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ORIGINAL ARTICLE

Knowledge and use of contraceptive methods among university students at public universities

Conocimiento y uso de métodos anticonceptivos en estudiantes universitarios en universidad pública

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Abstract

Adequate knowledge about contraceptive methods is fundamental for preventing sexually transmitted infections and unplanned pregnancies, particularly among university students. The objective of this study was to analyze the level of knowledge about the use and effectiveness of contraceptive methods among students from different faculties of the Autonomous University of Tamaulipas, as well as to evaluate its relationship with their academic area of study. A quantitative, observational, cross-sectional study was conducted with 365 students from the faculties of Medicine, Nursing, and Engineering. Data collection was carried out using a questionnaire adapted from the Contraception Module of the National Survey of Demographic Dynamics, which included sociodemographic variables and an instrument for assessing contraceptive knowledge. Statistical analysis was performed using descriptive statistics and Pearson's chi-squared test. The results showed that a considerable proportion of the students had an insufficient level of knowledge, with statistically significant differences observed among the faculties, and better results in health-related fields. It is concluded that the level of knowledge about contraceptive methods in the university population studied is limited and is associated with academic training, which highlights the need to strengthen comprehensive sexual education strategies in the university setting

Keywords: contraceptive knowledge; university students; sex education; sexually transmitted infections; reproductive health

Resumen

El conocimiento adecuado sobre los métodos anticonceptivos constituye un elemento fundamental para la prevención de infecciones de transmisión sexual y embarazos no planificados, particularmente en población universitaria. El objetivo del presente estudio fue analizar el nivel de conocimiento sobre el uso y la funcionalidad de los métodos anticonceptivos en estudiantes de distintas facultades de la Universidad Autónoma de Tamaulipas, así como evaluar su relación con el área académica de adscripción. Se realizó un estudio cuantitativo, observacional y de corte transversal, en el que participaron 365 estudiantes de las facultades de Medicina, Enfermería e Ingeniería. La recolección de datos se efectuó mediante un cuestionario adaptado del Módulo de Anticoncepción de la Encuesta Nacional de la Dinámica Demográfica, el cual incluyó variables sociodemográficas y un instrumento de evaluación del conocimiento anticonceptivo. El análisis estadístico se llevó a cabo mediante estadística descriptiva y la prueba de Chi-cuadrada de Pearson. Los resultados evidenciaron que una proporción considerable de los estudiantes presentó un nivel de conocimiento insuficiente, observándose diferencias estadísticamente significativas entre las facultades, con mejores resultados en las áreas relacionadas con la salud. Se concluye que el nivel de conocimiento sobre métodos anticonceptivos en la población universitaria estudiada es limitado y se asocia con la formación académica, lo que resalta la necesidad de fortalecer estrategias de educación sexual integral en el ámbito universitario.

Palabras clave: conocimiento anticonceptivo; estudiantes universitarios; educación sexual; infecciones de transmisión sexual; salud reproductiva

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INTRODUCTION

Sexual and reproductive health among adolescents and young adults represents a major challenge for contemporary public health, particularly in light of the sustained increase in sexually transmitted infections (STIs), including the human immunodeficiency virus (HIV), as well as the persistent prevalence of unintended pregnancies within this population. Recent reports from international organizations indicate that, following a period of stabilization, a resurgence of preventable STIs has been observed since 2021, associated with unprotected sexual practices, inconsistent use of contraceptive methods, and deficiencies in comprehensive sexual education—especially among individuals aged 18 to 29 years (World Health Organization [WHO], 2023, 2024; Centers for Disease Control and Prevention [CDC], 2023).

Global evidence consistently underscores that access to effective contraceptive methods and adequate knowledge of their use are essential strategies for preventing both STIs and unintended pregnancies. However, these benefits depend largely on the population's level of sexual and reproductive health literacy. Recent studies have shown that self-reported knowledge of contraception does not necessarily translate into correct practices, due to factors such as incomplete information, persistent myths, misperception of risk, and structural educational barriers (Darroch et al., 2020; Kågesten et al., 2021). Within the university context, these challenges acquire particular relevance, as the transition into adulthood is often accompanied by increased personal autonomy, evolving social dynamics, and heightened sexual activity. Research conducted among university populations in Latin America has documented significant gaps between perceived and actual knowledge of contraceptive methods, as well as risk-related sexual behaviors linked to deficiencies in formal sexual education (De Melo et al., 2022; Gutiérrez-Alvarado et al., 2021). These discrepancies persist even in settings where students report having previously received sexual health information during their earlier education.

Scientific evidence suggests that academic training directly influences levels of knowledge in sexual and reproductive health. Comparative studies indicate that students enrolled in health-related disciplines tend to demonstrate higher levels of technical knowledge regarding contraception than their peers in non-health fields. Nevertheless, such knowledge levels are not always sufficient to ensure safe sexual practices (Pérez-Campos et al., 2022; Kirby et al., 2021). This scenario raises concerns about the effectiveness of traditional sexual education approaches, even within academic programs linked to the health sciences.

In Mexico, recent national data confirm the persistence of these challenges. The National Survey of Demographic Dynamics reports that, although a high proportion of young people claim awareness of contraceptive methods, there remains considerable lack of knowledge regarding their correct use, actual effectiveness, and protection against STIs (National Institute of Statistics and Geography [INEGI], 2023).

Concurrently, national health reports indicate a sustained increase in HIV incidence among young populations, reinforcing the urgency of strengthening evidence-based preventive strategies (National Institute of Public Health [INSP], 2022).

From an international perspective, organizations such as the Pan American Health Organization emphasize the need to implement comprehensive, continuous, and culturally appropriate educational interventions aimed at improving knowledge and informed decision-making in sexual health, particularly within higher education settings (Pan American Health Organization [PAHO], 2022). These recommendations align with systematic reviews highlighting the effectiveness of comprehensive educational programs compared with restrictive or exclusively information-based approaches (Santelli et al., 2017; Cleland et al., 2020).

In this context, it is essential to generate empirical evidence to assess the level of knowledge regarding the use and functionality of contraceptive methods among university students and to analyze its association with academic field of study. Such analyses enable the identification of groups with greater informational vulnerability and provide valuable insights for the design of more effective, interdisciplinary, and prevention-oriented sexual education programs in university settings.

Therefore, the aim of the present study is to analyze the level of knowledge regarding the use and functionality of contraceptive methods among students from different faculties at the Autonomous University of Tamaulipas, as well as to explore its relationship with academic training, in order to contribute to the strengthening of institutional strategies for the promotion of sexual and reproductive health in university populations.

METHODS, TECHNIQUES, AND INSTRUMENTS

A quantitative, observational, analytical, cross-sectional study was conducted to assess the level of knowledge regarding the use and functionality of contraceptive methods among university students and to examine its association with their academic field of study. The research was carried out between August and December 2024 at the Autonomous University of Tamaulipas, Tampico campus.

The study population comprised approximately 3,800 students enrolled in the Faculties of Medicine, Nursing, and Engineering. The sample size was calculated using the finite population formula, assuming a 95% confidence level, a 5% margin of error, and an expected proportion of 50%, a conservative criterion applied in the absence of prior estimates for the variable of interest. Based on these parameters, a minimum sample size of 350 participants was obtained; however, the final sample included 365 students. An approximately equal distribution across the three faculties was ensured to facilitate inter-group comparisons. A non-probability convenience sampling approach was employed, contingent upon participant availability and voluntary consent.

Eligibility criteria included students of any sex aged 17 years or older who were actively enrolled in any semester within the participating faculties and who provided informed consent. Exclusion criteria comprised students from other faculties, individuals who declined to participate, and those who did not complete the questionnaire in full.

Data collection was performed באמצעות a structured questionnaire adapted from the Contraception Module of the National Survey of Demographic Dynamics (ENADID 2018), modified for use in a mixed-sex university population. The instrument consisted of 24 items organized into two sections. The first section included sociodemographic variables—age, sex, faculty affiliation, and semester—as well as questions addressing contraceptive use and preference and self-perceived level of knowledge. The second section comprised 14 multiple-choice items designed to assess objective knowledge regarding correct use, indications, and effectiveness of various contraceptive methods.

Each correct response was assigned one point, yielding a maximum possible score of 14. For analytical purposes, a threshold of at least 60% correct responses was established to define a passing score. Participants were accordingly categorized as "pass" or "fail." This criterion was used exclusively for comparative analyses across faculties.

The questionnaire was administered in person within university facilities, ensuring the anonymity and confidentiality of all participants. Prior to administration, participants were informed about the study objectives, the voluntary nature of their participation, and the academic use of the collected data.

Statistical analysis was performed using Microsoft Excel and IBM SPSS version 30.0. Descriptive analyses were initially conducted using absolute and relative frequencies to characterize the study population, contraceptive use, and levels of knowledge. Subsequently, the association between contraceptive knowledge level (pass/fail) and faculty affiliation was evaluated using Pearson's chi-square test, appropriate for categorical variables. A statistical significance level of $\alpha = 0.05$ was established. The null hypothesis posited no significant differences in knowledge levels between faculties, whereas the alternative hypothesis proposed a statistically significant association between these variables.

The study adhered to fundamental ethical principles governing research involving human participants, ensuring confidentiality, anonymity, and voluntary participation. No personally identifiable information was collected, and all data were used exclusively for academic and scientific purposes.

RESULTS AND DISCUSSION

A total of 365 university students from the Faculties of Medicine, Nursing, and Engineering at the Autonomous University of Tamaulipas participated in the study. The sex distribution indicated a higher proportion of female participants, accounting for

57% (n = 208), compared with 43% (n = 157) male students.

Regarding age, the most represented group was 20 to 22 years, comprising 49% of the total sample (n = 179), followed by the 17–19 age group and those older than 23 years. These demographic characteristics are presented in detail in Table 1.

In terms of contraceptive use, the condom was the most frequently reported method, used by 57.81% of students (n = 211). However, a considerable proportion of participants, corresponding to 26.30% (n = 96), reported not using any contraceptive method. Other methods included oral contraceptive pills (6.03%, n = 22), natural methods (4.38%, n = 16), subdermal implants (2.19%, n = 8), injectable contraceptives (1.92%, n = 7), intrauterine devices (1.10%, n = 4), and contraceptive patches (0.27%, n = 1).

Table 1. *Tabla 1. Características demográficas de la población estudiada (n*

Variable	Category	n	%
Gender	Female	208	57.0
	Male	157	43.0
Age (years)	17 - 19	135	37.0
	20 - 22	179	49.0
	>= 23	51	14.0

Regarding sources of information on contraceptive methods, formal education (primary, secondary, or high school) was identified as the main source by 71.23% of participants (n = 260), followed by the internet (18.9%, n = 69), family members (5.5%, n = 20), and friends (4.4%, n = 16). Analysis of knowledge levels revealed that only 34% of students achieved a passing score (n = 123), whereas 66% failed the assessment (n = 242). When these results were stratified by faculty, notable differences emerged, as detailed in Table 2.

Table 2. *Level of knowledge about contraceptive methods by faculty*

Faculty	Passed n (%)	Failed n (%)	Total
Medicine	59 (50.0)	60 (50.0)	119
Nursing	53 (42.4)	72 (57.6)	125
Engineering	12 (9.9)	109 (90.1)	121

The findings indicate that students from the Faculty of Medicine achieved the highest proportion of passing scores, followed by those from Nursing, whereas the Faculty of Engineering accounted for the largest proportion of students with failing grades.

To examine the association between faculty affiliation and level of knowledge regarding contraceptive methods, Pearson's chi-square test was applied. The calculated χ^2 value was 48.094 with 2 degrees of freedom, exceeding the critical value of 5.991 at a significance level of $p < 0.05$. These results demonstrate a statistically significant association between the variables; therefore, the null hypothesis was rejected.

The findings of the present study indicate that the level of knowledge regarding contraceptive methods among university students was predominantly low, despite the fact that most participants reported

having a moderate to high level of prior knowledge before the administration of the instrument. This discrepancy between subjective perception and objective knowledge is consistent with findings from recent studies conducted in university populations, which have documented a tendency to overestimate personal knowledge in matters related to sexual and reproductive health (De Melo et al., 2022; Pérez-Campos et al., 2022).

The observation that students enrolled in health-related programs achieved better results than those in non-health disciplines aligns with contemporary research indicating that academic training exerts a direct influence on sexual health literacy.

Recent studies conducted in Latin American universities suggest that curricula in Medicine and Nursing, which systematically address topics such as sexuality, STI prevention, and family planning, contribute to higher levels of technical knowledge compared with programs unrelated to the health sciences (Long et al., 2023).

Nevertheless, it is important to emphasize that even among students in health-related fields, the proportion achieving passing scores remained limited. This finding is consistent with national reports highlighting deficiencies in the depth and continuity of formal sexual education, even within health-related academic programs (Sánchez-Meneses et al., 2021; INEGI, 2023). This issue becomes particularly relevant in light of the recent increase in HIV cases and other sexually transmitted infections among young populations, as reported both in Mexico and internationally (WHO, 2023; CENSIDA, 2024).

The predominance of condom use as the primary contraceptive method is consistent with findings from national surveys and recent university-based studies. However, the substantial proportion of students who reported not using any contraceptive method represents a matter of concern. Current research has linked this behavior to low risk perception, inconsistent use of protective methods, and deficiencies in comprehensive sexual education—factors that increase vulnerability to sexually transmitted infections and unintended pregnancies (WHO, 2024).

Moreover, the fact that formal schooling was identified as the primary source of information, despite the majority of students failing the assessment, suggests that prior educational programs have not succeeded in fostering meaningful and sustained learning. This finding is in line with recent studies that question the effectiveness of traditional sexual education models, emphasizing the need for more participatory, updated, and context-specific pedagogical strategies tailored to the realities of university populations (Gutiérrez-Alvarado et al., 2021).

Among the main limitations of this study are the use of non-probability sampling and the focus on a single institution, which restrict the generalizability of the findings. Nevertheless, the results provide relevant

evidence to inform the design of educational interventions aimed at strengthening contraceptive knowledge among university students, particularly in disciplines not related to the health sciences.

CONCLUSIONS

The present study demonstrated that the level of knowledge regarding the use and functionality of contraceptive methods among university students is insufficient, despite a widespread perception of having adequate information on the subject. This gap between perceived and actual knowledge constitutes a relevant risk factor for sexual and reproductive health within the university population, particularly in a context marked by the recent increase in sexually transmitted infections and the persistent occurrence of unintended pregnancies among young individuals.

Comparative analysis revealed that academic training is significantly associated with contraceptive knowledge levels, with better performance observed among students enrolled in health-related disciplines. However, the findings suggest that enrollment in a health sciences program alone does not ensure sufficient mastery of the topic, highlighting the need to reassess the depth, continuity, and pedagogical approach used to address sexual health content within university curricula.

Furthermore, the identification of formal schooling as the primary source of information—without corresponding adequate knowledge levels—points to structural limitations in traditional sexual education models. This finding underscores the importance of transitioning toward more comprehensive, updated, and evidence-based educational strategies that promote not only knowledge acquisition but also the development of skills for informed and responsible decision-making.

From an institutional perspective, the results provide relevant insights for the design of intervention programs aimed at strengthening sexual education in university settings, with particular emphasis on students from non-health-related fields. The incorporation of interdisciplinary and preventive approaches could substantially contribute to reducing risky sexual behaviors and improving sexual and reproductive health outcomes in this population.

Finally, although the findings offer valuable evidence, they should be interpreted in light of the study's methodological limitations, particularly the use of non-probability sampling and its restriction to a single institution. In this regard, future research should consider including a broader range of institutions and employing methodological designs that allow for greater generalizability, as well as longitudinal evaluation of the impact of educational interventions on knowledge and use of contraceptive methods.

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