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Digital literacy in applicants to the medical degree program

Alfabetización digital en aspirantes a la carrera de Médico Cirujano

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Abstract

Digital literacy constitutes an essential competency in contemporary medical education, as it integrates skills for accessing, evaluating, creating, and ethically communicating information in digital environments. The COVID-19 pandemic exposed digital gaps that affected academic performance, particularly among medical students, highlighting the need to assess these competencies from entry into higher education in order to promote educational equity. The objective of this study was to analyze the individual factors associated with the level of digital literacy among applicants to the Bachelor of Medicine program at the Faculty of Medicine "Dr. Alberto Romo Caballero" of the Autonomous University of Tamaulipas. An observational, cross-sectional, and analytical study was conducted in an approximate sample of 360 applicants, selected through simple random sampling. The DIGI 2.0 questionnaire, consisting of 20 Likert-type items, was applied, and statistical analysis included descriptive statistics, Student's t-tests, ANOVA, and Spearman correlations, using SPSS version 29. The results showed adequate internal consistency of the instrument ($\alpha = 0.80$) and a medium–high level of digital literacy, with a mean score of 65 points. No significant differences were identified according to sociodemographic variables; however, areas of opportunity were detected in critical information management, digital security, and content creation, supporting the need to implement digital leveling programs starting in the preparatory course.

Keywords: digital literacy; medical education; medical school applicants; digital competencies; university entry

Resumen

La alfabetización digital constituye una competencia esencial en la formación médica contemporánea, al integrar habilidades para el acceso, evaluación, creación y comunicación ética de la información en entornos digitales. La pandemia por COVID-19 evidenció brechas digitales que afectaron el desempeño académico, particularmente en estudiantes de Medicina, lo que resalta la necesidad de evaluar estas competencias desde el ingreso a la educación superior para promover la equidad educativa. El objetivo del estudio fue analizar los factores individuales asociados al nivel de alfabetización digital en aspirantes a la Licenciatura de Médico Cirujano de la Facultad de Medicina "Dr. Alberto Romo Caballero" de la Universidad Autónoma de Tamaulipas. Se realizó un estudio observacional, transversal y analítico en una muestra aproximada de 360 aspirantes, seleccionados mediante muestreo aleatorio simple. Se aplicó el cuestionario DIGI 2.0, compuesto por 20 ítems tipo Likert, y el análisis estadístico incluyó estadística descriptiva, pruebas t de Student, ANOVA y correlaciones de Spearman, utilizando SPSS versión 29. Los resultados mostraron una adecuada consistencia interna del instrumento ($\alpha = 0.80$) y un nivel medio-alto de alfabetización digital, con una media de 65 puntos. No se identificaron diferencias significativas por variables sociodemográficas; sin embargo, se detectaron áreas de oportunidad en la gestión crítica de la información, la seguridad digital y la creación de contenido, lo que respalda la necesidad de implementar programas de nivelación digital desde el curso propedéutico.

Palabras clave: alfabetización digital; educación médica; aspirantes a medicina; competencias digitales; ingreso universitario

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INTRODUCTION

Digital literacy has become a core competency in medical education, integrating the skills required to access, evaluate, and ethically communicate information in digital environments (Vuorikari et al., 2022; OECD, 2023). International organizations such as UNESCO (2024) and the European Digital Competence Framework (DigComp 3.0) recognize these competencies as essential for ensuring educational equity and adaptation to emerging technologies.During the COVID-19 pandemic, significant digital divides were revealed, affecting academic performance, particularly among medical students (Albahri et al., 2023; Murphy et al., 2023).In Mexico, although internet access has improved, regional disparities and differences in meaningful digital use persist (INEGI, 2025; Del-Valle-Soto et al., 2024). Assessing digital literacy among applicants to medical programs allows the identification of existing gaps and the design of leveling strategies that promote autonomous learning and educational equity from the moment students enter university (de Vries, 2024; Yuan et al., 2024).

OBJETIVE

To analyze individual factors associated with the level of digital literacy among applicants to the Medical Doctor (MD) program.

METHODOLY

An observational, cross-sectional, and analytical study was conducted among applicants to the Medical Doctor program at the Faculty of Medicine "Dr. Alberto Romo Caballero" of the Autonomous University of Tamaulipas. The sample was selected using simple random sampling (n ≈ 360).Participants completed the DIGI 2.0 questionnaire, consisting of 20 Likert-type items (1–5) designed to evaluate digital competencies in the following domains: Information management, Communication, Digital content creation, Digital problem solving. Statistical analysis was performed using SPSS version 29, applying: Descriptive statistics, Student's t-test, ANOVA, Spearman correlations, Internal consistency of the instrument was assessed using Cronbach's alpha, and statistical significance was established at $p < 0.05$.

RESULTS

A total of 360 valid questionnaires were analyzed. The DIGI 2.0 instrument demonstrated high internal consistency (Cronbach's $\alpha = 0.80$). The overall DIGI score showed a mean of 65 points (SD ≈ 10), indicating a moderate-to-high level of digital literacy among applicants. Data distribution was normal (Shapiro–Wilk test, $p > 0.05$), allowing the use of parametric statistical tests. No statistically significant differences were observed according to sex or type of high school education ($p > 0.05$; Student's t-test and ANOVA), suggesting a relatively equitable distribution of digital competencies. Spearman correlations between the DIGI score and variables such as age, academic grade average, and hours of ICT use were positive but not statistically significant ($p > 0.05$), indicating a general homogeneity in digital proficiency among applicants. However, areas requiring improvement were identified, particularly in: Critical information management, Digital security, Digital content creation.
These domains exhibited greater individual variability among participants.

CONCLUSIONS

A total of 360 valid questionnaires were analyzed. The DIGI 2.0 instrument demonstrated high internal consistency (Cronbach's $\alpha = 0.80$).The overall DIGI score showed a mean of 65 points (SD ≈ 10), indicating a moderate-to-high level of digital literacy among applicants.Data distribution was normal (Shapiro–Wilk test, $p > 0.05$), allowing the use of parametric statistical tests.No statistically significant differences were observed according to sex or type of high school education ($p > 0.05$; Student's t-test and ANOVA), suggesting a relatively equitable distribution of digital competencies.Spearman correlations between the DIGI score and variables such as age, academic grade average, and hours of ICT use were positive but not statistically significant ($p > 0.05$), indicating a general homogeneity in digital proficiency among applicants.However, areas requiring improvement were identified, particularly in:Critical information managementDigital securityDigital content creationThese domains exhibited greater individual variability among participants.

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