statistical software "Statistical Package for Social Sciences" version-20. Secured score was presented in terms of Mean±SD. Independent Sample T test was applied to compare the secured scores in the three given domains i.e. knowledge & skills, attitude and ethical behavior for each year. In order to compare the secured scores for each year, the students were further divided into two groups i.e those who have done the electives locally and those who did it abroad. Furthermore, Local and abroad groups were compared regarding the above mentioned three domains for both years separately.

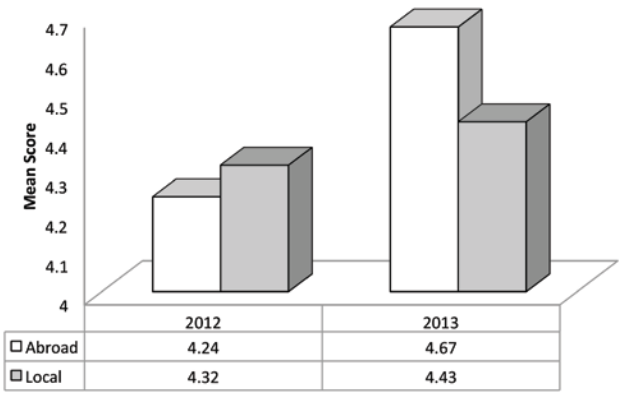
RESULTS

It was observed from the findings that secured scores for all three educational domains were significantly higher in year 2013. Among all the three domains, students secured highest score in ethical behavior for year 2013 with mean 4.58 and SD 0.407. Difference between secured scores for year 2012 and year 2013 was also highest in ethical behavior and is 0.37 (Considering significance level 0.05).

Comparing local and abroad groups, it was evident from the data that there was no significant difference detected between the secured scores of local and abroad student groups in year 2012 while in year 2013, statistically significant difference was observed among the two groups (P-value 0.026). Both groups improved their overall secured score i.e. difference between scores of both the years was 0.12 and 0.44 for local and abroad ones respectively. Overall highest scores were secured by abroad group in year 2013 (Considering significance level 0.05).
was used as a parameter for the oxidative stress showed a mark decline oxidative stress. No physical parameter changed except drastic effect of weight loss. Graph 1 shows glucose levels in control, hyperglycemia and after therapy. Graph 2 shows glutathione levels in control, hyperglycemia and after therapy. Levels of glutathione were 3.5 nmol/L in therapy animals as compared to 2.5 nmol/L in hyperglycemic animals, showing reduction in oxidative stress.

Table 1 shows comparison of lipid profile of controls and hyperlipidemics. Table 2 shows the comparison of hyperlipidemic and treatment group, p-value was significant. Graph 3 shows LDL-C, HDL-C and TG of hyperlipidemics and after treatment. Graph 4 represents the total cholesterol in control, hyperglycemia and after therapy.

Fig. 1. Comparison of Mean scores secured by students of year 2012 and 2013



In group of students who completed their electives abroad in the year 2012, scores for attitude and ethical behavior were significantly different from those of the local group with P-value 0.017 and 0.010 respectively. On the other hand, secured scores for knowledge and attitude in 2013 were significantly different among students in region wise elective groups i.e. P-value 0.039 and 0.020 respectively.

Table 1. Comparison of Objectives

Attributes	Year-2012 Mean ± SD	Year-2013 Mean ± SD	P-value
Score	4.23±0.432	4.52±0.403	<0.01**
Knowledge Skills	4.14±0.524	4.31±0.466	0.045*
Attitude	4.32±0.467	4.58±0.407	0.001**
Ethical Behavior	4.25±0.662	4.62±0.491	<0.01**

Table 2. Group wise comparison of Objectives for students of 2012

Objectives	Local Mean ± SD	Abroad Mean ± SD	P-value
Knowledge Skills	4.15±0.58	4.12±0.42	0.763
Attitude	4.23±0.50	4.48±0.36	0.017*
Ethical Behavior	4.12±0.72	4.49±0.47	0.010*

Table 3. Group wise comparison of Objectives for students of 2013

Objectives	Local Mean ± SD	Abroad Mean ± SD	P-value
Knowledge Skills	4.47±0.543	4.2±0.372	0.039*
Attitude	4.74±0.47	4.49±0.32	0.020*
Ethical Behavior	4.75±0.517	4.53±0.464	0.097

DISCUSSION

In this study participatory action research was used to assess the difference in the performance of students in elective rotations after launching planned changes in the teaching/ learning methodology. In action research actual educational problems are discussed for the purpose of rectification of the existing ones and strengthening the program for future. The participants of action research use reflective strategies to propose new changes [13]. Students of ZMC who entered final year in 2013, and all the faculty involved in their teaching participated in the discussion for finding out means to improve learning in the fields identified in the previous year's elective evaluation report.

With the encouragement to become responsible for their own learning, students actively contributed in decision making regarding the teaching schedule and teaching/ learning methodologies. Studies have shown that a learner centered approach to curriculum improves academic performance as well as the quality of learning [14, 15, 16]. Retention of knowledge in the long term memory is enhanced if the students are actively involved in their learning program [17, 18].

Lectures in large groups are notorious as there is little interaction with the students and passive learning takes place [19]. During the student faculty interaction it was suggested that the number of lectures was to be reduced and more time should be provided for learning in wards and emergency rooms. This combination of active learning and student centered instruction acted as a strong motivating force for the students and the improvement became evident from the results of performance of the batch of 2013 in their elective rotations [20]. Statistically significant difference between the scores of the two years and between the two groups of the year 2013 clearly depicts that the student centered approach in instruction as well as the participation of the students in improving their academic performance facilitated them in achieving the objectives of the elective rotations.

Students going outside the country for electives in 2013 probably took the challenge of performing more seriously than the previous year group and got the highest scores among all the groups of the two years.

In the year 2012, analysis of elective evaluation forms showed that students possessed good clinical knowledge but were weak in clinical skills. Learning of facts is different from learning of skills and to enable skill's learning practicing of the required skill is imperative [21]. During faculty student meeting in 2013, the teaching program was revisited. More time was allocated for student interaction with the patients and performing and practicing clinical skills by increasing the time spent in the clinics and wards. Duvivier et al. very aptly stated "repitition itself is not enough; progress depends on sustained efforts to purposefully enhance particular aspects of performance." [22, 23]

Students going for clinical electives outside their parent institution face challenges of language barrier that may affect communication with the patients and their families, as well as of cultural change and professional attitude [24]. Ethical considerations to healthcare though not much emphasized in our national medical curriculum, are given paramount importance internationally. Medical Ethics as a topic is not explicitly taught at Ziauddin Medical College but is learnt by the students implicitly. More often than not, the students try to emulate their teachers in professional behavior and handling of ethical issues. Ethical behavior and professional conduct are also assumed to be the tacit traits of clinical practice at Ziauddin hospitals. [25, 26, 27,28] Students of the class of 2012 who were going abroad were probably cognizant of the importance of ethical behavior and made conscious efforts to develop themselves as compassionate and culturally competent healthcare providers.

CONCLUSIONS

Involvement of students and teaching faculty in Participatory action research helps in improving the results, as in this study in the performance of students in elective clinical rotations [29]. Use of Quantitative assessment data of the previous year can be used to highlight the weaknesses in learning and provide directions for forthcoming educational programs.

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