ORIGINAL ARTICLE

Sexual Knowledge Among Medical Students in International Islamic University Malaysia, Kuantan: A Cross-sectional Study

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ABSTRACT

Introduction: Sexual knowledge in selected medical schools remains a controversial subject. Despite the importance of sexual health in medical practice, the emphasis on this subject within medical training may vary inconsistently across institutions. This study examines the association between sociodemographic variables and sexual knowledge among medical students at the International Islamic University Malaysia. **Materials and methods:** The study design is a questionnaire-based survey. This cross-sectional study used convenience sampling with 212 respondents. Participants were first to fifth-year medical students at the International Islamic University Malaysia, Kuantan. Outcome measures were students' knowledge of aspects of human sexuality expressed on a five-point Likert scale using the Youth and Adolescent Sexual Knowledge Scale. **Results:** The mean sexual knowledge score was 104.26 ± 5.88 out of a total of 150, indicating a moderate-to-good level of sexual knowledge among respondents. Scores were derived from a 30-item questionnaire, with higher scores reflecting greater factual correctness. Sexual knowledge scores showed a significant positive association with age and year of study ($p < 0.05$), indicating increasing knowledge with academic progression. **Conclusion:** Sexual knowledge was higher among students in later academic years, but significant gaps persist, particularly in the areas of legal and ethical understanding. These findings suggest the need for enhanced integration of sexual health content within clinical and ethics-related modules, supported by professional development in medical education.
Malaysian Journal of Medicine and Health Sciences (2026) 22(SUPP4):68-73. doi:10.47836/mjmhs.22.s4.10

Keywords: Medical education, Medical students, Sexual knowledge, Sexual health, Malaysia

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INTRODUCTION

Sexual knowledge is integral to well-being and linked to the risks of STIs, unintended pregnancy, and mental health problems (1). In light of these risks, future physicians require comprehensive training to identify sexual-health concerns and counsel patients effectively (2,3). Beyond individual competencies, medical school curricula need to evolve to better equip future physicians to serve a wide range of patients with varied sexual health attitudes and experiences (4). Crucially, healthcare providers who are well-informed and empathetic can establish a secure and trustworthy environment that promotes open dialogue (5).

Proficiency in sexual health is essential for diagnosing and managing STIs, sexual dysfunctions, and reproductive disorders. Evidence of knowledge gaps is demonstrated by a Kelantan study in which only 12.4% of in-school adolescents knew STIs can be contracted through sexual intercourse (6). In a U.S. survey, medical students scored below 70% in four of six categories and overall (4), and UK students averaged 60% on a 10-item test (7), indicating suboptimal undergraduate preparation.

Sexual knowledge encompasses information about reproduction, pregnancy, masturbation, abortion, fertility, contraceptive methods, and sexually transmitted diseases (8). Sexual knowledge should comprehensively cover the physical development transitioning from childhood to adolescence, the intricacies of the reproductive system, the mechanics of sexual intercourse and subsequent childbirth, methods of pregnancy prevention, the discernment and management of sexual advances from both men and women, and the considerable prevalence of sexually transmitted diseases (STDs) and illicit sexual activities (9). Due to the significant influence of sexual health literacy on patient outcomes, there is growing apprehension about whether the sexual health education provided in undergraduate medical curricula is adequate (10-12).

In Malaysia, discussions about sex remain sensitive due to prevailing cultural and religious norms. Topics related to sex and reproductive health are frequently regarded as taboo within families. This situation underscores a significant need for reliable and accessible sources of information for adolescents (13).

The current literature suggests that, although a few comparable scales are available globally, they are considered unsuitable for research in Malaysia. The abridged 24-item Miller–Fisk questionnaire is culturally inappropriate because of explicit content and its design for highly educated women (14). The 106-item Sexual Knowledge and Attitude Questionnaire (SKAQ) spans heterosexual relations, sexual myths, abortion, autoeroticism, and masturbation (15), but its explicit, practice-oriented items (e.g., coital techniques/positions, masturbation habits, same-sex behaviour) make it unsuitable for Malaysian youths. In a related study using the simplified Hindi SKAQ-II, Dutt et al. reported that college students had poor sexual knowledge yet liberal attitudes toward sexuality and a higher likelihood of sexual activity (16). The tool used in this study is the Youth and Adolescent Sexual Knowledge Scale (YASKS). The Youth and Adolescent Sexual Knowledge Scale distinguishes itself from other reviewed sexual knowledge scales by concentrating solely on the knowledge aspect of sex without delving into attitudes or practices (17).

Previous research has aimed to bridge deficiencies in undergraduate medical education, primarily emphasising students' attitudes, comfort levels, and self-reported confidence regarding sexual health knowledge (18-20). Although self-assessment of sexual health attitudes has traditionally served as a key metric, concerns have arisen that these indicators may not accurately represent the true depth of knowledge. This is because trainees often overestimate their expertise in health topics when responding to surveys (15).

There is a notable lack of research in Malaysia evaluating the sexual knowledge of medical students. Despite the critical importance of this issue within the field, existing studies generally focus on students in a broader context rather than specifically targeting medical students. This gap highlights a significant need for targeted research to assess and address the sexual knowledge and education of future healthcare professionals. Although this study does not involve an intervention, identifying patterns and gaps in sexual knowledge among medical students provides an essential needs assessment for curriculum development and targeted educational planning.

MATERIALS AND METHODS

This study was conducted as a cross-sectional investigation among undergraduate medical students at the International Islamic University Malaysia (IIUM), Kuantan. The questionnaire consists of two parts: Part 1 elicits sociodemographic characteristics, while Part 2 comprises 30 questions assessing students' knowledge of sexual subjects. Subjects indicated their level of approval or disapproval of each item along a five-point Likert scale on which 5 indicated strong disapproval and 1 indicated strong approval.

Instrument

The tool used in this study was the Youth and Adolescent Sexual Knowledge Scale (YASKS), a measure developed and validated in Malaysia. The Youth and Adolescent Sexual Knowledge Scale (YASKS) is a Malaysian-developed, culturally appropriate, 12-item, two-factor measure. Validation (expert review and EFA) showed acceptable total reliability ($\alpha \approx 0.70$) but variable domain alphas (≈ 0.68, ≈ 0.50). Our primary analyses focus on the total score, and domain-level findings are interpreted cautiously. (17)

Participants, sampling, and recruitment

All enrolled MBBS students were eligible. We sought proportional representation across academic years using a stratified, year-of-study target (quota) approach. Invitations were disseminated through official class communication channels with identical study information and reminders. Participation was voluntary and anonymous. Although proportional targets were set, recruitment was non-probability and voluntary; some strata were over- or underrepresented (acknowledged in the Limitations section). The inclusion criteria were consent and a completed questionnaire; entries with more than 20% missing items or duplicates were excluded.

Sample size and power

The primary analysis examined the association between the total sexual-knowledge score and the year of study. Using Fisher's z method (two-sided $\alpha=0.05$), a conservative $r=0.25$ required $n \approx 123$ for 80% power and $n \approx 164$ for 90% power. Allowing for missing/ineligible

responses, and to ensure coverage across five strata, we targeted ≥200 participants; the achieved sample size was n = 212.

Response format and scoring

Items used a 5-point Likert scale. The questionnaire displayed the orientation (1 = strongly agree to 5 = strongly disagree); for analysis, responses were recoded so that higher totals reflect greater factual correctness. Items with opposite keying were reverse-coded per a prespecified scoring sheet. Total knowledge was computed by summation. For interpretability, we also classified total scores using Bloom cut-offs based on the percentage of the maximum: Good (≥80%), Moderate (60–79%), and Poor (<60%).

Covariates

Sociodemographic variables included age (years), gender (male/female), year of study (1–5), ethnicity, and parental monthly household income (MYR: <RM5000; RM5000–RM10 000; >RM10 000). The data were analysed using SPSS version 26, and a p-value of less than 0.05 was considered significant. Approval to conduct the study was obtained from the IIUM Research Ethics Committee (IREC 2024-310).

RESULTS

The final analysis included data from 212 consented participants to examine the relationship between demographic factors and sexual knowledge among medical students at IIUM Kuantan. Descriptive statistics of sexual knowledge scores indicate a mean score of 104.26 ± 5.88, with a minimum score of 91 and a maximum of 117. The distribution of scores suggests moderate variability, indicating differences in students' knowledge levels. The socio-demographic data among participants are summarised in Table I.

Table I. Socio-demographic characteristics among participants (n = 212).

Variables		Number (%)
Age (mean ± SD)		21.52 ± 1.72
Year of study	One	41 (19.3)
	Two	19 (9.0)
	Three	54 (25.5)
	Four	37 (17.5)
	Five	61 (28.8)
Gender	Female	138 (65.1)
	Male	74 (34.9)
Parental income	Less than RM5,000	52 (24.5)
	RM5,000 – RM10,000	68 (32.1)
	More than RM10,000	92 (43.4)

Pearson's correlation analysis revealed a weak-to-moderate positive correlation between age and year of study and sexual knowledge scores, suggesting that older students and those in higher years of study tend to have greater knowledge. The relationship between demographic data and sexual knowledge is summarised in Table II. The effect of year of study on sexual knowledge was examined using ANOVA, which showed a significant difference across years (Table II). Table II also displays that gender differences and parental income were not statistically significant.

Despite the fact that gender was not associated with overall sexual knowledge scores, significant associations were observed for specific medico-legal knowledge items in the questionnaire. A chi-square test was conducted to examine the relationship between responses to Items 29, 30 and 31 with demographic variables, and it was found that female students exhibited higher agreement with correct responses, while male students had slightly higher uncertainty rates.

Table II. Relationship between demographic factors and sexual knowledge.

Variables	Age (n = 212)	Year of study (n = 212)	Gender (n = 212)	Parental income (n = 212)
Sexual knowledge score	0.269[a] (<0.001)[b]	0.322[a] (<0.001)[b]	0.550[c] (0.58)[b]	0.847[d] (0.43)[b]

[a]Pearson correlation coefficient; [b]p value; [c]Independent t-test; [d]one-way ANOVA

DISCUSSION

This study demonstrated a significant relationship between sociodemographic variables and sexual knowledge among medical students in IIUM Kuantan. The current findings highlight a progressive acquisition of sexual knowledge among medical students, with the year of study emerging as the key to the knowledge levels. The positive correlation between academic progression and sexual knowledge is consistent with earlier studies demonstrating that structured medical education enhances students' understanding of sexual health concepts (21, 22). However, the moderate correlation might indicate that additional factors (such as clinical exposure, teaching methods, and self-directed learning) also contribute to knowledge variability, warranting further investigation into these influences (23).

Nevertheless, key gaps exist in the legal and ethical dimensions of sexual health knowledge, where both age and year of study demonstrated significant associations with students' perceptions. As students' progress in their training and age, they seem to develop a deeper comprehension of these medico-legal aspects (24). However, the persistence of insufficient knowledge indicates a need for a more robust integration of ethical and legal content into the medical curriculum (25). Reinforcing medico-legal learning in multidisciplinary courses such as Obstetrics and Gynaecology, Family Medicine, and Medical Ethics could help students

navigate the reality of patient care, where consent and legal constraints should be considered in making clinical decisions (25).

Furthermore, although no overall gender disparities in sexual knowledge were seen in this study, female students displayed a greater awareness of medico-legal aspects, while male students showed slightly higher uncertainty. This dissimilarity highlights the possibility that gender-specific learning approaches or social contexts might influence learning engagement on medico-legal topics (26).

Age, year of study, and gender thus represent interconnected factors affecting how students comprehend ethical concepts in sexual education. To address these factors, educational strategies should aim to both standardise fundamental knowledge and personalise learning experiences, fostering a deeper understanding of sexual health and its medicolegal aspects (27). By incorporating interactive case-based discussions, scenario simulations, and small group discussions where ethical knowledge is explored, students can be fostered to develop critical thinking and competencies in essential sexual knowledge (27). Integrating real-life clinical vignettes in medical education would allow students to not only obtain the ethical concepts but also appreciate the moral complexities in patient care (28).

Empowering ethics and medico-legal components within sexual education in the medical curriculum requires a multifaceted approach. First, it demands an early introduction to these topics in the pre-clinical years, enabling students to ground their clinical experiences in well-established ethical principles (29). Second, clinically integrated reinforcement of ethical and legal principles should be embedded in medical education to improve students' ability to make context-sensitive judgments about sexual concepts. Finally, a structured assessment of medico-legal competencies should be conducted to ensure that students internalise and apply these concepts consistently (30).

The quality and type of sexual knowledge vary depending on cultural, educational, and personal factors. As studied by Lou & Chen, 2009, age is positively associated with sexual knowledge, with older adolescents outperforming younger ones in this area (31). This difference is likely due to older individuals' greater cognitive maturity and broader life experiences, which enhance their understanding of sexual topics.

Concerning parents' income having no significant influence on sexual knowledge, it is expected that the knowledge mostly comes from the individual experiences of study. Insights must be sought in either official learning, attending lectures, or the daily experiences of an individual. Although parents' incomes have no direct impact on sexual knowledge, parental support, on the other hand, has effects on sexual behaviour and sexual health. According to research by de Graaf et al., 2010 for both males and females, the higher levels of parental support and knowledge were related to fewer sexual partners, more consistent contraceptive use, better communicative skills, and higher levels of assertiveness and satisfaction (32).

Question number 30, asking regarding the civil law on sex practice before marriage, has the lowest mean, which shows the awareness may be lacking. The education syllabus regarding law, which covers the topics, was introduced to year 4 students during the Forensic Medicine posting. However, this may be insufficient. Policies and legislation are important parts of sexual knowledge as they may impact the moral judgment of an individual act. In addition, based on a study by Walrond et al., 2006 it is stated that medical students widely recognised the significance of ethical knowledge but expressed that their understanding of legal aspects was limited (33).

The need for sexual knowledge is crucial among medical students, and some areas need to be improved to enhance their expertise. One way is to implement comprehensive sexual education through the academic syllabus. Inserting programs that cover a wide range of topics, including anatomy, contraception, consent, and sexual orientation, would increase the general understanding of these topics. As important as it is, conveying messages through workshops and seminars would be much needed in this age. Hosting regular interactive sessions led by healthcare professionals, educators, or counsellors to provide accurate and updated information would be beneficial for medical students.

This study did not assess sexual orientation, as this remains a sensitive area within the Malaysian sociocultural and ethical context. This limitation may restrict the generalisability of findings, and future research should consider including sexual orientation in a culturally appropriate way.

Limitations

We used a stratified, year-of-study quota recruitment via official class channels. Although proportional targets were set, within-stratum enrolment was non-probability and voluntary, resulting in under- or over-representation of some years and a gender imbalance. These features may limit generalisability and the precision of between-year comparisons. A probability-based stratified design with random selection and response monitoring by stratum would better ensure representativeness.

Recruitment through voluntary participation in online groups may preferentially attract students who are more

comfortable discussing sexual health or have a greater interest in the topic. This self-selection risk may bias estimates of knowledge levels and limit generalizability beyond the sampled respondents. Because invitations were disseminated broadly without a definitive sampling frame, a true response rate could not be calculated, further constraining external validity.

Moreover, non-standard orientation (5 = strongly disagree) may have introduced response error despite full labelling and recoding; any misclassification is likely non-differential, biasing estimates toward the midpoint.

CONCLUSION

This cross-sectional survey found higher sexual-knowledge scores in later academic years, with modest between-year differences. While we cannot infer causality, these associations are consistent with cumulative curricular exposure across the five-year programme. Persistent gaps, particularly in medico-legal or ethical content, suggest opportunities to strengthen structured teaching and supervised practice. Future studies employing probability sampling, longitudinal designs, and more refined socio-economic measures could better clarify the trajectories and determinants of sexual health knowledge. From an educational perspective, the findings underscore gaps in specific domains, notably medico-legal and ethical knowledge, that may require targeted reinforcement. Clinically, enhanced foundational training at the undergraduate level may contribute to greater confidence and appropriateness in managing sexual health concerns during patient encounters.

ACKNOWLEDGEMENT

The authors would like to thank the medical students of International Islamic University Malaysia (IIUM) who participated in this study and the IIUM Research Ethics Committee for approving the research (IREC 2024-310).

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