Review Article

Dundee Ready Educational Environment Measure (Dreem) ; An Effective Tool to Assess Educational Environment

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Abstract

Quality of an educational environment is an indicative of the effectiveness of an educational programme on student's learning, motivation and learning outcome. The foundation for improving the health and safety of patients start with the competency of health care providers. The education of health professionals is fundamental to these health initiatives. In nursing programme the main objective is to produce nursing graduates who can provide comprehensive care and treatment to the community. The critical components include appropriate physical structures and services which reflects curriculum quality, teaching and learning as well as support for outcomes as practioners. Educational environment is one of the most important determinants of an effective curriculum. The educational atmosphere and the student's perceptions about the teaching pattern and their own opinion reflect their performance. An important component of academic strengthening and curriculum renewal is the evaluation of the quality and structuring of the programme. Consideration of climate in the medical school along the line of continuous quality improvement and innovation are likely to further the medical schools as a learning organization; to measure such an environment a standard tool named Dundee Ready Educational Environment Measure (DREEM) has been proven effective in different settings.

Key Words: Educational Environment, Learning Atmosphere, Perception of teacher, Social environment, Student's perception.

Introduction

Dundee Ready Educational Environment Measure (DREEM) is a generic instrument for measuring student's perception of undergraduate health profession's curriculum. Measurement of the educational environment is necessary in health professional education programme. Information gained from these investigations can be used to implement and measure changes in the curriculum, educational delivery and physical as well as social environment. In DREEM tool there are number of questionnaires to measure the educational environment (Vaughan et al., 2014)). Components of the educational environment include physical infrastructure such as rooms for lectures, tutorials and clinical activities, facilitating and constraining factors for learning, the atmosphere created by students and faculty members including teaching, clinical and administrative staffs. For an excellent discourse on the concepts and issues of educational environment, approach to study, understanding of practice and educational outcomes must be achieved. Understanding an educational programme environment can assist with quality assurance by identifying where a programme can be improved and subsequently evaluating changes that are implemented. There are currently few studies in developing countries that examine the educational environment of students in medical curriculum which investigate changes over the student's entire time within a programme of study.

Components of DREEM

The DREEM is a 50 item questionnaire developed by Roff et al., to measure the educational environment in health professional education programme. The questionnaire was developed through the use of Delphi approach involving a range of health professionals. Each item is measured using a five point likert scale where 0 is strongly disagree, 1 is disagree, 2 is neither agree or disagree, 3 is agree and 4 is strongly agree. Respondents are presented with a statement and asked to select a response. Items 4,8,9,17,25,35,39,48 and 50 are negatively worded and these require recoding prior to calculating the total and subscale scores. The 50 items are divided into five subscales based on the initial psychometric analysis. The five subscales are student's perceptions of learning, student's perception of teachers, student's academic self-perception, student's perception of atmosphere and student's social self-perception. The DREEM was published in 1997 as a tool to evaluate educational environment of medical schools and other health training settings and a recent review concluded that it is the most suitable such instrument. Other related studies that used the DREEM questionnaire were searched and were read thoroughly, critically reviewed, analyzed and conclusion was drawn.

Evidences related to DREEM

A cross sectional survey at Isra School of optometry Pakistan using the DREEM using non parametric tests found median score was 61.5% (123/200). The highest percent score was observed for student's perception of academic self (72%) and the lowest for student's perceptions of teachers (56.8%). There was a significant difference in the perceptions of students in different years of education (Raiz et al., 2016).

Using DREEM at Rafsanjan University Iran, students in the midwifery nursing, radiology, operating room nursing, laboratory sciences, medical emergency and anesthesia, the t test and analysis of variance statistical tests showed mean scores in the five domains as 113.5 out of 200(56.74%) which was more positive than negative. The total mean scores for perception of learning, teaching and atmosphere were 27.4/48(57.24%), 24.60/44(55.91%) and 26.8/48(55.89%) respectively. Academic and social self-perception were 20.5/32(64.11%) and 15.7/28(56.36%) respectively. The total DREEM score varied significantly between courses (p=0.01). First year students and female had significantly higher score (p=0.01). It is essential for faculty members and course managers to make efforts towards observing principles of instructional environment and to reduce deficits in order to provide a better learning environment with more facilities and supportive systems for the students (Bakhshialiabad et al., 2015).

The study using the DREEM questionnaire to assess the perception of educational environment, which includes two consecutive and cohorts were evaluated during the second year entering 2010 and 2011 for former and new curriculum respectively in a medical school of Santiago-Chile. Both group evaluated the educational environment positively. The total average scores of the perception of the educational environment by 2010 cohort was of 132 points and by 2011 cohort of 126 points a statistically significant difference. The good preparation the students are receiving for the profession and the relevance of the assignments they are learning were considered strength by the students from both groups. Before any changes are made to the curriculum, it is indispensable to take into accounts how the academic load might affect the students (Ceron et al., 2015)

A DREEM questionnaire used in Australian university among undergraduate students enrolled in the emergency health, midwifery, radiography and medical imaging, occupational therapy, pharmacy, nutrition and dietetics, physiotherapy and social work courses at Monash University showed scores across the sample fairly high (M=137.3,SD18.3) indicating an overall positive perception of learning environment among students. Total scores were significantly higher for females (M=138.8;SD=17.2) than males(M=132.3SD=20.7) and this trend was consistent across all aspects of perceived learning

environment. Students who enrolled in their course directly after completing high school yielded less positive ratings on some DREEM subscales than students who did not enroll immediately after completing high school (Brown etal., 2011).

The pilot study which was aimed to assess the reliability and validity of modified DREEM tool was used to evaluate the effects of different pedagogical approaches in clinical environment on nursing student's learning perceptions. This study demonstrated that model DREEM yields a high internal consistency. This tool evaluated nursing student's perceptions of their clinical learning environment on the basis of five subscales. Students learning perceptions, facilitators, academic self-perception, atmosphere, social self-perception and mentorship (Perry et al., 2016).

The third year nursing student's perception of educational learning environment in pediatric and maternity courses using DREEM Questionnaire in Egypt, showed total mean score for student's perception of their learning environment were 115.0+-23.02 and 110.3+-17.4 respectively. Student's beliefs in their gaining knowledge of environment were more positive than negative with a significant difference between both groups. All students agreed to positive approach regarding their learning moving in the right direction, positive academic self-perception, positive learning atmosphere and positive social self-perception. The result showed that 10% of both speciality students have mean score <=2, about half of the students have mean score 3.1-3.5 positive aspects while none of students scored >3.5 as excellent items. Perceptions of mastering learning environment were more positive than negative with a significant difference between pediatric and maternity students (Fawzia et al., 2015).

A study in Karachi that used DREEM questionnaire scored 121.07 out of 200; the student's perceptions of educational environment being more positive. They also considered the overall atmosphere of college comfortable and reported better than average social lives. The study showed that the students perceived a positive learning environment at the college. Although the students were experiencing a considerable amount of stress, their social life on the campus was satisfactory (Faiza et al., 2013).

The learning climate has been found to be significant in determining students' academic achievement and learning. The total DREEM score for female students were significantly higher than for males (p=0.01). The total scores of new entry students were significantly higher than the others (p=0.01). The total mean score was 114.3(SD20.6) out of 200 which was considered as more positive than negative. The subscale with highest mean score was student's perception of learning. The lowest mean score was for academic self-perception. The school's educational climate was generally perceived positively by students but specific areas identified by students as needing improvement (Bakhshi et al., 2013).

Qualitative analysis in association with the DREEM questionnaire was administered to undergraduate students together with an open question asking for suggested changes to current medical school. Practices highlighted were further defined through qualitative analysis using focus group email questionnaire and introduction of stressful incident reporting. Stress resulting from experiences on clinical placement was highlighted by some students. The qualitative data has substantially enhanced questionnaire interpretation and allowed action to address common causes for student dissatisfaction (Whittle et al., 2007).

The DREEM questionnaire administered to medical students to measured internal consistency of the instrument and its subscales with the method described by Cronbach and the result were expressed with alpha coefficient ranging from 0 to 1. Based on the responses DREEM was found highly reliable with an alpha coefficient of 0.91. The subscale with highest mean score was academic self-perceptions which indicate student's perceptions of their academic achievements. The lowest mean score was for the students perceptions on their social environment. The overall mean score was

127.5+20.9(63.8%). Scores observed in students in year 5 were significantly lower, including student's perceptions of learning, student's perceptions of teachers, student's perception of learning atmosphere and student's perceptions of the social environment. The schools educational climate was generally perceived positively (Riquelme et al., 2009).

The quality of the educational environment is a key determinant of student centered curriculum. Evaluation of the educational environment is an important component of programme appraisal. In order to conduct such evaluation, use of comprehensive valid and reliable instrument is essential. Using DREEM score in Ireland highlighted two concerns. Firstly the internal consistency of the 5 scales that appear low, secondly construct validity is not well supported (Hammond and et al., 2012).

Educational environment makes an important contribution to student learning. The DREEM questionnaire used alone has little value for identifying means of remediation of poor aspects of environment. DREEM questionnaire identified areas for changes to enhance student's experiences. Items for concern highlighted were further defined through qualitative analysis using focus groups, email questionnaire and introduction of stressful incident reporting. Stress resulting from experiences on clinical placement was highlighted by some students but on closer investigation found to be rare. The qualitative data have substantially enhanced questionnaire interpretation and allowed actions to address common causes for student satisfaction to be undertaken (Whittle et al., 2007)

Conclusion

The DREEM instrument has been used in several countries. It is applied to evaluate the perceptions of medical students and students of other allied health courses. It has been proved as a valid instrument for providing a profile of health institution's strengths and weaknesses. DREEM has been used in evaluating between different groups and comparison with ideal/expected scores. Users must be given an informed guideline on its reporting and statistical methodology is recommended to improve the educational environment and thus the overall quality of educational provision. It is essential for educationist to create an appropriate educational environment in order to provide and maintain high quality learning environment for students. Learning environment has a significant role in determining students' academic achievement and learning. Thus there is a need to carry out similar studies in our context in order to assess quality education.

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