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Students' perception of a reduction in teaching weeks in a medical programme in Fiji

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Abstract

Introduction: The MBBS programme at Fiji National University reduced its teaching weeks from 18 to 14 weeks in 2018. The purpose of this study was to assess student perceptions of learning and teachers following the reduction in the number of teaching weeks from 18 to 14 weeks.

Methods: A questionnaire was created using a modified Dundee Ready Education Environment Measure (mDREEM) tool (23 items). This was comprised of two subscales; Students Perception of Learning (SPL – 12 items) and Students Perception of Teachers (SPT – 11 items). This was circulated to Year 5 MBBS students through an online survey in 2020.

Results: The response rate was 96%. The students regarded their educational environment as positive in both length of teaching weeks, with an overall mDREEM mean score of 63.29 in 18 weeks and 62.03 in 14 weeks. No statistically significant differences were found between 18 week and 14 week scores across mDREEM scores, SPL scores or SPT scores. The highest scoring item over both was 'teachers are knowledgeable'.

Conclusion: A positive perception was noted for both lengths of teaching weeks. Reducing the teaching weeks from 18 to 14 did not statistically significantly reduce students' perception of their educational environment. Items identified with low scores will give a window of opportunity for lecturers and to improve these areas. Future studies may explore the use of the five subscales of the DREEM tool and this study can be integrated into further evaluations of educational environment at Fiji National University.

Keywords: Medical Students, Educational Learning Environment, DREEM Tool, Fiji National University, Teaching, Medical Education

Practice Highlights

- mDREEM scores did not significantly differ between 18 weeks and 14 weeks of teaching.
- The highest scoring item over both weeks was 'teachers are knowledgeable'.

I. INTRODUCTION

The Fiji National University (FNU) was founded in 2010 by the merging of six academic institutions in the Fiji Islands, including the Fiji School of Medicine (FSM). FNU has continued the FSM's tradition of educating and training a diverse population of students from Fiji and neighbouring Pacific Island nations. The Bachelor of Medicine and Bachelor of Surgery (MBBS) programme is a six-year course at FNU. As part of the academic year,

each pre-clinical year group have a teaching week block course. During this time, students receive 2-4 hours of scheduled lectures, 2-hour tutorials twice weekly, as well as 2 hours of clinical skills and 2 hours of anatomy, 2 hours of laboratory sessions and a health centre attachment 4 hours a week.

In 2018, FNU reduced the teaching week block course in the MBBS programme from 18 weeks to 14 weeks. The

teaching weeks were shortened due to the decision to move specialty courses such as Psychiatry and Public Health to their respective clinical blocks from Years 4 to 6. This adaptation was challenging for the lecturers, who had to reformat their teaching sessions, in addition to providing resources onto an online Moodle platform. It is well established that the educational environment plays an important role in determining the academic success of medical students (Prosser et al., 1999; Ramsden 2003). Therefore, it is important to evaluate the impact of any major changes to the educational environment, such as a reduction in teaching weeks from 18 weeks to 14 weeks.

Previous research has demonstrated that the duration of clinical rotations has been able to be decreased without adversely affecting the academic success of medical students. For example, one group demonstrated that a shortened four-week clinical rotation in Obstetrics and Gynaecology provided enough opportunity for final year medical students to undertake a quality improvement project in the curriculum (Kool et al., 2017).

The Dundee Ready Education Environment Measure (DREEM) is a quantitative tool used to evaluate students' perceptions of the educational environment in medical schools. The DREEM tool consists of 50 items, each rated on a scale from 0 to 4. It has five domains, allowing for a maximum score of 200. Higher scores indicate a positive perception of the learning environment (Roff et al., 1997).

A systematic review published in 2012 analysed 40 studies reporting DREEM scores from 20 countries. This review demonstrated that DREEM had been used internationally for various purposes, including diagnostic assessments and comparative studies across different groups (Miles et al., 2012). Five studies focused on investigating the impact of a changed curriculum, which was our area of interest (Demirören et al., 2008, Edgren et al., 2010, O'Brien et al., 2008, Riquelme et al., 2009, Till et al., 2004). We identified three key themes: 1) the DREEM tool was able to highlight areas of concern and/or remediation among students (Riquelme et al., 2009 Till et al., 2004), 2) DREEM scores were different in different phases of medical education, with year 3 students having the highest scores, and year 5 students having the lowest scores (Demirören et al., 2008, Riquelme et al., 2009), and 3) the DREEM tool identified clusters of students based on how positively they perceived the curriculum (O'Brien et al., 2008).

The aim of this research was to compare students' perception of learning and teachers between 18 weeks and 14 weeks, using a modified DREEM (mDREEM)

tool which utilises two of the five domains from the original DREEM tool. The authors' hypothesis was that students' perception of learning and teaching would be reduced in with a decrease in teaching weeks to 14 weeks compared to 18 weeks.

II. METHODS

A. Participants

An online survey was developed by the authors. This was distributed via email to eligible participants using Google Forms from 12th December to 17th December 2020. Eligible participants included the Year 5 MBBS cohort of 2021, as this cohort was exposed to both 18 week and 14 week teaching programmes. Participation in the survey was optional and results were anonymous. Submission of a completed survey was taken as providing informed consent to participate in this research. Full ethics approval was provided through FNU's College Human Health Ethics Committee (ID: 292.20). Facility approval was granted to conduct the research.

B. mDREEM Tool

The authors selected two of the five domains of the DREEM tool to be included in the survey. The selected two domains included students' perceptions of learning (SPL) and students' perceptions of teachers (SPT). The rationale for using only these two domains was that they were the two domains of interest for the teachers, and it was thought that a survey with less questions would be more likely to be filled to completion by more of the students. Using a Likert scale, each item was scored from 0 to 4, with 4 = strongly agree, 3 = agree, 2 = not sure, 1 = disagree and 0 = strongly disagree. Six of the 23 statements in the mDREEM tool were negative statements: 1) the teaching over-emphasised factual learning; 2) the teaching is too teacher-centred; 3) teachers ridicule the students; 4) the teachers are authoritarian; 5) teachers get angry in class and 6) the students irritate the teachers. These were scored in a reverse manner.

The mDREEM tool had a maximum score of 92. The SPL domain included 12 items, with a maximum score of 48. The SPT domain included 11 items, with a maximum score of 44. This research used the following guide to interpret the overall scores:

- 0–23 = Very poor environment
- 24 – 46 = A large number of problems in the environment
- 47–69 = More positive than negative environment
- 70–92 = Excellent

C. Statistical Analysis

Analysis of the collected data was by using R version 4.3.1. Mean scores were reported with standard deviations. Paired t-tests were performed to compare aspects of the mDREEM scores over 18 weeks and 14 weeks, with a statistical significance threshold of $p < 0.05$. Reliability analysis of the mDREEM tool was assessed using Cronbach's Alpha test, where > 0.7 was deemed acceptable internal consistency.

III. RESULTS

Seventy-eight out of eighty-one (96%) MBSS Year 5 students participated in the online survey. Fifty-one (65%) were females and 51% of participants were aged

between 23 and 25 years old. Fijian of Indian descent students made up the majority of the responders (67%) followed by other ethnicities (18%) and i-Taueki students (15%). The majority of students resided at the FNU Hostel (69%) while 28% lived within Suva and only 3% lived outside Suva.

Table 1 illustrates the 23 individual mDREEM items with mean scores across 18 weeks and 14 weeks. The item 'the teaching overemphasised factual learning' scored the lowest for both 18 and 14 weeks. The item 'teachers are knowledgeable' scored the highest for both 18 and 14 weeks.

Items	mDREEM item	Code	18 weeks		14 weeks	
			Mean	SD	Mean	SD
1	I am encouraged to participate in class	SPL	3.13	0.91	2.78	1.03
2	The teaching is often stimulating	SPL	2.79	1.02	2.65	0.94
3	The teaching is student-centred	SPL	2.97	0.95	2.79	0.92
4	The teaching helps to develop my competence	SPL	3.06	0.82	2.63	0.92
5	The teaching is well focused	SPL	2.67	1.00	2.55	1.03
6	The teaching helps to develop my confidence	SPL	2.88	1.01	2.79	0.94
7	The teaching time is put to good use	SPL	2.81	1.12	2.60	1.00
8	The teaching over-emphasised factual learning	SPL	1.85	0.92	1.91	0.79
9	I am clear about the learning objectives of the course	SPL	2.77	1.02	2.78	0.98
10	The teaching encourages me to be an active learner	SPL	2.86	1.16	2.97	0.88
11	Long term learning is emphasised over short term learning	SPL	2.59	1.13	2.56	0.98
12	The teaching is too teacher-centred	SPL	2.85	0.80	2.74	0.78
13	The teachers are knowledgeable	SPT	3.18	0.83	3.13	0.80
14	The teachers are patient	SPT	3.01	0.73	2.74	0.89
15	The teachers ridicule the students	SPT	2.49	0.97	2.56	0.97
16	The teachers are authoritarian	SPT	2.49	0.96	2.58	0.91
17	The teachers have good communication skills	SPT	3.04	0.90	2.99	0.71
18	The teachers are good at providing feedback to students	SPT	2.54	1.15	2.86	0.96
19	The teachers provide constructive criticisms	SPT	2.85	0.90	2.92	0.84
20	The teachers give clear examples during class	SPT	2.78	0.91	2.79	0.84
21	The teachers get angry in class	SPT	2.63	1.01	2.63	0.85
22	The teachers are well prepared for their classes	SPT	2.87	0.90	2.92	0.81
23	The students irritate the teachers	SPT	2.23	0.95	2.23	0.83

Table 1. Descriptive statistics of individual item DREEM scores for 18 and 14 teaching weeks

The mean SPL scores over 18 weeks and 14 weeks were 33.23 (SD 7.38) and 31.74 (SD 7.52), respectively, out of a maximum of 48 (SPL 18 weeks: 69.33%; SPL 14 weeks: 66.13%). The mean SPT scores over 18 weeks and 14 weeks were 30.06 (SD 6.34) and 30.28 (SD 5.74), respectively, out of a maximum of 44 (SPT 18 weeks:

68.32%; SPT 14 weeks: 68.82%). The mean mDREEM scores over 18 weeks and 14 weeks were 63.29 (SD 12.58) and 62.03 (SD 12.01), respectively, out of a maximum of 92 (mDREEM 18 weeks: 68.80%; mDREEM 14 weeks: 67.42%). These results are presented in Table 2.

	SPL 18	SPL 14	SPT 18	SPT 14	mDREEM 18	mDREEM 14
Mean	33.23	31.74	30.06	30.28	63.29	62.03
SD	7.38	7.52	6.34	5.74	12.58	12.01

Table 2. Descriptive summary statistics for 18 and 14 teaching weeks

The mean difference in SPL scores between 18 weeks and 14 weeks was 1.48. This difference was not statistically significant ($t(77) = 1.61, p = 0.11$). The mean difference in SPT scores between 18 weeks and 14 weeks was -0.22, and this was also not statistically significant ($t(77) = -0.43, p = 0.67$). The mean difference in overall mDREEM scores between 18 weeks and 14 weeks was 1.27, which was also not statistically significant ($t(77) = 1.04, p = 0.30$).

The reliability analysis for both 18 and 14 teaching weeks found a Cronbach's Alpha Test of 0.58 for SPL, which was less than the threshold of 0.7 and 0.84 for SPT, which was greater than the threshold of 0.7. For mDREEM, the Cronbach's Alpha Test was 0.77, which was greater than the threshold of 0.7 and confirmed acceptable internal consistency for the mDREEM tool.

IV. DISCUSSION

This study has demonstrated that a reduction in teaching from 18 to 14 weeks did not result in a significant decrease in mDREEM, SPL or SPT scores among Year 5 MBBS students at FNU in 2020. This finding refuted the authors' hypothesis of a reduction in teaching weeks leading to student dissatisfaction of the educational environment.

Both 18 weeks and 14 weeks scored within the range of 47 to 69 out of 92, indicating a 'more positive than negative environment' based on predefined thresholds outlined in the methods section. The 'excellent' threshold of 70+ out of 92 was not obtained, indicating room for improvement. In particular, the item 'teachers are knowledgeable' scored the highest for both 18 and 14 weeks indicating that students perceived their teachers to have high levels of knowledge despite the reduction in teaching weeks. In contrast, 'the teaching overemphasised factual learning' was identified as the most significant negative statement and provides an area of focus for the lecturers.

One group used the DREEM tool to assess curriculum changes in an Irish medical school and that found that the new curriculum was associated with students reporting higher mean DREEM scores (Finn et al., 2014). While FNU's curriculum change did not result in higher mDREEM scores, the maintenance of mDREEM scores is encouraging and provides a framework for ongoing work towards improving students' perception of their educational environment.

This finding was similar to a previous study reviewing shortened medical education rotations previously discussed in the introduction section of this paper (Kool

et al., 2017). Given the concordance with other similar research findings, the authors are of the belief that the results from this study are largely generalisable to MBBS students and lecturers worldwide, despite only being a single-centre study.

A major strength of this study was the high response rate of 96%. This ensures that data collected as part of this research is representative of the population of interest as compared to several studies with lower response rates (Al-Ansari et al., 2015; Ali et al., 2012; Hyde et al., 2018). Moreover, the results are comparable to the high response rates of other DREEM studies conducted internationally (Alraawi et al., 2020; Stormon et al., 2019; Till et al., 2004).

One limitation of this study was using only two domains of the DREEM tool, neglecting the three domains of Students' Academic Self-Perception (SAP), Students' Perception of Atmosphere (SPA) and Students' Social Self-Perception (SSP). The authors selected SPT and SPL as the two key domains for this research, and thought that by selecting the two most relevant domains, that this would shorten the questionnaire and improve completion of the questionnaire amongst participants. Future research at FNU should trial the use of all five domains of the DREEM tool to assess whether this provides further insights into how teaching weeks can be improved for MBBS students. It will be of interest to see whether response rates are reduced with the use of the full DREEM tool in a questionnaire. Furthermore, future surveys should investigate perspectives of MBBS students over a range of year groups, given previous research suggesting that Year 3 MBBS students have higher DREEM scores than Year 5 MBBS students. A second limitation of this study was that the alpha value for SPL failed to achieve the threshold of >0.7 , making it concerning that this domain was unable to achieve acceptable internal consistency. However, the authors note that SPT and mDREEM both achieved acceptable internal consistency. A final limitation of this study was the fully quantitative nature of the survey – the authors did not provide an option for students to add comments to this survey. Future surveys should provide an option for students to add comments, in order to provide more insights into the perspectives of MBBS students.

V. CONCLUSION

In conclusion, the students rated FNU's MBBS programme educational environment positively. A reduction in teaching weeks from 18 to 14 did not result in a statistically significant decrease in SPL, SPT or mDREEM scores. This study identified valuable information for the authors regarding the improvement of educational environment for medical students.

Utilisation of these results to guide educational development in these areas needing improvement will be of help in shaping the delivery of quality education to medical students. In addition, this research may open a door for further studies to investigate challenges faced by tutors and link it to the perceptions of medical students in their educational environment. Likewise, this study is important for future studies in evaluating the educational climate for FNU and other local and international universities.

Notes on Contributors

Dr Maria Bartolome is the corresponding author for this research. She is a PBL (problem based learning) lecturer at the School of Medicine, Fiji National University. She was involved in conceptualisation, methodology, investigation, formal analysis, and writing the original draft.

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Ethical Approval

Ethical approval was provided through FNU's College Human Health Ethics Committee (CHHREC) – reference ID: 292.20.

Data Availability

The corresponding author is able to provide researchers access to our anonymised dataset, on reasonable request.

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Declaration of Interest

The authors do not have any conflicts of interest to disclose.

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