ORIGINAL RESEARCH

Perceptions of Physiotherapy students about their teaching environment at Kamuzu University of Health Sciences in Malawi

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Abstract

Introduction

The learning environment is defined as an environment where teaching is taking place, as perceived by both students and teachers. A conducive learning environment is critical for successful curriculum implementation, which also affects students' academic performance. There have been initiatives introduced to improve the learning environment at Kamuzu University of Health Sciences (KUHeS). The purpose of this study was to ascertain physiotherapy final year students' perceptions of their learning environment at KUHeS in Malawi.

Methodology

This study was conducted at KUHeS among final-year physiotherapy students. A retrospective, quantitative cross-sectional design was used. The study utilised secondary data on education environment which had already been collected using Dundee Ready Education Environment Measure (DREEM) forms. There were 26 completed DREEM forms for 2019/2020 academic year. Demographic data were captured. Mean and standard deviation were used to analyse the DREEM scores. Inferential analysis was conducted with p-value set at ≤ 0.05.

Results

The total DREEM mean score was 120/200 which represented a positive perception of students learning environment. Students' academic self-perception scored the highest (69.13%), followed by students' perception of learning (61.94%), students' social self-perception (59.46%), students' perception of atmosphere (56.25), and students' perception of teachers (55.50%). Married students had negative perceptions (p-value = 0.05) of their teachers and students with previous college experience had positive perceptions of their academic performance (p-value = 0.02). Many statements under items of perception of teachers (mean score = 24) and social self-perceptions (mean score = 16) were considered negatively.

Conclusion

Students in their final year of physiotherapy had positive perceptions of their learning environment. However, students' perceptions of their teachers and social life were low. The learning environment had a significant impact on married students and those who had no prior experience with college life. Faculty development initiatives should aim to improve these critical areas.

Keywords: learning environment, DREEM, undergraduate students, perception

Introduction

The learning environment is defined as an environment where educational activities take place, as perceived by both teachers and students[1]. The education environment encompasses areas, that affect teaching and learning, in various settings, such as the classroom or hospital for students that are undergoing training in any field of health professions[2,3]. Palmgren et al suggests that an ideal education environment should be friendly and provide support for academic progression[4]. A study conducted in 2013 by Wyne et al reported that, education environment has a strong relationship with students' performance and satisfaction with the program they are pursuing[5]. This finding is consistent with what Yoo and Kim reported in 2019 6. Students' perceptions of their learning environment are valuable and can be used to improve its quality[7]. Therefore, it is critical to collect feedback from students on how they perceive their educational environment in order to develop strategies that may improve learning[8].

Perception of undergraduate students on learning environment varies among universities[9]. In Iran, it was noted that medical students learning environment improved from one academic year to another as the university employed different approaches to implementing their curriculum[7]. Hence, it is important to regularly obtain students feedback using tools that are sensitive to detect changes taking place in a learning environment.

The following are contributing factors to poor learning environment: not receiving timely feedback from lecturers, disorganized teaching, lack of support to stressed students and authoritative teachers[9,10]. It is reported that when a university is using student-centered approach, students

perceive it positively and it enables them to develop strategies for deep learning[7]. However, there is paucity of published data to whether the students pursuing the undergraduate physiotherapy program at KUHeS in Malawi have the same perception or not.

Kamuzu University of Health Sciences is one of Malawi's higher education institutions that offers undergraduate health professions programs. The university has a Teaching and Learning Development Center (TLDC) which is responsible for organizing activities designed to help in faculty development by providing guidance and training that impact teaching and learning. Over the years, trainings by TLDC have ranged from "teach the teacher" (with a shift in the focus from teacher-centered to student-centered learning), assessment, standard setting exams, mentoring, curriculum development and providing guidance on curriculum review. It is with a belief that things in the learning environment may have changed at the university and improved students' satisfaction following these trainings.

Previous students' evaluation of teaching (unpublished data) from physiotherapy undergraduate students revealed some gaps that needed intervention in order to improve learning environments in both the clinical and classroom settings. Students indicated insufficient supervision at clinical sites, overload of information during class teaching and lack of feedback. However, the tools that were used to collect the data were not scientifically validated. The physiotherapy staff decided to use a validated tool to objectively evaluate the learning environment in order to make conclusions that are scientifically sound. For this reason, the study only included the cohort that evaluated the learning environment using a validated tool known as Dundee Ready Educational Measure (DREEM)[2].

Methods

Study design

The study used a cross-sectional retrospective study design to collect quantitative data such as demographic information, history of supplementary exams, accommodation status, previous college experience, and scores for their perception of their learning environment.

Study population

Data were collected from the Rehabilitation Science Department repository. Data captured the feedback provided by final-year undergraduate physiotherapy students for 2019-2020 academic year. As part of the routine evaluation that informs the department regarding areas that require attention, all final year students completed and returned the DREEM forms. There were 29 final-year students registered for the 2019-2020 academic year, and it was expected that all of them would submit feedback forms. However, there were only 26 forms in the repository.

Sample selection criteria

The study used a non-probability random sampling technique to select the DREEM feedback forms only. All DREEM forms that were submitted by KUHeS final-year undergraduate physiotherapy students during 2019–2020 academic year were included. Only DREEM feedback was accepted; other types of feedback were excluded.

Data collection procedure and data collection tool

The investigators accessed the data, in hardcopy form, of the completed Dundee Ready Educational Environment Measure (DREEM) questionnaire. The data from DREEM forms were extracted and entered in an excel spreadsheet and stored in a password protected computer.

The questionnaire has five domains which assess students' perceptions of learning, students' perceptions of teachers, students' academic self-perceptions, students' perceptions of the atmosphere, and students' social self-perceptions.

The questionnaire has been widely used in high- and middle-income countries and it has been validated (face validity was confirmed and content validity ratio was found to be 0.39) and has internal consistency reliability of 0.91 (Cronbach's alpha)[2,11,12]. Recently, few studies in the low-income countries in Africa have used this tool to assess learning environment of undergraduate students[13,14]. It has 50 statements which are rated on a five-point Likert scale – the lowest score is 0 which represents "strongly disagree" while the highest score is 4 representing "strongly agree". The DREEM questionnaire was designed to have the following statements scored in reverse pattern (0 for strongly agree and 4 strongly disagree): 4, 8, 9, 17, 25, 35, 39 48 and 50 (Table 3-7). The questionnaire has a maximum score of 200. The scores are interpreted as follows: 0 -100 (0 – 50%) = very poor educational environment and has significant problems, 101 – 150 (51 – 75%) = more positive perception of the environment than negative; and 151 – 200 = excellent education environment. Individual statements with a mean score of ≤2 indicate areas with more problems, statements with a mean between 2 and 3 indicate areas that need to be enhanced; and mean score of ≥3.5 indicate real positive points.

Data management and analysis

The data were entered in a Microsoft office excel spreadsheet for cleaning and were then exported to IBM SPSS 26 for analysis. Frequency, percentage, mean and standard deviation of the DREEM scores were calculated. Two sample t-test was used to analyse the difference between students' perception scores and demographic details (gender, previous experience of college life, marital status, and history of supplementary exams), and p values of ≤ 0.05 were considered statistically significant.

Ethical consideration

Ethical approval was obtained from the College of Medicine Research and Ethics Review Board (P.03/23/4006). As the study involved retrieving student feedback forms from KUHeS, there was no direct involvement of human subjects. As a result, permission was obtained from the KUHeS head of Rehabilitation Science Department, who granted the investigators access to the data. The information was kept anonymous, and no attempt was made to identify the students who completed the DREEM questionnaire.

Results

Demographic characteristics

Out of 29 final year physiotherapy students (m = 13; f = 13), 26 students submitted completed DREEM feedback forms to the department, representing a 90% response rate. The mean age was 24 (±3.3) years. Seven students (27%) had a history of sitting supplementary exams.

Perception of students on learning environment

The overall mean score for students' perception of their learning environment was 120 which is interpreted as "more

positive than negative". Overall domain analysis score is shown in Table 1. The mean score for 'student perception of learning' was 29.73 which is considered as positive. 'Student perception of teachers' had a mean score of 24.42 which is interpreted as moving in the right direction. 'Students' academic self-perception' had a score of 22.12 suggesting a "feeling more on positive side", while 'student's perception of atmosphere' had a score of 27 indicating a more positive attitude. The students' social self-perception had a score of 16.65, which indicates "not too bad".

Perception of students – Domain analysis

The mean scores for each DREEM domain are shown in Tables 3 - 7. The following are the range of mean scores for DREEM domains: students' perception of learning domain (1.28 – 3.31); students' perception of teacher's domain (1.13 - 3.15); academic self-perception domain (2.44 – 3.12); students' perception of atmosphere (1.31 – 3.00); and students' self-social perception (1.27 – 3.27).

Table 1: DREEM mean scores

DREEM domain	Maximum score	Mean (SD)	Percentage (%)
Students' perceptions of learning	48	29.73(5.60)	61.94
Students' perceptions of teachers	44	24.42(5.55)	55.50
Students' academic self-perceptions	32	22.12(3.22)	69.13
Students' perceptions of atmosphere	48	27(7.23)	56.25
Students' social self-perceptions	28	16.65(3.76)	59.46
Overall DREEM score	200	120(20.26)	60

Table 2: Association between demographic details and DREEM domains (p values)

Variables	SPOL	SPOT	SASP	SPOA	SSSP
Gender	0.81	0.86	0.77	0.46	0. 51
Marital status	0.38	0.05*	0.90	0.24	0.07
Accommodation (Campus)	0.13	0.47	0.06	0.41	0.34
History of supplementary exam	0.71	0.09	0.33	0.68	0.15
Previous experience of college life	0.22	0.59	0.02*	0.37	0.89

* Statistical significance

SPOL = Students' perceptions of learning, SPOT = Students' perceptions of teachers,

SASP = Students' academic self-perceptions, SPOA = Students' perceptions of atmosphere,

SSSP = Students' social self-perceptions

Perception of students – Item analysis

The mean scores for each individual item in each DREEM domain are presented in Tables 3–7. The analysis of these individual items allowed for the identification of specific areas of strength and weaknesses in the students' learning environment. Twelve items scored below 2, the majority of which were in subscales of students' perception of teachers (4), student self-social perception (3), and students' perception of atmosphere (3). The majority of the items (28) scored between 2 and 3. A few items (8) scored above 3.

Table 3: Students perception of Learning

	Statement	Mean score (SD)
1	I am encouraged to participate in the group	3.31(0.55)
7	The teaching is often stimulating	2.64(0.81)
13	The teaching is student centered	2.28(1.06)
16	The teaching helps to develop my competence	2.62(0.90)
20	The teaching is well focused	2.73(0.87)
22	The teaching helps to develop my confidence	2.58(0.99)
24	The teaching time is put to good use	2.77(0.59)
25	The teaching over -emphasises factual learning	1.28(0.68)
38	I am clear about the learning objectives of the course	2.62(0.90)
44	The teaching encourages me to be an active learner	2.64(0.86)
47	Long term learning is emphasised over short term learning	2.42(1.06)
48	The teaching is too teacher-centred	1.92(1.15)

Table 4: Students perception of teachers

	Statement	Mean score (SD)
2	The teachers are knowledgeable	3.15(0.54)
6	The teachers are patient with patients	2.27(0.96)
8	The teachers ridicule the students	1.81(1.27)
9	The teachers are authoritarian	1.13(1.01)
18	The teachers have good communications skills with patients	2.48(0.96)
29	The teachers are good at providing feedback to students	2.19(1.10)
32	The teachers provide constructive criticism here	1.72(1.14)
37	The teachers give clear examples	2.77(0.82)
39	The teachers get angry	1.46(1.14)
40	The teachers are well prepared	2.73(0.67)
50	The students irritate the teachers	2.28(1.14)

Table 5: Students academic self-perception

	Statement	Mean score (SD)
5	Learning strategies which worked for me before continue to work for me now	2.29(0.95)
10	I am confident about my passing this year	3.58(0.90)
21	I feel I am being well prepared for my profession	2.92(0.89)
26	Last Year's work has been a good preparation for this year's work	2.65(1.09)
27	I am able to memorise all I need	2.44(1.16)
31	I have learned a lot about empathy in my profession	3.12(0.82)
41	My problem solving skills are being well developed here	2.88(0.53)
45	Much of what I have to learn seems relevant to a career in healthcare	2.96(0.66)

Table 6: Students perception of atmosphere

	Statement	Mean score (SD)
11	The atmosphere is relaxed during the clinical teaching clinical teaching	1.31(1.29)
12	This programme is well timetabled	2.15(1.35)
17	Cheating is a problem in the programme	2.84(1.18)
23	The teaching is relaxed	1.92(1.06)
30	There are opportunities for me to develop interpersonal skills	2.81(0.98)
33	I feel socially comfortable here	2.58(1.03)
35	I find the programme disappointing	2.60(1.38)
36	I am able to concentrate well	2.69(0.93)
42	The enjoyment outweighs the stress of the programme	1.58(1.17)
43	The atmosphere motivates me as a learner	2.31(1.16)
49	I feel able to ask the questions I want	3.00(0.85)

Association of students' perception with demographic characteristics

The study found that students' perception of teachers was significantly affected by marital status (p=0.05). Students' academic self-perception was significantly associated with previous experience of college life (p=0.02).

Discussion

In this study, the overall DREEM mean score was 120± 20.26 which indicates that the final year physiotherapy students had a positive perception of their learning environment. Other studies in Africa that used DREEM questionnaire reported similar findings although their scores were higher than the scores of this study. The mean score for physiotherapy students in Rwanda was 138, Nigeria presented a mean score

Table 7: Students self-social perception

	Statement	Mean score (SD)
3	There is a good support system for students who get stressed	1.27(1.04)
4	I am too tired to enjoy the programme	2.15(1.12)
14	I am rarely bored on this programme	1.92(1.26)
15	I have good friends in this location	3.27(0.87)
19	My social life is good	3.24(0.72)
28	I seldom feel lonely	1.96(1.17)
46	My accommodation is pleasant (answer if appropriate)	3.04(1.15)

of 131, while Malaysia, had a score of 133 on DREEM questionnaire[4,14,15]. The findings of this study were contrary to the studies conducted in Pakistan, Saudi Arabia and Sweden among students pursuing other medical programs (Medicine, Dental and nursing) where their perception of learning environment was below 100 and was considered more negative than positive[9,10,16]. The difference could be due to different approaches to curriculum implementation in various medical programs. Studies conducted in Sweden and India have demonstrated that physiotherapy students got support from their lecturers through constructive and frequent feedback[17]. Students in that study reported that lecturers approached them like a colleague which empowered them to participate in clinical learning. Curricula structure has also shown to contribute to students` perception of their learning environment. Outcome-based curricula are reported to contribute to more positive perceptions of learning environment compared those who have traditional curricula because they are student-centered and promote students' creativity in learning[7,18,19]. KUHeS's physiotherapy curriculum uses an outcome-based approach, hence it is not surprising to have a positive perception of learning environment. The effectiveness of different supporting systems that universities set in place has also shown to influence the students' perception about their learning environments[20,21]. This has not been investigated in this study, hence further studies are needed to explore KUHeS's student support system and understand how it affect students' experience of their learning environment.

DREEM domains

Students' academic self-perceptions had the highest scores among the DREEM domains. A statement such as 'I am confident about my passing this year' was rated highly in this domain. This shows that the students had confidence in the knowledge and skills they developed during the course to achieve their goals in that academic year. Psychologists reported that students' self-perception might not have a strong impact on the actual performance of the students, as university students misjudge their test-performance[22]. However, a study conducted in Ghana reported that frequent feedback and counselling from lecturers improved students' ability to correctly predict their academic performance[23]. In this study, actual performance of the students was not assessed or compared to the self-perceived performance because the DREEM forms were anonymous and could not

be traced to a particular student. Therefore, it is difficult to conclude if students' perception was reflected in their actual performance.

'Students' perception of teacher' is a domain with the lowest score in this study. The following 4 items in this domain scored below 2 which indicate major areas to be considered for intervention: 'the teachers ridicule the students', 'the teachers are authoritarian', 'the teachers provide constructive criticism here', and 'the teachers get angry'. The poorly scored statements highlight the communication challenges teachers have while putting the curriculum into practice. The student-centered approach used at KUHeS is emphasized in the current curriculum; however, this may not have automatically resulted in change of culture from a teacher-centered to student-centered approach in implementation. In Malaysia, physiotherapy students reported that teachers forbade them from challenging and questioning facts[15]. They were instructed to adhere strictly to everything that had been taught to them. This teaching approach may limit students from being creative in their learning environment. This shows that, in other higher institutions, hierarchy and bureaucracy hinder learning experience of students, as teachers and those in management positions are taken as experts and cannot be questioned. In contrast, physiotherapy students in Sweden and India showed greater satisfaction regarding their interaction with lecturers since they were treated as colleagues[17]. The ratio of teachers to students is another factor that supports this positive interaction in the global north compared to global south where a teacher is responsible for more students[24–26]. Lower student-teacher ratios provide more opportunities for productive engagement as there is less strain on teachers. Further studies should explore ways of improving perception of teachers among students at KUHeS.

DREEM individual items

The majority of the DREEM items scored between 2 and 3. This implies that although students' perceptions were positive, there are still areas that require improvement[2]. Ten items scored below 2 indicate major problems in need of significant improvement. This number of major problems are high compared to studies conducted in Malaysia and India that used DREEM questionnaire among medical students and reported having less than 5 items with major problems[13,27]. The two items with the lowest scores were 'the teachers are authoritarian' and 'there is a good support system for students who get stressed'. Mental health issues are becoming more prevalent among university students. There is a reportedly a 7.8% prevalence of suicidal ideation among university students which is associated with weak social support system[28]. The undergraduate students at KUHeS reside away from their families, and for some of them, this is the first time they have had to take responsibility for their own life. Students who lack coping mechanisms and a healthy balance between their social and academic lives might experience depression. According to studies, some colleges are silent about mental health issues; as a result, students who are under mental stress experience self-stigma that discourages them from seeking assistance[29,30]. In Malawi, suicide occurrences have recently increased dramatically, which is a sign that people are experiencing mental strains. However, a survey among youth revealed that they are unaware of the facilities and services that might assist them when they are depressed[31]. Malawian culture might also contribute to this challenge, as men are not expected to show their weaknesses hence, they battle with depression by themselves as no one might come forth to enquire about their wellbeing. Having teachers who are authoritarian, as shown in this study, makes them less approachable to non-academic conversations with the students which might reduce the possibility of students' opening up to them about the challenges they are facing[32]. Therefore, staff members should consider developing skills to manage teaching and students in a way that promotes dialogue. Structures that promote students' mental wellness should be considered by KUHeS and the Rehabilitation Science department, and students should be frequently reminded to consult if they are feeling stressed[25].

Association of DREEM and demographic details

In this study, students who were single had more positive attitudes, compared to those students who were married, regarding their perception of their teachers. With the increase in the number of married people in higher institutions, it is necessary to consider the expectations of married students and conduct a needs assessment when they enroll in undergraduate programs[33]. It has been reported in Nigeria that academic performance of the students was affected by their marital status[34]. This could be because married students experience stress as they have to divide their attention between the responsibilities of the family and school[35]. Women in Malawi are known for their role in providing a nurturing atmosphere (such as caregiving and homemaking) in their families[36]. This means that, married women studying at university face the challenge of balancing their social responsibilities and academic life. In this study, married students may have disliked the authoritarian way teachers addressed them, as they are considered mature by society and able to make their own decision without external pressure. This might have contributed to them having negative attitude toward their teachers because of the manner the teachers conducted themselves. Therefore, teachers need to be considerate by exploring and employing some of the supporting strategies for students who are married such as mentorship and support groups where married students will discuss the issues that affect their learning[21].

In this study, the students' academic self-perception was significantly affected by the previous history of college life. Those who had previously attended a higher education institution, had the perception that they had the capacity to pass their program. This is an unexpected result considering that in fourth year, all students could by this stage have adapted to their learning environment and adopted a coping strategy to pass exams. However, those with previous history of college life were older and more mature students compared to their counterparts. Therefore, their confidence to encounter stressful situations such as exams, could be considered better than those without the history of previous college life. It is therefore necessary to consider providing proper mentorship programs and structured learning outcomes to students who have not attended a higher education institution before. This will help to enhance part of the institution's mission to provide student-centred and innovative education and research.

Strength and limitations

The use of a valid and reliable questionnaire assisted the researchers in measuring the learning environment of students, making it comparable to published data. Because this was a cross-sectional study, it is difficult to understand the causal effect. Therefore, different study designs

should be explored to understand how some demographic details influence students' perceptions of their learning environment. Because the DREEM questionnaire was validated in higher-income countries, some of the statements in this questionnaire may not be applicable to a low-resource country like Malawi, where culture may influence how students perceive their learning environment in higher education institutions. Because of the small sample size, it is difficult to generalize the findings; thus, the findings of this study should be interpreted with caution.

Conclusion

Final-year physiotherapy students at Kamuzu University of Health Science had an overall positive attitude toward their learning environment. The study identified areas that require additional attention in order to meet the educational needs of students at KUHeS in Malawi. Marital status and those who had no prior experience with college life were found to have a negative impact on their perception of their teachers and academic self-perception, respectively.

Competing interests

Funding

Authors' contributions

G.M. conceptualized the study, collected, and analysed the data, wrote the first draft of the manuscript, and edited all drafts. E.T. conceptualized the study and edited all versions including the final draft. E.C designed the study, assisted with data collection and analysis, and reviewed all drafts. N.T. assisted with the study design, data analysis, and reviewed all drafts. All authors read and approved the final manuscript.

Acknowledgement

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