Iraqi Medical Student’s Perceptions of Learning Environment Following Surgical Curriculum Change

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doi: 10.5455/aim.2022.30.105-109
ACTA INFORM MED. 2022 JUN 30(2): 105-109
Received: MAY 03, 2022
Accepted: JUN 05, 2022

ABSTRACT

Background: There are three undergraduate medical school curricula types - ‘traditional’, ‘integrated’, and ‘problem-based learning’ (PBL). Traditional curricula involve teaching basic medical science in the early years in an atomistic and often didactic way, predominantly through lectures. In later years, students move on to learning clinical skills and applying their medical knowledge in clinical settings. Meanwhile, the philosophy of integrated curricula is that students learn best by understanding medical science in relation to whole systems and by linking knowledge with practice. Integrated curricula take a more holistic approach and bring together elements of medical science rather than teaching them in isolation. Objective: The study aimed to measure and compare perceptions of the learning environment between two cohorts of medical students at a medical school in Iraq. The intention was to explore differences in perceptions between those following a traditional surgical curriculum and those following an innovative, integrated curriculum and thereby add to the body of evidence looking at the impact of the two surgical curriculum models on the learning environment. Methods: The Dundee Ready Educational Environment Measure (DREEM) was used to measure students’ perceptions of their learning environment. The unpaired t-test was used to compare the mean scores of two cohorts of medical students. Results: The global mean score for the students following the integrated curriculum was higher than the global mean scores for the group studying the traditional curriculum. This difference is statistically significant. The mean scores for the integrated curriculum students are higher than those of the traditional curriculum students for all sub-sets of the measure. The difference is statistically significant for one sub-set, ‘Students’ Perceptions of Learning,’ and the difference is close to being statistically significant for the ‘Students’ Perception of Teachers’ sub-set. Conclusion: The results reflect those from other international studies and add to the body of evidence that suggests that innovative, integrated curricula are a critical factor in promoting a more positive learning environment than that generated within a traditional curriculum model.

Keywords: medical perceptions, learning environment, surgical curriculum change.

1. BACKGROUND

There are three undergraduate medical school curricula types – ‘traditional’, ‘integrated’, and ‘problem-based learning’ (PBL). Traditional curricula involve teaching basic medical science in the early years in an atomistic and often didactic way, predominantly through lectures. In later years, students move on to learning clinical skills and applying their medical knowledge in clinical settings. Meanwhile, the philosophy of integrated curricula is that students learn best by understanding medical science in relation to whole systems and by linking knowledge with practice. Integrated curricula take a more holistic approach and bring together elements of medical science rather than teaching them in isolation. There is often an early emphasis on linking knowledge, theory, clinical skills, and practice. PBL is based on a student-centered pedagogy and involves active learning where students learn about a subject through...
solving open-ended problems. In this approach, students discover what additional knowledge is needed to solve a problem and how to access this knowledge. Often students work together in small groups to solve problems and learn with and from one another. Therefore, with PBL, the whole curriculum is set out as a list of concerns. However, PBL is also one method of teaching and learning that is commonly used as part of an integrated curriculum. Undergraduate medical school curricula have evolved over the years. Towards the end of the twentieth century, there was a move in many countries away from traditional medical curricula to integrated curricula and the use of PBL as a method of teaching and learning. A review of the websites of all thirty-three UK undergraduate medical schools suggests that most, if not all, now deliver some form of integrated curriculum. Indeed, the General Medical Council (GMC), through its guidance in Tomorrow’s Doctors (GMC 2003), has actively encouraged an integrated approach to curriculum development and delivery (1). As part of that, most of these medical schools use small group teaching and active learning methods as part of a blended learning approach (which will also include methods such as lectures and e-learning). This movement towards integrated curricula has not been confined to the UK. It is now an international movement, with many overseas medical schools have also started to deliver an integrated medical curriculum. This has included increasing interest in doing so in the Middle and Far East. In Iraq, the traditional curriculum was widely used, except one university Alsamarai, 2013, since the first medical school in Baghdad in 1927 (2). Until recent years, Iraq remained internationally isolated, with years of war, economic sanctions, and a utilitarian regime, which curtailed all means of public communication with the rest of the world, including via the internet. This was reflected in medical education development as Iraq did not benefit from the advances in medical education mentioned above. There were 23 medical colleges, and all followed the traditional curriculum. However, since 2003, medical schools in Iraq have been looking for developments internationally. Despite a challenging situation, many are now showing an appetite for change and an interest in integrated curricula. This momentum has been nurtured through a British Council-supported initiative - the Development Partnerships in Higher Education, many are now showing an appetite for change and an interest in integrated curricula. This was reflected in medical education development as Iraq did not benefit from the advances in medical education mentioned above. There were 23 medical colleges, and all followed the traditional curriculum. However, since 2003, medical schools in Iraq have been looking for developments internationally. Despite a challenging situation, many are now showing an appetite for change and an interest in integrated curricula. This momentum has been nurtured through a British Council-supported initiative - the Development Partnerships in Higher Education (Delphi).

Kufa University’s medical school in Iraq, established in 1977, followed a traditional, discipline-based medical curriculum, comprising two years of pure basic science followed by four years of a para-clinical and clinical study. As part of the Delphi project, the medical school was partnered with Leicester University’s medical school in the UK in 2009. Following a program of workshops to update staff on integrated curriculum principles and delivery methods, its faculty decided to move to an integrated curriculum in 2012-2013. As this was introduced for new first-year students, there was a transition period where both curricula were being delivered by the medical school side-by-side. The new curriculum moved with the new intake every year as they progressed. In contrast, the old traditional curriculum continued to be delivered for the existing students during their final years at the college. The new integrated curriculum differed significantly from the traditional in content, structure, and delivery methods. The delivery of two curricula in the same college provided an ideal opportunity to compare students’ perceptions of the learning environment of the two models of medical education.

2. OBJECTIVE

The study sought to compare undergraduate medical students’ perceptions of the quality of the learning environment under both a traditional and innovative integrated undergraduate surgical curriculum at Kufa University.

3. MATERIAL AND METHODS

Sample

The study compared two groups of medical students’ perceptions of their learning environment. The first group is traditional curriculum students who completed their medical school successfully in 2017. We will refer to this group as the Traditional group. The second group is the Integrated Curriculum who also completed their surgical requirements in the following year (2018), and we will refer to them as integrated group. Both groups passed through all surgical contents of the curriculum in two different forms (traditional & integrated). We distributed the questionnaire on the last day of the final years of each group.

Measurement tool

The primary tool used in this study was the Dundee Ready Educational Environment Measure (DREEM). This is a questionnaire that is used to measure the educational climate in medical institutions (3). It was initially developed at Dundee University in the UK to be used as a universal measurement tool. The questionnaire was validated in the UK and other countries (including Bangladesh, Ethiopia, and Argentina) (ibid.), and was subsequently translated into many languages, and has been found to be a reliable and valid measurement tool by researchers across the world (4). An Arabic translation of DREEM, which has been validated and used in previous studies, was used in this study (2-5). The questionnaire has fifty items. Each relates to one of five themes:

1. Students’ perceptions of learning;
2. Students’ perceptions of teachers;
3. Students’ academic self-perceptions;
4. Students’ perceptions of the (learning) atmosphere;
5. Students’ social self-perceptions.

Responses to the items are scored. A mean global score is calculated (between 0 and 200) and scores for each of the five themes. A practical guide to using the DREEM tool by McAleer and Roff (2001) provides detailed guidance on interpreting scores (6). However, the higher the score, the more positive respondents feel about the education environment. The study was conducted in 2017 after completing the sixth academic year (2016-2017) for the traditional group, and the same questionnaire was also administered to students who completed year sixth
of the new integrated curriculum in 2018 (2017-2018). The comparison was made between the two groups to examine students’ perceptions of the new surgical curriculum. Need to say how and when distributed. The questionnaire was distributed for both groups separately on the last day of the final exam for both groups. Both groups have been asked independently to gather in a large lecture room, where the researcher introduces the advantage of such research and then instructs how to fill the questionnaire. Global mean scores and scores for the five themes from the study groups were calculated and compared using the unpaired t-test.

### 4. RESULTS

There were 122 respondents of the integrated group. We excluded six students from the analysis as they didn’t declare their gender. After exclusion, there were 62 (53.4%) males and 54 (46.6%) females in this group. There were 94 respondents of the traditional group. Excluding four respondents who didn’t declare their gender, 59 (65.6%) males and 31 (34.4%) females. Table 1 shows the characteristics of the participants. There was no statistically significant difference in the gender distribution between the two groups (Chi-square 3.065, p=0.08). Table one shows the characteristic of the medical students who participate in this study.

Table 2 presents the results of the analysis of the DREEM scores. The global mean score for the integrated group was higher than the global mean score for the traditional group of students. For the Students’ perception of learning (SPoL), the P-value was 0.01. Students’ perception of teachers (SPoT) was with a P-value of 0.08. Students’ academic self-perception p-value was 0.12. P-value of 0.23 was for students’ perception of the atmosphere. Lastly, Students’ social self-perception score was with a P-value equal to 0.57. The total DREEM score was with a P-value of 0.05. This difference is statistically significant. The mean scores for the integrated group were higher than those of the traditional group for all sub-sets. The difference is statistically significant for one sub-set, SPoL, and the difference is close to being statistically significant for the SPoT sub-set.

### 5. DISCUSSION

This study measured and compared two groups of medical students’ perceptions of the learning environment at a medical school in Iraq. In general, the perceptions of students’ learning environment following the integrated curriculum, as measured by the DREEM questionnaire, were more positive than those studying the traditional curriculum, particularly for the ‘Students’ Perceptions of Learning’ sub-set. The results of this study do reflect those in other studies. For example, within Saudi Arabia, studies by Zawawi and Elzubeir (2012) and Al-Rukban et al. (2010) compared perceptions of the education environment in different medical schools adopting different approaches to education and found significantly higher DREEM scores from the respondents following more innovative, integrated curricula (7, 8). Other cross-national comparisons have shown a similar trend. For example, Al-Hazimi et al. (2004) used the DREEM tool to compare three medical schools in the Middle East delivering a traditional curriculum (two in Saudi Arabia and one in Yemen with the Dundee University’s medical school providing an integrated curriculum (9). They found a vital statistically significant difference in scores between the Middle Eastern medical schools and the Dundee medical school, with the Dundee medical school scoring significantly higher than the three Middle Eastern schools. However, caution must be exercised as a comparison between institutions and countries is difficult (10). An extensive review of the education literature presented in a 1997 research report found a consensus among researchers of the positive educational outcomes of an integrated studies approach to learning (11). By taking a holistic approach and studying the whole system and processes rather than learning about topics in isolation, integrated medical curricula are akin to interdisciplinary curricula in other areas of the education system. The benefits of such an approach include better student comprehension of concepts and interdependencies, improved decision-making and critical thinking, increased problem-solving ability, and greater self-confidence and motivation. This helps explain why integrated

| Items                  | Number (%)                                      |
|------------------------|-------------------------------------------------|
| Total number of participants | 216                                      |
| Total number of respondents after exclusion | 206                                      |
| Number Responses of integrated group | 116(55.3%)               |
| Males                  | 62 (53.4%)                                      |
| Females                | 54 (46.6%)                                      |
| Number responses of traditional group | 90 (43.6%)               |
| Males                  | 59 (65.6%)                                      |
| Females                | 31 (34.4%)                                      |

Table 2. Comparison of DREEM scores between Kufa University Year 6 integrated curriculum and Year 6 traditional curriculum medical students. SPoL = Students’ perceptions of learning, SPoT = Students’ perceptions of teachers, SASP = Students’ academic self-perceptions, SPoA = Students’ perceptions of the atmosphere, SSSP = Students’ social self-perceptions
medical curricula would lead to improved performance and higher learner satisfaction. Moreover, a study evaluating the educational environment at a medical school in Saudi Arabia, which combined the DREEM tool with focus groups, identified curriculum overload and a lack of feedback as two of the key reasons for low scores (12). Therefore, it is likely that an integrated curriculum also provides a good teaching environment by encouraging a more interactive approach to learning, with less information overload. This study produced a statistically significant difference for the ‘Students’ Perception of Learning’ sub-set, with a higher mean score for the integrated surgical curriculum group than for the traditional curriculum group. A number of the items within this sub-set relate to an active, learner-cantered, participative, competence-based (rather than knowledge-based) approach to education. This aligns with the teaching methods integral to delivering an integrated curriculum, and it is at odds with the fact-driven, didactic delivery methods of a traditional curriculum. There were no significant differences in sub-set scores at Kufa University. This may be due to the introduction of the integrated curriculum being relatively recent at the time of the study and teaching staff still learning and refining their teaching methods. Once more established, this new approach to education may result in even more significant differences in DREEM scores if the study was repeated. In Iraq, an Arabic version of the DREEM measure evaluates the educational environment in the Tikrit University College of Medicine, which has adopted an innovative, integrated curriculum since its establishment in 1989 (2). In general, they found the learning environment of the college to be perceived positively. Their study also sought to measure the internal consistency of this version of the questionnaire. Their analysis concluded that the Arabic DREEM is reliable and practical for assessing education environments in Iraq’s medical colleges and medical schools. This study further supports the authors’ use of the DREEM questionnaire within an Iraqi medical school setting. These studies find that an integrated curriculum is linked to positive perceptions of the education environment. This is the first study in Iraq comparing perceptions of those following an integrated curriculum with those following a traditional one within the same institution using a reliable and valid measurement tool. Since the students were at the same university, the comparison groups (which provided a good sample size) were comparable since they were studying within the same environment and culture. Moreover, the male to female ratios were similar. The only confounding factor is that the two groups were at different years of study. Caution must be exercised when comparing the perceptions of students at these different stages of learning.

However, other Middle Eastern studies have found no significant differences in DREEM scores between different year groups studying the same curriculum in the same institution (8-13).

The quality of the teaching-learning process at the universities in Western and South-Eastern Europe are different and depends mainly of the infrastructure that includes an optimal teaching space, personnel and equipment, in accordance with existing standards and norms.

For the assessment of teaching process at the faculties and universities during past twenty years the opinion of students was very important (14-26). Masic et al. published a few papers in which they described quality assessment of Bologna model of medical education, especially in the fields of Family medicine and Medical informatics (15, 22, 26). Students are often unhappy with the educational process. To compare the results of the teaching process evaluation between students studying according to the Bologna system and the old system (former Austro-Hungarian teaching model) of education. Professor Masic used the personaly created questionnaire as a carrier of data created with 32 variables relevant for assessing the success of the educational process at the Medical Faculty in Sarajevo. The survey was conducted among students of the sixth year of the Medical Faculty in Sarajevo. There were 103 students, of which 32 were studying according to the Bologna and 71 by the old concept of studies. Results of survey which measured students satisfaction with the educational process (theoretical and practical instruction, interactive learning, testing, use of IT and technical aids in teaching, availability of instructional literature etc.) lead us to the conclusion that the lowest satisfaction is associated with factors depending on financial resources, specifically related to library funds and the degree of computerization of educational process, and also with the level of teachers capability to convey knowledge to students with the application of modern medical information technology and technical teaching aids. He survey was conducted among students of the sixth year of the Medical Faculty in Sarajevo. Surveyed were 103 examinees, of which 32 studying according to the Bologna and 71 by the old concept of studies. To form an estimate of the realized quality of the teaching process created a set of questions relating to staff who educate students, methods of education, availability of personel and the use of ICT and other teaching aids (14, 23, 26). Also, when we talk about medical doctors and having in mind that 50% of medical information is outdated after period of 3-4 years than continuous medical education (CME) is of essential interest. The survey consisted of eight groups of questions: a) basic information; b) the evaluation of the basic elements/variables on realized quality of the teaching process; c) the assessment of availability and quality of the teaching space (space, equipment, personnel); d) the evaluation of the quality of the educational process (teachers, methods, effects); e) the evaluation methods and quality assessment of students (exams, method, objectivity); f) the evaluation of the organization for implemented teaching process (number of students in the group, time, classroom technical equipment, technical aids, etc.); g) rating the degree of computerization of the educational process; h) the availability, accessibility and quality of literature in the faculty library. Authors described “teacher centred university” in contrary of “student centred university” how is proposed Bologna Process (14). Purpose of that studies for students is to pass exam, instead acquiring
knowledge and to gain skills. Bologna process has a positive effect on the role of higher education in the lifelong learning framework. Lifelong learning must not mean that people’s knowledge is automatically considered outdated or expired after a certain time period and everyone is obliged to update their skills.

6. CONCLUSION

Changing the Surgical curriculum has its impact on student performance and their outcomes. The results of this study add to the growing body of international evidence suggesting that integrated, innovative medical curricula contribute to a more positive learning environment in medical schools than a traditional curriculum model.

- Author’s contribution: All authors were involved in all steps of preparation this article. Final proofreading was made by the first author.
- Conflict of interest: None declared.
- Financial support and sponsorship: Nil.

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