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Perceptions of the learning environment among health professions students across multiple campuses during curriculum reform

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Abstract

Purpose

This study compared how undergraduate students in pharmacy and other health science programmes at Fatima College of Health Sciences (FCHS), UAE, perceived their learning environment during a period of curriculum reform.

Methods

In this cross-sectional survey, students FCHS's Abu Dhabi (n = 776) and Al Ain (n = 593) campuses were invited to complete the 50-item Dundee Ready Education Environment Measure (DREEM). Independent-samples t-tests compared total and domain scores between campuses and one-way ANOVA compared scores across programmes.

Results

Of 123 students who started the survey, 92 provided complete responses (63 from Abu Dhabi, 29 from Al Ain). The mean total DREEM score was 134.39 (SD 20.81) of 200 (67.2%), interpreted as "more positive than negative." Total and domain scores did not differ significantly between campuses (all p>.05) or across programmes overall. However, perceptions of teachers varied significantly by programme ($F(6,85) = 3.18$, $p=.007$), with pharmacy students rating teachers more favourably than nursing students ($p=.003$, Hedges' $g = 0.88$). Item-level analysis showed peer friendship and perceived teacher knowledge as the most highly rated items, while overemphasis on factual learning and teacher-centred instruction were rated lowest at both campuses.

Conclusion

Students at both FCHS campuses perceived their learning environment as more positive than negative, with particularly favourable academic self-perceptions and comparatively lower scores for atmosphere and social self-perceptions. Programme-level differences, especially in perceptions of teachers, appear more relevant than campus location and should be considered exploratory. These findings offer baseline evidence for curriculum reform and suggest that programme-specific, mixed-methods follow-up and targeted faculty development may be more appropriate than uniform, campus-wide interventions.

1.0 Introduction

Over the past decades, the UAE government has invested heavily in expanding its healthcare sector. This deliberate strategy aims to provide a more affordable and higher quality healthcare services.[1] The dramatic growth in the healthcare sector prompted a concomitant and vital growth in the quality,

capacity, and diversity of healthcare education programmes across the country, in order to support the demands for competent and skilled healthcare professionals.[2] In this dynamic environment, a thorough assessment of the learning context that undergraduate health profession students undergo has become crucial.[3] Thus, detailed information about the learning environment may offer invaluable evidence to enhance learning opportunities, helping in the development of a highly qualified and well-trained healthcare workforce in the UAE.[2, 4]

Since its development in 1997, the Dundee Ready Education Environment Measure (DREEM)[5] has been widely used to assess health professions education globally.[6] It has been psychometrically validated across different cultural contexts and health profession student populations.[7] Researchers employ it to diagnose problems, compare different student groups and institutions, compare staff' and students' perceptions, evaluate curriculum changes and identify at-risk students.[6, 8, 9] DREEM-based global studies have typically reported learning environments on the positive side of the spectrum[8, 10–12], and the scores have shown a correlation with academic performance, quality of life, and mental health.[8] Notably, there can be a considerable variation of DREEM scores between various health profession programmes, academic years, and genders of students.[13, 14] Although it is known to be useful in designing a curriculum and training faculty[13, 15], a combination of qualitative methodology and the use of DREEM can produce a more profound understanding of what specific changes should be made to the educational environment.[15] In addition, DREEM provides a useful system to monitor the changes longitudinally and determine the effectiveness of curriculum improvement.[6, 8, 13, 15]

In the Middle East and North Africa (MENA) region, the DREEM instrument has been used to assess the learning environment in undergraduate health profession programmes.[4, 14, 16–24] It was used in the various fields like medicine, pharmacy, dentistry and nursing and provided useful information regarding the strengths of the programmes and areas that need to be addressed. In the UAE, the DREEM questionnaire has been pivotal in evaluating educational reforms in health professions. Shehnaz and colleagues[21] demonstrated its utility by showing that an integrated curriculum was perceived more positively by medical students than a traditional one. This finding was reinforced by Shehnaz, Sreedharan, and Gomathi, who used the DREEM questionnaire to demonstrate that faculty and students held congruent views on the new curriculum's strengths and areas needing improvement.[22] Taken together, these local studies highlight the effectiveness of the DREEM inventory in offering a global evaluation of the educational environment and informing evidence-based interventions to maximise the quality of healthcare education.

Programme-specific perceptions of the educational environment vary considerably across health professions disciplines. For example, the learning environment in the pharmacy programmes has been examined in Saudi Arabia and Syria, revealing contrasting educational realities: one indicating an environment in need of major improvement and the other showing a notably positive student perception.[17, 20] Comparable variation has also been reported among nursing students in the Gulf and wider MENA region, with total DREEM scores ranging from approximately 118 to 130 out of 200 across different institutional contexts.[25, 26] Elsewhere, studies encompassing multiple health-professions

disciplines within a single institution with pharmacy, physiotherapy, midwifery, radiography and occupational therapy programmes demonstrated meaningful programme-level variation in DREEM scores despite shared institutional resources and culture.[27, 28] Within the UAE specifically, DREEM has been used to evaluate a curricular transition in medical education, showing markedly more favourable perceptions following a shift to an integrated curriculum.[21] Despite this recognised variability across programmes and institutions, few studies have directly compared DREEM scores across multiple health-professions programmes within a single institution in the UAE, limiting understanding of whether observed differences reflect programme-specific factors, institutional context, or broader curricular design.

This study was conducted as FCHS undertook curriculum development initiatives across both campuses, providing a timely opportunity to establish baseline evidence of students' perceptions prior to and during this transition. This study aimed to describe total and domain-specific DREEM scores among undergraduate health-professions students and to examine whether these perceptions differed by campus and programme. Beyond establishing baseline evidence, these findings are intended to inform the selection of forthcoming pedagogical strategies, including more interactive, technology-enabled teaching approaches as FCHS continues its curriculum reform.

2.0 Methods

2.1 Participants and setting

This cross-sectional study was conducted among undergraduate students enrolled in health-professions programmes at the Abu Dhabi and Al Ain campuses of Fatima College of Health Sciences. Eligible participants were students in Years 1–5 of pharmacy, nursing, radiography and medical imaging, paramedicine, physiotherapy, midwifery, or psychology during the 2023–2024 academic year. They are students with active enrolment in any of these programmes at the time of data collection. Participation was voluntary, all 1369 eligible students (Abu Dhabi, n = 776, Al Ain, n = 593) were invited via institutional email to complete the survey.

2.2 Study Instrument

The 50-item Dundee Ready Education Environment Measure (DREEM) was used to assess students’ perceptions of the educational environment. Each item was rated on a five-point Likert scale, ranging from 0 (strongly disagree) to 4 (strongly agree). Negatively worded items – 4, 8, 9, 17, 25, 35, 39, 48, and 50 were reverse-scored before analysis.[29] Total DREEM scores range from 0 to 200, with higher scores indicating more favourable perceptions of the educational environment. Domain scores were calculated using the standard DREEM item allocation: students’ perceptions of learning (12 items; maximum 48), students’ perceptions of teachers (11 items; maximum 44), students’ academic self-perceptions (8 items; maximum 32), students’ perceptions of atmosphere (12 items; maximum 48), and students’ social self-perceptions (7 items; maximum 28).

2.3 Data collection and distribution

After obtaining ethics approval from the FCHS Institutional Ethics Review Board (Ref number: FECE-2-23-24-WONG), the DREEM questionnaire was distributed to students between April and May 2024. The questionnaire was created using SurveyMonkey®, a web-based survey software, and was then shared with all students in FCHS across two campuses through university emails. Students were informed about the purpose of the survey as well as the data collection procedure prior to completion of the questionnaire. Anonymity and voluntary participation were assured. Participants' consent to participate in the study was inferred by their completion of the questionnaire. A reminder was sent to the students two weeks after the initial survey distribution date. A second reminder was sent two weeks after the first reminder. The survey closed two months after the initial distribution date. Respondents were included if they completed all 50 DREEM items.

2.4 Statistical Analyses

Statistical analysis was carried out using SPSS v.29.0 for Windows. Descriptive statistics are presented as means, standard deviations, ranges, and percentages of maximum possible scores. The internal consistency of the overall DREEM scale and its five domains was examined using Cronbach's alpha with 95% confidence intervals. Campus comparisons for total and domain scores were conducted using independent-samples t-tests with Welch's correction, applied uniformly across all comparisons given the unequal campus sample sizes; effect sizes are reported as Cohen's *d*. One-way ANOVA was used to compare scores across the health-professions programmes, with Tukey post-hoc comparisons performed where significant omnibus effects were identified. Statistical significance was set at $p<.05$ for all analyses. Findings for programme-level comparisons should be interpreted cautiously given the small and unequal size of several programme subgroups.

3.0 Results

3.1 Response Rate and Sample Demographics

Of 1,369 eligible students, 123 initiated the survey and 92 respondents were included in the final analysis. Most respondents were female (n = 87, 94.6%) from Abu Dhabi campus (n = 63, 68.5%). Pharmacy students comprised the largest programme group (n = 34, 37.0%), followed by nursing (n = 25, 27.2%), radiography and medical imaging (n = 16, 17.4%), and paramedics (n = 11, 12.0%). The remaining respondents were enrolled in physiotherapy (n = 3), midwifery (n = 2), and psychology (n = 1) programmes. Participant characteristics are presented in Table 1.

Table 1
Demographic profile of participants at Abu Dhabi and Al Ain campus.

Characteristic	Category	n (%)
Gender	Female	87 (94.6)
	Male	5 (5.4)
Campus	Abu Dhabi/ Campus 1	63 (68.5)
	Al Ain/ Campus 2	29 (31.5)
Programme	Pharmacy	34 (37.0)
	Nursing	25 (27.2)
	RMI	16 (17.4)
	Paramedic	11 (12.0)
	Physiotherapy	3 (3.3)
	Midwifery	2 (2.2)
	Psychology	1 (1.1)
*Data presented as numbers (percentages)		

3.2 Reliability

The overall DREEM scale demonstrated excellent internal consistency (Cronbach's alpha = .907, 95% CI [.878, .932]). Internal consistency of the domains ranged from .573 for students' social self-perceptions to .778 for students' perceptions of teachers. The relatively low alpha for the social self-perceptions domain indicates that this domain should be interpreted cautiously.

Table 2
Reliability

Domain	Number of items	Cronbach's alpha	95% CI
Total DREEM	50	.907	.787 – .932
Perceptions of Learning	12	.717	.623 – .795
Perceptions of Teachers	11	.778	.704 – .840
Academic Self-perceptions	8	.690	.585 – .777
Perceptions of Atmosphere	12	.705	.607 – .786
Social Self-perceptions	7	.573	.426 – .694

3.3 Overall DREEM Scores and Campus Comparison

The overall mean total DREEM score was 134.39 (SD 20.81) out of a possible 200, corresponding to 67.2% of the maximum score and consistent with a learning environment perceived as "more positive than negative." Among the five domains, academic self-perceptions scored highest relative to its maximum (74.8%), followed by perceptions of learning (67.8%) and perceptions of teachers (66.1%); perceptions of atmosphere and social self-perceptions scored comparatively lower, at 64.2% each (Table 3).

Campus-level comparisons showed no statistically significant differences in total or domain DREEM scores (Table 4). Mean total scores were similar for Abu Dhabi (M = 133.48, SD = 20.24) and Al Ain (M = 136.38, SD = 22.23; t(50.2) = − 0.60, p=.552, d = − 0.14). None of the five domain comparisons reached statistical significance (perceptions of learning: t(40.7) = − 0.28, p=.784, d = − 0.07; perceptions of teachers: t(59.5) = − 0.73, p=.468, d = − 0.16; academic self-perceptions: t(53.2) = − 0.97, p=.336, d = − 0.22; perceptions of atmosphere: t(48.9) = − 0.03, p=.979, d = − 0.01; social self-perceptions: t(50.1) = − 0.67, p=.50, d = − 0.15). All effect sizes were small, indicating that campus location was not a meaningful source of variation in students' perceptions of their learning environment.

Table 3
Overall mean DREEM scores

Domain	Maximum	Mean (SD)	Range	% of maximum	Interpretation
Total DREEM	200	134.39 (20.81)	76–174	67.2	More positive than negative
Perceptions of Learning (SoL)	48	32.54 (5.12)	16–46	67.8	More positive perception of learning
Perceptions of Teachers (SoT)	44	29.10 (6.40)	6–43	66.1	Moving in the right direction
Academic Self-perceptions (SaS)	32	23.92 (3.93)	15–32	74.8	Feeling more on the positive side
Perceptions of Atmosphere (SoA)	48	30.84 (5.96)	15–45	64.2	More positive atmosphere
Social Self-perceptions (SSP)	28	17.99 (3.97)	8–27	64.2	Not too bad

Table 4
Campus comparison of DREEM domain scores

Domain	Campus 1 (n = 63) M (SD)	Campus 2 (n = 29) M (SD)	*t*	*df*	*p* (exact)	Cohen's *d*
SoL	32.43 (4.44)	32.79 (6.44)	−0.276	40.7	.784	−0.07
SoT	28.78 (6.60)	29.79 (6.00)	−0.730	59.5	.468	−0.16
SaS	23.65 (3.90)	24.52 (4.01)	−0.972	53.2	.336	−0.22
SoA	30.83 (5.75)	30.86 (6.51)	−0.026	48.9	.979	−0.01
SSP	17.79 (3.86)	18.41 (4.24)	−0.670	50.1	.506	−0.15
Total	**133.48 (20.24)**	**136.38 (22.23)**	**-0.598**	**50.2**	**.552**	**-0.14**

3.4 DREEM Scores by Programme

Total DREEM scores did not differ significantly across the seven health-professions programmes. However, students' perceptions of teachers differed significantly by programme (F (6,85) = 3.18, p = .007, partial η = .183). Post-hoc analysis showed that pharmacy students reported significantly more favourable perceptions of teachers (mean 32.56, SD 5.21) than nursing students (mean 26.68, SD 8.10; p = .003, Hedges' g = .88). Comparison involving smaller programme groups should be interpreted cautiously because of limited sample sizes.

3.5 Individual DREEM Item Analysis

Item-level analysis identified both convergent and campus-specific patterns of strength and concern (Table 5). Two items were rated among the five highest-scoring at both campuses: "The teachers are knowledgeable" (Item 2; Abu Dhabi M = 3.25, SD = 0.74; Al Ain M = 3.45, SD = 0.63) and "The teaching time is put to good use" (Item 31; Abu Dhabi M = 3.13, SD = 1.04; Al Ain M = 3.31, SD = 0.66), suggesting that perceived faculty competence and effective use of teaching time were shared strengths across both campuses.

Beyond these shared strengths, each campus displayed distinct patterns in its highest-rated items. At Abu Dhabi, students most strongly recognised peer friendship ("I have good friends in this school," Item 15, M = 3.29, SD = 0.89), encouragement to participate in class (Item 1, M = 3.27, SD = 0.60), and the perceived relevance of learning to a future healthcare career (Item 45, M = 3.24, SD = 0.67). On the other hand, students at Al Ain most strongly recodgnised confidence about passing the year (Item 10, M = 3.41, SD = 0.78) and clarity of learning objectives (Item 38, M = 3.28, SD = 0.65), alongside peer friendships (Item 47, M = 3.24, SD = 0.74). Together, these pattern suggest that while both campuses share core academic strengths, Abu Dhabi students place relatively greater emphasis on social connectedness and classroom engagement, whereas Al Ain students report stronger academic confidence and clarity of expectations.

Four items were identified among the five lowest-scoring at both campuses: "The teaching over-emphasizes factual learning" (Item 25; Abu Dhabi M = 1.10, SD = 0.76; Al Ain M = 1.03, SD = 0.78), tiredness in relation to the course (Item 4; Abu Dhabi M = 1.25, SD = 1.12; Al Ain M = 1.59, SD = 1.18), the perception that cheating is a problem (Item 17; Abu Dhabi M = 1.67, SD = 1.33; Al Ain M = 1.62, SD = 1.37), and teacher-centred teaching (Item 48; Abu Dhabi M = 1.75, SD = 1.02; Al Ain M = 1.28, SD = 1.22). Applying the threshold proposed by McAleer and Roff, item means at or below 2.0 denote areas requiring particular attention; by this criterion, all four shared low-scoring items fell within this range at both campuses, most notably overemphasis on factual learning, which represented the single lowest-rated item institution-wide.

Campus-specific concerns were also observed. At Abu Dhabi, students rated teacher authoritarianism (Item 9, M = 1.63, SD = 1.13) among their five lowest-scoring items, whereas at Al Ain, the perception that students irritate teachers (Item 50, M = 1.55, SD = 1.21) was uniquely prominent among the lowest-rated items. Both values fell below the 2.0 attention threshold, indicating that concerns about teacher-student relational dynamics, while expressed differently at each campus, represent a further area warranting faculty development attention. No item at either campus reached the ≥ 3.5 threshold denoting a particularly strong area, indicating that even the most favourably rated aspects of the educational environment have room for improvement.

Overall, these findings suggest that student concerns are concentrated on pedagogical approach (excessive factual emphasis, teacher-centred instruction) and workload-related fatigue rather than on isolated instances of poor teacher conduct, while perceived strengths reflect a combination of shared faculty competence and campus-specific social or academic factors.

Table 5
Item-level strengths and areas requiring attention on the DREEM inventory, by campus

Domain	Item	Item statement	Campus 1 (Abu Dhabi) Mean (SD)	Campus 2 (Al Ain) Mean (SD)	Observed at both campuses?
Highest-ranked item					
SoT	2	"The teachers are knowledgeable"	3.25 (0.74)	3.45 (0.63)	Yes
SaS	31	"I have learnt a lot about empathy in my profession"	3.13 (1.04)	3.31 (0.66)	Yes
SSP	15	“I have good friends in this school”	3.29 (0.89)	3.00 (1.04)	Abu Dhabi only
SoL	1	“I am encouraged to participate in class"	3.27 (0.60)	3.10 (1.01)	Abu Dhabi only
SaS	45	"Much of what I have to learn seems relevant to a career in healthcare"	3.24 (0.67)	3.10 (0.82)	Abu Dhabi only
SaS	10	“I am confident about passing this year”	3.13 (1.02)	3.41 (0.78)	Al Ain only
SoL	38	"I am clear about the learning objectives of the course"	3.03 (0.67)	3.28 (0.65)	Al Ain only
SoL	47	"Long term learning is emphasized over short term"	2.87 (0.81)	3.24 (0.74)	Al Ain only
Lowest-ranked items					
SoL	25	"*The teaching over-emphasizes factual learning*"	**1.10 (0.76)**	**1.03 (0.78)**	Yes
SSP	4	*"I am too tired to enjoy this course"*	**1.25 (1.12)**	**1.59 (1.18)**	Yes
SoA	17	*"Cheating is a problem in this school"*	**1.67 (1.33)**	**1.62 (1.37)**	Yes

Note: Highest- and lowest-ranked items reflect the five items with the greatest and least mean agreement at each campus. Bold values indicate the item mean fell at or below 2.0, the McAleer and Roff (2001)[30] threshold for an area requiring particular attention. No item at either campus reached the ≥ 3.5 threshold denoting a particularly strong area.

Domain	Item	Item statement	Campus 1 (Abu Dhabi) Mean (SD)	Campus 2 (Al Ain) Mean (SD)	Observed at both campuses?
SoL	48	"*The teaching is too teacher-centred*"	**1.75 (1.02)**	**1.28 (1.22)**	Yes
SoT	9	*"The teachers are authoritarian"*	**1.63 (1.13)**	1.62 (1.05)	Abu Dhabi only
SoT	50	*"The students irritate the teachers"*	2.16 (1.23)	**1.55 (1.21)**	Al Ain only

Note: Highest- and lowest-ranked items reflect the five items with the greatest and least mean agreement at each campus. Bold values indicate the item mean fell at or below 2.0, the McAleer and Roff (2001)[30] threshold for an area requiring particular attention. No item at either campus reached the ≥ 3.5 threshold denoting a particularly strong area.

4.0 Discussion

In this multi-campus survey of undergraduate health-professions students, the overall DREEM score indicated that respondents perceived their educational environment as more positive than negative, consistent with standard interpretation ranges for this instrument. Students' academic self-perceptions emerged as the relatively strongest domain, whereas perceptions of atmosphere and social self-perceptions were comparatively lower, highlighting important areas for further exploration. Although total scores and domain scores did not differ significantly by campus, pharmacy students reported more favourable perceptions of teachers than nursing students, while total DREEM scores across programmes did not differ significantly.

The pharmacy programme's generally positive learning environment mirrors other DREEM evaluations in the MENA region, though with notable variation. Pharmacy students at King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) in Riyadh also reported scores in the "more positive than negative" range.[17] Damascus University's pharmacy schools in Syria, by contrasts, reported a substantially lower total DREEM score of 89.9/200, corresponding to an environment with "plenty of problems".[20] FCHS sits toward the more favourable end of this regional spectrum.

Globally, these scores align with established pharmacy programme elsewhere. Cardiff University in the UK[31], Peoples University of Medical and Health Sciences for Women in Pakistan[26], pharmacy schools in Malaysia[10], Hamdard University in Pakistan[29] and a newly developed Malaysian pharmacy school[31] all reported comparable "more positive than negative" scores. These parallels suggest that the pharmacy learning environment at FCHS is comparable to international norms. At the same time, work from private-sector pharmacy institutes in Pakistan reported lower mean DREEM scores[32], indicating that not all programmes can achieve similarly positive conditions and that contextual factors matter.

Academic Self-perceptions was the highest-scoring domain at both campuses. This pattern echoes findings from Cardiff and Monash University students, where students often report feeling relatively confident about their academic progress.[28, 31] In contrast, Perceptions of Atmosphere and Social Self-perceptions were the lowest-scoring domains at both campuses. This mirrors reports from Taylor's University and Monash University, where issues around social support and overall climate are frequently identified as relative weaknesses.[28, 31] A plausible explanation is that demanding health professions curricula with dense teaching schedules, frequent assessments and clinical responsibilities can constrain students' time and energy for social activities, which may dampen students' sense of belonging and overall atmosphere.

Research from the UAE and neighbouring settings has shown that heavy workloads are a persistent challenge for health sciences students, directly impacting their work-life balance.[33] Studies from other local universities suggest that structured peer-support programmes, social events, and mentoring initiatives can relieve some of this pressure and strengthen the social side of the learning environment.[34, 35] At FCHS, pharmacy and allied health students face similarly intensive timetables, including long lecture blocks, laboratory work and clinical placements, which likely contribute to the lower scores in Social Self-perceptions and Atmosphere. Another contributing factor may be the historical lack of structured social events on the academic calendar. Recent institutional efforts such as orientation weeks, peer-mentoring programmes and regular social gatherings bring FCHS more in line with universities that foster social connectedness. Their impact on students' perceptions, however, has yet to be systematically evaluated.

The item-level patterns add further nuance to these campus-level observations. On the Abu Dhabi campus, students most strongly agreed with "I have good friends in this school" (Item 15, M = 3.29), highlighting a strong sense of peer support and social connection. This emphasis on friendships echoes findings from Damascus University, where items related to social support also received high ratings.[20] In Al Ain, the highest score was given to "The teachers are knowledgeable" (Item 2, M = 3.48), reflecting confidence in faculty expertise. This is in line with work from Terna Medical College in India, where perceived faculty competence has been identified as a core strength of the educational environment.[36] Although these differences are descriptive rather than statistically significant, but they hint that campus culture may shape whether students emphasise peer relationships or teacher-related strengths. Such hypotheses are best explored through qualitative work rather than treated as firm conclusions.

Both campuses also flagged concerns about aspects of teaching. At Abu Dhabi, "The teachers are authoritarian" (Item 9, M = 1.63) ranked among the five lowest-scoring items, while at Al Ain, "The students irritate the teachers" (Item 50, M = 1.55) stood out as a campus-specific concern. In addition, "The teaching over-emphasizes factual learning" (Item 25) and "The teaching is too teacher-centred" (Item 48) fell at or below the McAleer and Roff threshold of 2.0 on both campuses, indicating areas requiring particular attention. Similar concerns about authoritarian teaching, factual overload, and strained teacher-student interactions have been reported at Damascus University and Gujranwala Medical College, reinforcing their detrimental effect on student wellbeing and learning climcate.[20, 37]

Together, these findings point towards the need for faculty development that promotes more students-centred teaching, constructive feedback and supportive communication.

The programme-level difference in perceptions of teachers merits further investigation. Pharmacy students rated teacher-related items more favourably than nursing students, and the effect size was large, suggesting that programme context may shape how teaching, feedback and academic support are experienced. Given the cross-sectional design, voluntary participation and uneven programme group sizes, particular for psychology, midwifery, and physiotherapy, this result should be interpreted as exploratory rather than definitive. Follow up work using qualitative interviews or focus groups could help clarify whether the observed differences are driven by feedback practices, communication style, teaching organisation, clinical supervision or other programme-specific features and could inform targeted faculty development and quality improvement strategies.[21, 22]

The absence of significant campus differences is worth addressing directly rather than dismissing as a null result. Effect sizes were uniformly small (all $|d|<0.25$; Table 4), which indicate that campus location contributes little to variability in students' perceptions, not merely a Type II error from limited power. In this sense, non-significant findings are still informative. They suggest that students view the educational environment similar across campuses, making it reasonable to design many interventions at college level rather than separately for each site. Doing so may simplify resource allocation and coherent curriculum-reform efforts, while still allowing programmes to tailor specific strategies to their own educational and clinical contexts.

This study also speaks to the UAE's broader healthcare strategy, which sets ambitious goals for training and retaining locally educated health professionals. A positive learning environment is known to predict academic success, professional identity formation, and reduced burnout.[8, 13] Our findings suggest that FCHS has a solid foundation, with overall scores in the "more positive than negative" range, particularly for academic self-perceptions. At the same time, the low scores on teacher-centred teaching and the relatively weak social self-perceptions are clear warning signs. If these concerns remain unaddressed, they may contribute to student dissatisfaction or attrition, undermining national workforce goals. In this context, faculty development and structured peer-support programmes may be central strategies for retaining students in the pipeline and supporting curriculum reform across health-profession programmes.[33–35]

5.0 Limitations

First, the voluntary-response design and low analytic response rate of 6.7% may have introduced non-response bias and limit representativeness. The DREEM questionnaire includes 50 items and typically requires 15–20 minutes to complete, which may have discouraged some students from finishing the survey. It is therefore possible that respondents who completed all items differed systematically from non-respondents; for instance, they may have been more motivated or more engaged, potentially biasing the results toward more positive perceptions of the learning environment.

Second, the sample skewed heavily towards female (94.3%), limiting the reliability of any gender-based comparison. This composition is not an artefact of sampling but reflects the actual gender distribution at FCHS and mirrors the broader trend in UAE health-professions education, where women outnumber men significantly. Nonetheless, the current findings may not fully capture male students' perceptions of the learning environment and are most directly applicable to female-dominated cohorts.

Third, programme sizes were small and highly unequal, particularly for psychology, midwifery, and physiotherapy; therefore, programme-level comparisons, including the observed differences in perceptions of teachers, should be interpreted as exploratory and with caution.

Fourth, the cross-sectional design prevents assessment of changes over time or attribution of perceptions directly to curriculum reforms. Longitudinal mixed-methods research, incorporating interviews or focus groups, could provide deeper insights into students' perceptions and help explain the "why" behind the quantitative patterns observed during curriculum reform. Finally, the Social Self-perceptions domain demonstrated relatively low internal consistency in this sample, and its results should therefore be interpreted cautiously. This limitation applies specifically to that domain rather than the overall DREEM scale, which showed excellent reliability.

6.0 Educational implications

These findings provide baseline evidence for institutional monitoring of the educational environment during curriculum reform. The programme-level difference in perceptions of teachers suggests that teaching practices, student–teacher communication, feedback, and academic support may warrant further programme-specific evaluation. Rather than implementing broad change solely on the basis of this survey, the institution should use mixed-methods follow-up, including student focus groups and faculty consultation to identify the contextual factors underlying the observed differences and to evaluate subsequent educational changes.

7.0 Conclusion

Among respondents, the educational environment was perceived as more positive than negative across undergraduate health-professions programmes. Academic self-perceptions were comparatively favourable, while perceptions of atmosphere and social self-perceptions offered potential areas for further inquiry. Pharmacy students reported more favourable perceptions of teachers than nursing students; however, this exploratory programme-level finding requires confirmation in larger and more representative samples. Longitudinal, programme-specific, mixed-methods evaluation is needed to guide educational improvement during curriculum reform.

Declarations

Ethics approval:

This study was approved by the Fatima College of Health Sciences Institutional Ethics Review Board (Reference number: FECE-2-23-24-WONG).

Consent to participate:

All methods were performed in accordance with relevant guidelines and regulations, and the study adhered to the principles of the Declaration of Helsinki. Participation was voluntary, and informed consent was obtained from all participants prior to data collection. Responses were collected anonymously and kept confidential.

Consent to publish:

Not applicable

Competing interests:

The authors declare no conflicts of interest.

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None

Author Contribution

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by [MA], [MA], [AA], [HA] and [PNW]. The study methodology was developed by [PNW], [RS], [SA], MA], [MA], [AA] and [HA]. Project resources were provided by [SA] and supervision was carried out by [PNW], [RS] and [SA]. Funding acquisition was secured by [[PNW], [RS] and [SA]. The first draft of the manuscript was written by [MA], [MA], [AA] and [HA]. Critical review and editing of the manuscript were performed by [PNW], and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Data Availability

The datasets generated and analysed during the current study are not publicly available due to institutional data-privacy policies but are available from the corresponding author on reasonable request.

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