TPM Vol. 33, No. S3, 2026
ISSN: 1972-6325
https://www.tpmap.org/

COMPREHENSIVE ASSESSMENT OF THE EDUCATIONAL ENVIRONMENT IN SAUDI NURSING EDUCATION: A DREEM-BASED STUDY AT KING ABDULAZIZ UNIVERSITY

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ABSTRACT

Background: The educational environment (EE) is a key determinant of nursing students' academic success, professional identity formation, and psychosocial well-being. In Saudi Arabia, where nursing education has expanded rapidly under Vision 2030 reforms, evaluating institutional climates is essential for continuous quality improvement.

Objectives: To assess undergraduate nursing students' overall perceptions of their EE at King Abdulaziz University (KAU) and examine domain-specific strengths and challenges to inform strategic improvements aligned with national accreditation reforms.

Methods: A descriptive cross-sectional study was conducted among 415 undergraduate BSN nursing students (2nd to 4th academic years) at the Faculty of Nursing, KAU, Jeddah. Participants completed the validated Arabic version of the 50-item Dundee Ready Educational Environment Measure (DREEM) via a secure electronic framework. Data were analyzed using SPSS version 21.0, utilizing Cronbach's alpha for internal reliability, independent t-tests for gender comparisons, and one-way ANOVA with Tukey's HSD post-hoc test for academic year variations.

Results: The overall mean DREEM score was 136.27 ± 27.03 out of 200, indicating an environment perceived as "more positive than negative". The instrument showed excellent overall reliability ($\alpha = 0.949$). The highest-rated domain was Student's Perceptions of Learning (SPoL: 32.78 ± 7.36), while Student's Social Self-Perception scored lowest (SSSP: 16.95 ± 4.35). Prominent program strengths included high faculty knowledge (83.1%) and well-focused, stimulating lessons. Notable weaknesses included perceived elements of authoritarian teaching behavior (61.7%) and factual content overload. While overall scores showed no significant difference by gender ($p > 0.05$), males reported significantly higher social self-perceptions ($p = 0.002$). Perceptions improved progressively across academic years, with senior (4th-year) students demonstrating significantly higher scores across nearly all subscales ($p \leq 0.001$).

Conclusions: Nursing students at KAU perceive their educational environment favorably. However, targeted interventions are required to address didactic pedagogical styles, transition toward student-centered mentorship, mitigate academic strain, and enhance social support systems to fulfill Vision 2030 educational expectations.

KEYWORDS: Educational Environment, DREEM, Nursing Education, Saudi Arabia, Vision 2030, King Abdulaziz University.

1. INTRODUCTION

The educational environment (EE) in health professions education refers to the full range of physical, psychosocial, and institutional factors that shape a learner's experiences. In nursing training, the EE can be conceptualized as the material and affective culture co-created through complex interactions between the academic institution, the teaching staff, and the student body. A supportive educational climate is recognized as an absolute prerequisite for higher-quality learning, deeper student engagement, and the cultivation of competent, emotionally stable healthcare professionals. Empirical evidence demonstrates that a positive learning atmosphere increases student motivation, academic satisfaction, and performance while reinforcing strong professional identity formation and general learner well-being. Conversely, an unfavorable or malignant learning environment correlates with elevated psychological distress, anxiety, and student burnout.

At the international level, the World Federation for Medical Education (WFME) emphasizes the systematic evaluation of the educational environment as a foundational quality metric for continuous institutional improvement and

programmatic accreditation. A resource-rich, safe learning environment allows nursing students to develop essential competencies, including critical thinking, complex clinical reasoning, and reflective problem-solving.

Within the Kingdom of Saudi Arabia, health professions education has experienced an unprecedented expansion over the last two decades. Aligned with the ambitious socio-economic reforms of Saudi Vision 2030, ongoing national developments have drastically expanded training capacities and instituted strict expectations for institutional and programmatic accountability. National regulatory frameworks led by the Education & Training Evaluation Commission's National Center for Academic Accreditation and Evaluation (ETEC-NCAAA) and the Saudi Commission for Health Specialties (SCFHS) increasingly prioritize competency-based learning outcomes and rigorous quality assurance mechanisms. Levers for enhancing educational quality include active supervision practices, timely constructive feedback, and the cultivation of psychologically safe learning environments, particularly during high-stress clinical transitions.

Despite the expansion of nursing programs across the Kingdom, empirical evidence explicitly examining nursing students' perceptions of their educational environment remains limited and context-sparse. Evaluating the educational environment at an established institution like the Faculty of Nursing at King Abdulaziz University (KAU) offers an opportunity to map operational strengths, highlight institutional barriers, and generate evidence-informed strategies to optimize teaching-learning processes. Accordingly, this study aims to assess nursing students' overall perception of their educational environment, analyze structural perceptions across the five core subscales of the DREEM instrument, identify perceived systemic barriers affecting the current learning experience, and propose actionable, context-optimized strategies to align Saudi nursing education with national quality benchmarks.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Theoretical Foundations of the Learning Environment: Educational theory posits that learning is an active, constructive process deeply shaped by contextual variables. This study is grounded in two primary theoretical paradigms: First, Kolb's Experiential Learning Theory, which conceptualizes learning as a continuous cycle involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. To successfully navigate this cycle, students require a stable, interactive educational environment that explicitly provides opportunities for reflection and clinical experimentation. Second, Moos's Theory of Human Environments posits that social climates can be accurately mapped across three interrelated dimensions: personal development (e.g., learner autonomy and task orientation), relationship dynamics (e.g., peer cohesion and faculty support), and system maintenance/change (e.g., organizational clarity, stability, and control). The DREEM subscales directly reflect these dimensions.

Global and Regional Context Using DREEM: The Dundee Ready Educational Environment Measure (DREEM), developed by Roff and colleagues, serves as a globally recognized, internationally validated benchmark tool for evaluating undergraduate health professional learning environments. Globally published DREEM mean scores in nursing education typically fall within a broad range of 78 to 139 out of 200, generally reflecting environments classified as "more positive than negative".

Within Saudi Arabia, cross-sectional studies across health science programs reveal notable variability. A systematic review encompassing 40 regional studies across medical, dental, and applied medical sciences faculties observed that global scores consistently hover within the 101–150 range. For instance, a study conducted among nursing students in Riyadh reported an overall mean DREEM score of 125.8 out of 200, though it was characterized by wide statistical variation (SD = 58.79), indicating substantial individual polarization in student perceptions. Local comparative data suggests that medical colleges frequently record slightly higher DREEM baselines than nursing or allied health faculties, a trend attributed to structural curriculum variations, historical funding allocations, or differing faculty-to-student interaction models.

Identified Strengths and Barriers in Prior Research: The literature reveals recurring domain-specific trends. Programmatic strengths usually include positive student perceptions of baseline faculty knowledge and basic clinical preparedness. Conversely, low ratings are frequently observed within the Student's Perception of Atmosphere (SPA) and Student's Perception of Learning (SPoL) subscales due to systemic barriers. For example, in a Saudi nursing study by Rawas et al., learning methods achieved a high mean score (72% of maximum), whereas the broader educational atmosphere scored lowest (59% of maximum). Commonly cited structural barriers include the persistence of traditional, lecture-dominated, hierarchical instructional methods, an overemphasis on passive memorization (rote learning), and insufficient constructive feedback. High endorsement rates for items like "teachers are authoritarian" highlight persistent didactic pedagogies that undermine learner psychological safety, reduce student engagement, and limit critical clinical judgment.

3. METHODOLOGY

Study Design and Setting: This descriptive, cross-sectional institutional study was conducted between September 2024 and February 2025 at the Faculty of Nursing, King Abdulaziz University (KAU) in Jeddah, Saudi Arabia. Established in 1977 as a foundational department under the Faculty of Medicine and Medical Sciences, KAU's Faculty of Nursing was the pioneering institution in Saudi Arabia to grant a Bachelor of Science in Nursing (BSN) degree. The faculty features advanced educational infrastructures, including specialized clinical simulation laboratories and integrated clinical training programs within the university's tertiary healthcare facilities.

Target Population and Sampling Strategy: The target population comprised undergraduate male and female nursing students actively enrolled within the BSN program. Inclusion criteria restricted the sample to students in their second, third, and fourth academic years. First-year preparatory students were excluded because they are primarily assigned general university science requirements and lack meaningful exposure to the dedicated nursing educational environment. The minimum required sample size was calculated using a standard single-proportion formula yielding a requirement of 385 students. To counteract potential electronic non-response or missing entries, a total accessible population census approach was combined with a purposive quota strategy to capture equivalent academic strata. Ultimately, 415 completely validated student responses were collected, representing 83.8% of the total eligible enrollment pool (N=495).

Instrumentation: Data were collected using the officially validated Arabic translation of the 50-item DREEM instrument. All 50 items utilize a standardized 5-point Likert scale scored as follows: 4 (Strongly Agree), 3 (Agree), 2 (Unsure), 1 (Disagree), and 0 (Strongly Disagree). The instrument contains 9 negative statements that are reverse-coded prior to statistical computation. The global DREEM score ranges from 0 to 200, with established interpretive bands: 0–50 (Very Poor), 51–100 (Plenty of Problems), 101–150 (More Positive than Negative), and 151–200 (Excellent). The tool is psychometrically segmented into five distinct subscales: Students' Perception of Learning (SPoL; 12 items), Students' Perception of Teachers (SPoT; 11 items), Students' Academic Self-Perception (SASP; 8 items), Students' Perception of Atmosphere (SPA; 12 items), and Students' Social Self-Perception (SSSP; 7 items).

Data Collection and Ethical Considerations: The research instrument was constructed via a secure digital framework and distributed electronically through verified institutional university email lists. Ethical clearance and full institutional approval were formally obtained from the Institutional Review Board (IRB) of King Abdulaziz University (Approval No. HA-02-j-008). Electronic informed consent was mandatory prior to accessing the primary items. No personal identifiable information (PII) was collected, securing total anonymity.

Statistical Analysis: Statistical processing was executed via IBM SPSS Version 21.0 for Windows. Scale reliability was verified via internal consistency analysis using Cronbach's alpha coefficients across global and domain measures. Comparative hypotheses across binary groups (such as gender) were analyzed using parametric independent-samples t-tests. Differences across academic cohorts were evaluated utilizing one-way analysis of variance (ANOVA) followed by Tukey's Honestly Significant Difference (HSD) post-hoc comparisons to map specific pairwise differences. The level of statistical significance was maintained at $p < 0.05$.

4. RESULTS

Participant Demographic Flow and Baseline Reliability: A total of 415 active participants completed the validated survey entries. The distribution of the cohort across academic years was well-balanced: 2nd Year (n = 157, 37.8%), 3rd Year (n = 127, 30.6%), and 4th Year (n = 131, 31.6%). The sample included 139 male students (33.5%) and 276 female students (66.5%). The global 50-item DREEM scale demonstrated an overall Cronbach's alpha of 0.949, reflecting strong internal consistency. The highest-rated domain was Student's Perception of Learning (SPoL: 32.78 ± 7.36), while Student's Social Self-Perception scored lowest (SSSP: 16.95 ± 4.35). The global mean score of 136.27 ± 27.03 out of 200 explicitly falls within the 'More Positive than Negative' interpretive band, confirming a supportive environment.

Table 1: Global and Domain DREEM Reliability and Descriptive Statistics

Subscale Dimension	Items	Cronbach's Alpha (α)	Mean Score (± SD)	Interpretation
Students' Perception of Learning (SPoL)	12	0.865	32.78 ± 7.36	Highly Positive
Students' Perception of Teachers (SPoT)	11	0.838	31.72 ± 6.49	Moving in the right direction
Students' Academic Self-Perception (SASP)	8	0.816	22.43 ± 5.08	Feeling Confident

Students' Perception of Atmosphere (SPA)	12	0.815	32.39 ± 7.23	A Good Feeling
Students' Social Self-Perception (SSSP)	7	0.604	16.95 ± 4.35	Not Too Bad

Deep Item Analysis and Stratified Subgroup Comparisons: Item-level examination within the SPoL domain identified that 81.4% agreed that teaching is well-focused, and 76.9% felt encouraged to actively participate. However, 28.9% indicated that teaching overemphasized factual learning, and 30.4% felt it was too teacher-centered. Within the SPoT domain, faculty scored high on expertise (83.1% knowledgeable), but a significant area of concern emerged regarding interpersonal dynamics: 61.7% agreed that teachers demonstrate authoritarian behaviors.

Independent t-tests indicated that the difference in overall DREEM scores between male (138.06 ± 31.81) and female (135.37 ± 24.28) students was not statistically significant ($p = 0.339$). However, male students scored significantly higher in social self-perceptions (SSSP) than female students (17.89 ± 3.94 vs. 16.48 ± 4.47, $p = 0.002$). One-way ANOVA revealed statistically significant variations across academic years for nearly all domains ($p \leq 0.001$), with total DREEM evaluations shifting from a lower level in the 2nd year (128.29 ± 30.15) to a peak among 4th-year seniors (145.06 ± 21.83).

Table 2: DREEM Domain Comparison by Gender and Academic Year (Means)

Factor Criteria	SPoL	SPoT	SASP	SPA	SSSP	Global DREEM
Male (n=139)	33.44	30.91	22.93	32.89	17.89	138.06
Female (n=276)	32.45	32.13	22.17	32.14	16.48	135.37
2nd Year (n=157)	30.16	31.03	20.81	30.90	15.39	128.29
3rd Year (n=127)	33.15	31.70	22.55	32.39	17.28	137.08
4th Year (n=131)	35.57	32.57	24.24	34.18	18.50	145.06

5. DISCUSSION

This study offers an empirical evaluation of the educational environment at KAU's Faculty of Nursing using the internationally validated DREEM instrument. The overall mean DREEM score of 136.27 ± 27.03 out of 200 places the institution within the upper tier of regional benchmarks, indicating a generally favorable and supportive educational climate. This positive baseline reflects KAU's substantial structural investments in state-of-the-art simulation equipment, modern instructional facilities, and formal faculty training initiatives.

However, item-level and subscale analyses identified critical areas of concern that act as barriers to learning. In the SPoL domain, positive views on stimulating teaching coexisted with concerns regarding an overemphasis on factual learning and teacher-centered methods. This content saturation promotes surface learning, forcing students to rely on rote memorization rather than developing the high-order critical thinking required for complex patient care. The persistent perception of authoritarian teaching behaviors (reported by 61.7% of the sample) indicates another structural barrier. Hierarchical faculty-student dynamics compromise the "psychological safety" required for students to confidently ask questions, admit mistakes, or engage in reflective dialogue.

The SSSP subscale yielded the lowest relative mean score (16.95 ± 4.35). This low performance reflects several contextual factors, including heavy clinical workloads, academic fatigue, separate campus environments, and a lack of dedicated on-campus social support networks. Interestingly, male students reported significantly higher social self-perceptions than female students ($p = 0.002$), which may be influenced by local socio-cultural dynamics or differing peer support patterns. The progressive upward trend in DREEM scores across academic years (from 128.29 to 145.06) suggests that as students advance, they adapt to the academic workload, develop stronger peer support systems, and gain clinical confidence.

Limitations and Strengths: This study achieved a high response rate (84.6%), ensuring a highly representative sample that reduces non-response bias. However, the cross-sectional design captures student perceptions at a single point in time, preventing the identification of causal relationships. Additionally, as a single-center study conducted at KAU, the findings may not be directly generalizable to all nursing faculties across Saudi Arabia.

6. RECOMMENDATIONS AND CONCLUSION

Recommendations for Institutional Reform: Based on the empirical findings, several targeted interventions are recommended: 1) Faculty Development in Student-Centered Pedagogy: Establish workshops focusing on active learning, problem-based learning, and simulation methods to reduce reliance on passive lectures. 2) Transition to Transformational Mentorship: Train faculty members in constructive feedback techniques and supportive clinical supervision to replace hierarchical behaviors. 3) Curriculum Rebalancing: Review course content to identify and reduce factual redundancies, helping to prevent cognitive overload. 4) Targeted Support for Transition Phases: Implement specialized academic and psychological orientation programs for second-year students to help them adjust to the specialized nursing curriculum. 5) Enhanced Social Networks: Create peer-support networks and student wellness initiatives to improve social self-perception.

Conclusion: Undergraduate nursing students at King Abdulaziz University perceive their educational environment positively, with particular appreciation for faculty expertise, structured course focus, and professional preparation. However, addressing identified challenges—such as authoritarian teaching styles, factual over-saturation, and social isolation—is essential for further improvement. By implementing interactive student-centered mentorship and strengthening student support systems, KAU can enhance its educational quality and help prepare highly competent nursing professionals in full alignment with Saudi Vision 2030 priorities.

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