
Assessing Health Literacy and Its Determinants among Undergraduate Students at King Faisal University, Saudi Arabia: A Cross-Sectional Study

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Abstract:

Background: health literacy (HL) is a significant predictor of an individual's ability to access, analyze, and interpret health information for informed decision-making. **Objectives:** this study aims to (i) investigate the association between health education, HL, and health behaviors, and (ii) measure HL levels among undergraduate students participating in healthcare and non-healthcare-related degree programs at King Faisal University in Al-Ahsa, Saudi Arabia. **Material and methods:** a cross-sectional study was conducted using the Health Literacy Questionnaire (HLQ), combining the Brief Health Literacy Screen (BHLS) and the Short Assessment of Health Literacy (SAHL). Data were obtained from 381 students using an online survey conducted across social media platforms during three months. **Results:** descriptive and inferential statistical analyses were performed using SPSS (version 26). Results revealed that 59.2% of students felt confident in completing medical forms, while 53% struggled to interpret written health information. Significant associations were detected between HL and demographic characteristics, including age, college type, academic level, and smoking status. Students in scientific colleges had higher HL levels and greater interest in physical activity compared to those in humanities programs. Sedentary behavior was frequent, with 48.5% of students sitting for 8–12 hours daily. **Conclusions:** the study underlines the need for focused interventions to improve HL, promote physical activity, and reduce sedentary behavior among university students. Recommendations include integrating HL education into curriculum, strengthening health communication efforts, and implementing smoking cessation initiatives.

Keywords: Health Literacy, Health Behaviors, Health Education, Saudi Arabia

Introduction:

Health literacy (HL) defines an individual's capacity to acquire, interpret, and comprehend essential health information to facilitate informed health decisions.¹ It encompasses two main concepts; clinical and public. The clinical idea emphasizes on patients' reliance on physicians' ability to handle health problems, while the public concept involves the information and skills necessary for health promotion and disease prevention². Nutbeam (2000) categorized HL into three categories: functional, interactive, and critical health literacy³. Functional HL refers to basic skills that enable individuals to access and understand health information to develop personal knowledge⁴. Interactive HL entails the ability to extract and utilize information from multiple sources through efficient communication with healthcare providers². Critical HL,

the most advanced level, involves the cognitive skills needed to assess and evaluate health-related information critically^{5, 6}.

The ability to utilize health-related information successfully is highly influenced by an individual's HL. Even when information is presented clearly, persons with weak HL may misinterpret it, leading to poor health outcomes⁷. This issue is further aggravated by the widespread transmission of inaccurate or low-quality health information, which can significantly impact decision-making⁸. Multiple factors contribute to variability in HL, including socioeconomic status, gender, prior health experiences, occupation, and educational achievement⁹. Low HL has been related with adverse consequences, such as increased healthcare costs, higher hospitalization and mortality rates, more reliance on emergency services, and poor medication adherence^{10, 11}.

Research consistently revealed that education plays a critical role in developing HL and supporting favorable health behaviors, including physical exercise and participation in routine health screenings¹². Although university students generally have better access to health-related resources, the majority of individuals struggle to understand and process medical information^{13, 14}. Few studies have investigated this subject in Saudi Arabia, despite the recognised significance of HL¹⁵. Therefore, this study intends to (i) evaluate the association between health education, HL, and health behaviors, and (ii) assess health literacy levels among undergraduate students enrolled in healthcare and non-healthcare-related majors at King Faisal University in Al-Ahsa, Saudi Arabia.

Methods:

Study Design

This cross-sectional study was conducted at King Faisal University, surveying both male and female undergraduate students from different colleges. Data were obtained using the Health Literacy Questionnaire (HLQ), which consists of two validated tools; the Brief Health Literacy Screen (BHLS) and the Short Assessment of Health Literacy (SAHL). The questionnaire was distributed online via Google Forms through social media platforms, especially WhatsApp, over a three-month period from June to August 2024.

Study Population and Sample Size

The study population includes 39,726 undergraduate students currently pursuing bachelor's degrees at King Faisal University. The minimum required sample size was estimated using the formula $n = (z^2 \times p \times q)/d^2$, where n represents the sample size, $Z = 1.96$ (equivalent to a 95% confidence level), $p = 0.5$ (anticipated proportion), $q = (1 - p) = 0.5$, and $d = 0.05$ (margin of error). Based on this calculation, a sample size of 381 participants was judged to be sufficient for evaluating health literacy awareness among students with a precision of $\pm 5\%$. The sample size was calculated by Raosoft[®] software¹⁶.

Inclusion and Exclusion Criteria

All enrolled undergraduate students at King Faisal University were eligible to participate in the study. However, preparatory year students, master's students, and graduates were excluded to keep focus on the target group of bachelor's degree candidates.

The questionnaire tool

The HLQ comprised two primary sections. The first section, the Brief Health Literacy Screen (BHLS), evaluated individuals' ability to understand and utilize health-related information. values on this part ranged from 0 to 18, with values between 0 and 14 indicating low health literacy¹⁷. The second section, the Short Assessment of Health Literacy (SAHL), evaluated individuals' confidence in comprehending health

information. Scores for this part varied from 5 to 25, with higher scores showing stronger health literacy and a greater capacity to apply health information effectively in decision-making. The Deanship of Scientific Research at King Faisal University obtained ethical clearance for this work. Prior to commencing the survey, all participants granted their consent.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics (version 26). Descriptive statistics, including frequencies and percentages, were utilized to summarize demographic characteristics, health literacy scores, and activity levels. Inferential analyses entailed generating contingency tables to evaluate associations between categorical variables. Chi-square tests of independence were used to investigate relationships between demographic characteristics (e.g., age, college type, academic stage, and smoking status) and key questionnaire items. A p-value of less than 0.05 was considered statistically significant for all statistical tests.

Results

Characteristics of the study participants

Table 1 demonstrates that the study population predominantly consists of undergraduate students, with the greatest percentage falling within the 20-21 (32.7%) and 22-23 (37.4%) age ranges. Younger individuals (18-19 years) constitute 12.1% of the sample, whereas older age groups (23-24 years and 24-25 years) account for 11.4% and 3.2%, respectively. Students aged 25+ constituted the remaining 3.2%. This distribution matches the normal undergraduate demographic of King Faisal University, while the minimal presence of older students (those above 23 years) could limit the generalizability of findings to non-traditional or mature student populations.

The study population showed a balanced representation across academic disciplines, with a moderate predominance of students from scientific colleges (57.4%) compared to humanities (42.6%). This distribution permits meaningful comparison analysis while addressing any discipline variations in health-related knowledge. The slight overrepresentation of scientific students may introduce measurement bias for characteristics particularly influenced by academic background.

Participants are dispersed throughout academic years, with the highest percentage in third-year (21.5%) and fifth-year (19.1%) cohorts. Preparatory year (6.4%) and postgraduate (3%) students are underrepresented, whereas non-students constitute a small percentage (1.5%). This distribution facilitates analysis of academic progression impacts while restricting conclusions concerning advanced-degree students due to smaller subgroup sizes.

Smoking prevalence data indicated that three-quarters of individuals (75.5%) are non-smokers, with around one-quarter (24.5%) identified as smokers. This substantial smoking incidence among university students necessitate investigation, particularly in examining its association with health literacy levels and other behavioral characteristics. The findings revealed potential prospects for targeted health interventions among the student population.

Table 1: Characteristics of the study participants

Characteristics	Number	%
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Age	18-19	49	12.10
	20-21	132	32.70
	22-23	151	37.40
	23-24	46	11.40
	24-25	13	3.20
	>25	13	3.20
	College	Scientific colleges	232
Humanities colleges		172	42.60
Stage	Prep year	26	6.40
	1st academic year	59	14.60
	2nd academic year	76	18.80
	3rd academic year	87	21.50
	4th academic year	61	15.10
	5th academic year	77	19.10
	not student	6	1.50
	post graduate	12	3.00
Are you smoker?	yes	99	24.50
	no	305	75.50

Responses of students to health literacy questionnaire

Table 2 demonstrates responses of students to health literacy questionnaire. Participants displayed varying levels of confidence in filling out medical forms independently. Nearly 59.2% reported being "quite" or "extremely" confident, while 26.5% felt "somewhat" confident. A smaller proportion expressed lower confidence, with 3% being "not at all confident" and 11.4% reporting "a little" confidence. These results indicate that while a majority of participants feel capable of handling medical forms, a notable minority may benefit from interventions to improve their confidence and literacy in medical settings.

The study showed important data about students' health literacy and activity patterns. Regarding medical form completion, participants indicated various confidence levels, with 59.2% declaring high confidence ("quite" or "extremely" confident) and 14.4% showing low confidence ("a little" or "not at all"). This indicated that while most students feel proficient with medical forms, a substantial minority could benefit from further guidance.

When analyzing assistance needs for medical forms, the findings showed that over half of participants (56.7%) often require support, including 23.3% who need frequent or continual assistance. Only 20% reported never needing help, demonstrating common challenges in medical form comprehension that may impair healthcare interactions. These challenges extended to health information processing, where 53%

reported problems interpreting written materials and 42.4% struggled with vocal conversations from physicians. Notably, 54.7% of participants had problems recalling medical instructions, suggesting a need for stronger communication strategies and follow-up support.

Physical activity patterns revealed concerning trends across intensity levels. Vigorous activity was particularly limited, with 41.3% reporting no participation and only 21% engaged more than three times weekly. Moderate activity indicated slightly improved but still inadequate rates (30.7% inactive). Mild activities like walking were most common, with 48.1% participating frequently, however 14.9% stayed completely inactive. These activity patterns were complemented by considerable sedentary behavior, as 48.5% reported sitting 8-12 hours every day and 14.9% exceeded 12 hours of sitting time. Only 11.4% maintained highly active routines with less than five hours of daily sitting.

Table 2: Responses of students to health literacy questionnaire

Questionnaire items		n	%
If you need to go to the doctor, clinic or hospital, how confident are you in filling out the medical forms by yourself?	not at all confident	12	3.00
	a little	46	11.40
	somewhat	107	26.50
	quite	119	29.50
	extremely	120	29.70
How often do you have someone (family member of staff at the clinic or hospital) help you to read health or medical forms?	always	21	5.20
	often	73	18.10
	sometimes	112	27.70
	occasionally	117	29.00
	never	81	20.00
How frequently do you encounter difficulties comprehending printed health information that impedes your comprehension of your health?	always	38	9.40
	often	52	12.90
	sometimes	124	30.70
	occasionally	104	25.70
	never	86	21.30
How often do you have trouble understanding what your doctor, nurse, or pharmacist tells you about your health or about treatments?	always	16	4.00
	often	44	10.90
	sometimes	111	27.50
	occasionally	134	33.20
	never	99	24.50
How frequently do you encounter difficulties recalling instructions from your physician, nurse, or chemist upon returning home?	always	26	6.40
	often	73	18.10
	sometimes	119	29.50
	occasionally	104	25.70

	never	82	20.30
Think of vigorous-intensity activities that take a lot of effort from you and lead to your breathing speed being much faster than normal. Such as: lifting heavy weights, running fast, drilling, rapid aerobic exercises for the muscles, riding a bike very fast, etc...just those activities that Took 10 Minutes over the last 7 days	More than 3 times	85	21.00
	twice	77	19.10
	once	75	18.60
	nothing	167	41.30
How much time do you spend doing vigorous-intensity activities during these days?	More than one hour	64	15.80
	30-60 min	81	20.00
	10-30 min	97	24.00
	nothing	162	40.10
Think of moderate-intensity activities that take moderate effort from you and lead to your breathing speed exceeding normal on average. Such as lifting weights of medium load, riding a bicycle at moderate speed, etc... (Not including walking). Only those activities that took at least 10 minutes. During the last 7 days.	more than 3 times	71	17.60
	twice	98	24.30
	once	111	27.50
	nothing	124	30.70
How much time do you spend doing moderate-intensity activities during these days?	>60 min	50	12.40
	30-60 min	96	23.80
	10-30 min	132	32.70
	nothing	126	31.20
Think of mild-intensity activities that take a mild effort from you and lead to your breathing speed increasing slightly above normal. Such as: walking from one place to another, whether at work, the street, the park, or even shopping. Only those activities that took at least 10 minutes during the last 7 days.	>3 times	194	48.10
	2 times	96	23.80
	1 time	53	13.20
	nothing	60	14.90
How much time do you spend doing mild-intensity activities during these days?	> 60 min	137	33.90
	30-60 min	115	28.50
	30-Oct	90	22.30
	nothing	62	15.30

How much time do you spend during the day sitting during the middle of the week, whether at work, at home, studying, or even when relaxing, visiting friends, reading, etc...?	>12 hours	60	14.90
	8-12 hours	196	48.50
	5-8 hours	102	25.20
	<5 hours	46	11.40

Health Information Sources Among Students

Figure 1 illustrates the different sources students utilize to get health-related information, showing distinct trends in health information-seeking behavior. Medical professionals appear as the most trusted source, with 67.57% of participants depending on healthcare providers for support emphasizing the persistent relevance of professional competence in health decision-making. Following this, nearly half of respondents (48.27%) explored the Ministry of Health website, while 43.32% ask family and friends, demonstrating that students' value both institutional and personal networks for health information.

The research demonstrated strong digital engagement, with 44.80% of students using certified medical websites and 40.59% getting information through social media platforms. This tendency illustrates the expanding influence of online resources; however, it also raises concerns regarding information quality given the varying reliability of these sources. In contrast, traditional media outlets exhibit substantially lower utilization rates, with only 10.15% consulting radio or TV programs and a minimal 5.45% reviewing daily newspapers, demonstrating a substantial shift toward digital information utilization among university students.

Notably, general health websites (19.31%) and specialist health publications (13.37%) constitute the least utilized sources, presumably indicating either lower awareness of these resources or perceptions of their limited importance. These findings suggest that health literacy initiatives should emphasize maintaining the credibility of regularly consulted sources while implementing ways to promote the visibility and perceived value of underutilized but potentially reliable information channels.

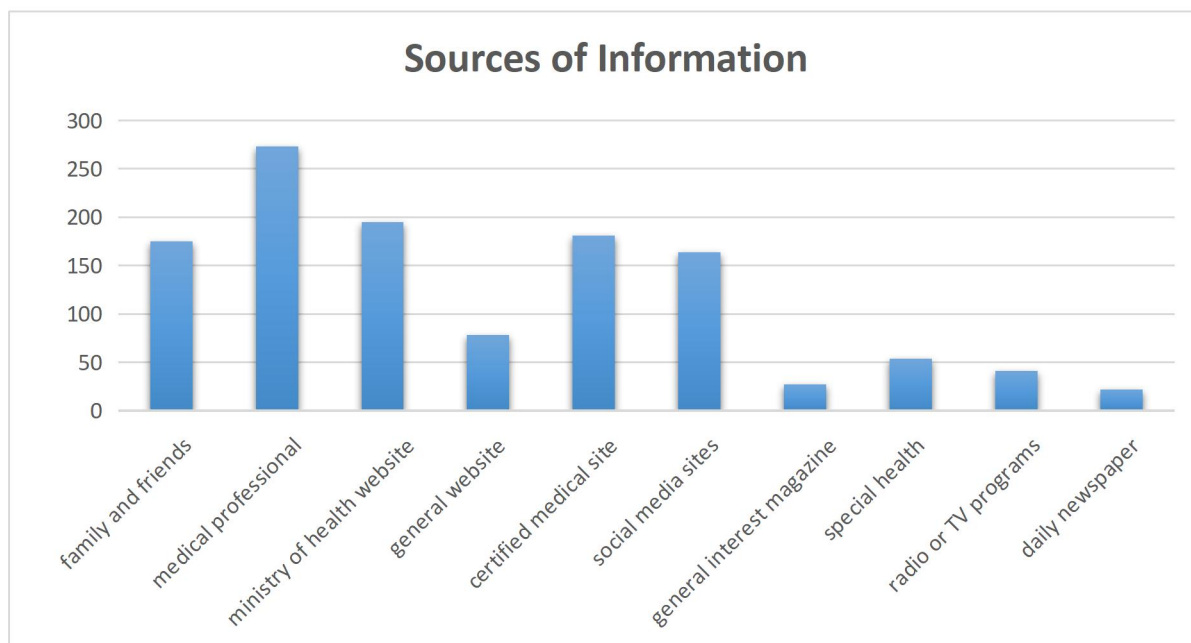


Figure 1: Sources of health-related information

Correlations Between Demographic Variables and Health Outcomes

The analysis identified multiple significant associations between demographic factors and health-related indicators. Age appeared as a significant determinant in understanding verbal health instructions ($\chi^2 = 38.1$, $p = 0.009$), with older individuals showing higher comprehension. This benefit may arise from accumulating healthcare experiences, increased educational exposure, or enhanced cognitive maturity. Younger students' relative challenges show the potential utility of age-appropriate communication strategies and customized health education initiatives to bridge this developmental gap.

Disciplinary differences showed particularly high associations with health outcomes. Students in scientific fields showed improved health literacy across several measures, including more confidence in completing medical forms ($\chi^2 = 30.9$, $p < 0.001$) and less difficulties with both written ($\chi^2 = 40.7$, $p < 0.001$) and verbal ($\chi^2 = 47$, $p < 0.001$) health information. Their behavioral patterns were also more positive, with more participation in vigorous ($\chi^2 = 19.8$, $p < 0.001$) and mild-intensity ($\chi^2 = 13$, $p = 0.005$) activities, paired with lower inactive time ($\chi^2 = 16.2$, $p = 0.001$). These obvious disparities suggest that humanities students may benefit from specific health literacy interventions and physical activity promotion programs.

Academic progression revealed a complex link with health indicators. While upper-year students showed better knowledge of both written ($\chi^2 = 43.7$, $p = 0.03$) and verbal ($\chi^2 = 61.6$, $p < 0.001$) health information, they paradoxically showed decreased involvement in moderate ($\chi^2 = 35.9$, $p = 0.022$) and mild-intensity ($\chi^2 = 34.4$, $p = 0.033$) physical activities. This negative association between academic achievement and physical activity participation underlines the necessity for specialized health activities that address the unique barriers experienced by advanced students.

Smoking status emerged as an important behavioral driver, with smokers consistently displaying lower performance across different metrics. This group reported lower confidence with medical forms ($\chi^2 = 18.1$, $p = 0.001$), greater difficulties understanding health information (written: $\chi^2 = 13.2$, $p = 0.011$; verbal: $\chi^2 = 11.9$, $p = 0.018$), and reduced physical activity participation (moderate: $\chi^2 = 13.4$, $p = 0.004$; mild: $\chi^2 = 36.3$, $p < 0.001$), along with increased sedentary behavior ($\chi^2 = 11.4$, $p = 0.01$). These findings underline the significance of developing integrated interventions that simultaneously address smoking cessation, health literacy improvement, and physical activity promotion for this at-risk population.

Table 3: Association between demographic variables and questionnaire items

Demographic variable	item	chi-square	p
age	How frequently do you encounter difficulties comprehending the information provided by your doctor, nurse, or chemist on your health or treatments?	38.1	0.009*
college	If you need to go to the doctor, clinic or hospital, how confident are you in filling out the medical forms by yourself?	30.9	<.001*

How many times have you needed someone else (a member of the medical staff at a clinic or hospital) to help you read health or medical forms?	37	<.001*
How often do you have problems learning about your health because of trouble understanding written health information?	40.7	<.001*
How often do you have trouble understanding what your doctor, nurse, or pharmacist tells you about your health or about treatments?	47	<.001*
How frequently do you encounter difficulties recalling instructions provided by your doctor, nurse, or chemist upon returning home?	29.6	<.001*
Think of vigorous-intensity activities that take a lot of effort from you and lead to your breathing speed being much faster than normal. Such as: lifting heavy weights, running fast, drilling, rapid aerobic exercises for the muscles, riding a bike very fast, etc...just those activities that Took 10 Minutes over the last 7 days	19.8	<.001*
How long does this type of activity take during these days? Vigorous	11.9	0.008*
Think of mild-intensity activities that take a mild effort from you and lead to your breathing speed increasing slightly above normal. Such as: walking from one place to another, whether at work, the street, the park, or even shopping. Only those activities that took at least 10 minutes during the last 7 days.	13	0.005*
How much time do you spend during the day sitting during the middle of the week, whether at work, at home, studying, or even when relaxing, visiting friends, reading, etc...	16.2	0.001*

stage	How frequently do you encounter difficulties comprehending printed health information that impedes your comprehension of your health?	43.7	0.03*
	How often do you have trouble understanding what your doctor, nurse, or pharmacist tells you about your health or about treatments?	61.6	<.001*
	How long does this type of activity take during these days ? moderate	35.9	0.022*
	How long does this type of activity take during these days)(mild intensity)	34.4	0.033*
Are you smoker?	How confident are you in independently completing medical forms when visiting a doctor, clinic, or hospital?	18.1	0.001*
	How frequently do you encounter difficulties comprehending printed health information that impedes your comprehension of your health?	13.2	0.011*
	How often do you have trouble understanding what your doctor, nurse, or pharmacist tells you about your health or about treatments?	11.9	0.018*
	Think of moderate-intensity activities that take moderate effort from you and lead to your breathing speed exceeding normal on average. Such as lifting weights of medium load, riding a bicycle at moderate speed, etc... (Not including walking). Only those activities that took at least 10 minutes. During the last 7 days.	13.4	0.004*
	Think of mild-intensity activities that take a mild effort from you and lead to your breathing speed increasing slightly above normal. Such as: walking from one place to another, whether at work, the street, the park, or even shopping. Only those activities that took at least 10 minutes during the last 7 days.	36.3	<.001*
	How much time do you spend during the day sitting during the middle of the week, whether at work, at home, studying, or even when relaxing, visiting friends, reading, etc...	11.4	0.01*

* <0.05: Statistically significant

Discussion

This study intended to evaluate awareness of health literacy among college students at King Faisal University. The findings revealed varying levels of confidence in completing medical forms, understanding written and verbal health information, and remembering medical instructions. Additionally, physical activity patterns indicate limited engagement in moderate and vigorous exercise, alongside high levels of sedentary behavior. Several demographic factors, including age, college of study, academic stage, and smoking status, significantly influenced health literacy levels and physical activity habits.

With most of the students aged 20–23 years (70.1%), the demographic distribution shows a typical undergraduate population. Younger students (18–19 years) and older age groups (23–25 years and above) constitute lower proportions, which corresponds to the predicted age range for undergraduate study. The almost equal division between scientific institutions (57.4%) and humanities colleges (42.6%) offers an appropriate sample that enables significant health literacy comparisons. Greater exposure of scientific students to health-related problems might lead biases, nevertheless. Our study's demographic distribution matches previous studies, so verifying that age and academic background are important variables affecting health literacy. According to a previous study, younger people frequently show stronger functional health literacy than older adults since health literacy skills differ greatly among age groups¹⁸. This fits the trend of younger research participants. According to a prior study, students from scientific fields tend to have more health literacy because of their exposure to health-related courses¹⁹. This supports up the finding that scientific students could bias health literacy comparison. Emphasizing the importance of academic background and topic of study, a research looked at differences in health literacy among college students²⁰. The findings match with our study's demographic divide and its implications for health literacy comparisons. An earlier research underlined that health literacy is impacted by socioeconomic variables, including education and academic background²¹. This supports the assumption that scientific students may have an edge in health literacy due to their educational experience.

The sample's distribution across academic stages revealed that the largest groups were in their 3rd (21.5%) and 5th (19.1%) academic years, with lower numbers of preparatory year (6.4%) and postgraduate students (3%). This demonstrates a focus on undergraduate students, with low participation from non-students (1.5%), reflecting the study's emphasis on active university participants. The participation of students across multiple academic levels provides for a deeper knowledge of health literacy and lifestyle behaviors at various periods in their educational journey. The fact that 24.5% of individuals reported being smokers is interesting, since it shows a rather high incidence of smoking among university students. This needs additional research, particularly in regard to health literacy and lifestyle decisions, as smoking is a substantial risk factor for different health conditions. The findings of our study coincide with prior research, demonstrating that smoking is a substantial concern among university students and is impacted by health literacy and lifestyle practices. A research indicated that smoking prevalence among university students varied substantially among locations, with rates ranging from 10% to 30% based on cultural, social, and economic factors²². The 24.5% prevalence in our study aligns with the higher end of this range, demonstrating that smoking is a substantial concern among students higher health literacy is connected with healthier lifestyle practices, including decreased smoking rates²³. This shows that measures to promote health literacy among university students might help lower smoking prevalence. A research stressed that smoking among university students is commonly connected to stress, peer influence, and adverse lifestyle behaviors²⁴. This corresponds with the necessity to examine the association between smoking and other lifestyle variables in our study. A research indicated that health practices, including smoking, typically differ by academic level, with older students and

those in advanced academic years more likely to engage in smoking²⁵. This might give information into the distribution of smoking habit in our sample.

The current study indicated that over half of the individuals relied on external aid while reading medical forms, with 29% needing assistance occasionally, 27.7% sometimes, 18.1% often, and 5.2% always. Only 20% reported never requiring help, showing a widespread challenge with reading health-related forms. This underscores the necessity of boosting health literacy among students to create more independence in handling healthcare activities. The findings of the study align with prior research, demonstrating that a considerable number of students encounter difficulty in comprehending and completing medical forms independently^{26, 27}. Previous research have revealed that low health literacy is a substantial obstacle to comprehending and completing medical forms, with younger persons typically overestimating their ability^{28, 29}. Screening for health literacy has been proven to be useful, with single-question screening instruments being helpful in detecting individuals with inadequate health literacy³⁰. Targeted educational interventions have been found to greatly increase students' capacity to understand and complete medical forms independently.

The research suggests that while a majority of students (59.2%) felt "quite" or "extremely" confident in independently filling out medical forms, a considerable number (40.8%) reported varied degrees of hesitation, ranging from "somewhat" confident to "not at all confident." This shows that a noteworthy subset of students may have difficulty in interpreting healthcare documents, maybe due to inadequate health literacy or unfamiliarity with medical terminology. Over half of the individuals reported relying on external support while reading medical forms, with 29% needing assistance occasionally, 27.7% sometimes, 18.1% often, and 5.2% constantly. Only 20% of students reported never needed help, showing a significant issue with reading health-related materials. This reliance on external support underlines the significance of enhancing health literacy among students to encourage more independence in handling healthcare activities. The findings of your study match with earlier research, demonstrating that a considerable number of students encounter problems in comprehending and completing medical documents independently. A research indicated that single-question screening measures, such as inquiring about confidence in filling out medical documents, are successful in detecting patients with inadequate health literacy. This correlates with the result that a considerable number of students felt just "somewhat" or less secure in filling out forms²⁸. A research showed that individuals with inadequate health literacy usually rely on external aid to interpret medical documents and instructions. This supports the conclusion that over 50% of students in our research required assistance to varied degrees³¹.

The data suggests that involvement in vigorous-intensity physical activity among students is rather low, with 41.3% reporting no exercise in the last seven days. Only 21% exercised more than three times, while 40.1% spent no time on such activities. These data imply a considerable gap in high-intensity exercise participation, which might be attributable to reasons such as academic workload, lack of information about the advantages of strenuous activity, or restricted access to facilities. Moderate-intensity activities were slightly more prevalent but remained restricted, with 30.7% of students reporting no exercise. While 27.5% exercised once and 24.3% twice, just 17.6% engaged more than three times. Regarding length, 31.2% spent no time on moderate activities, while just 12.4% participated for over an hour. These results underscore the need for tailored interventions to encourage both moderate- and high-intensity physical exercise among students. The findings of your study coincide with earlier studies, demonstrating that physical inactivity is a substantial problem among university students. A research indicated that physical inactivity is pervasive among university students, with many failing to reach the required levels of vigorous and moderate activity. This correlates with the findings of our study, where a substantial number of students indicated limited

involvement in physical activity³². A research identified hurdles such as academic stress, lack of time, and insufficient motivation as important factors leading to poor physical activity levels among students. These impediments may explain the low participation rates seen in our study³³.

Walking appeared as the most common mild-intensity exercise among students, with 48.1% walking more than three times a week and 33.9% walking for over an hour. This highlights walking as an accessible and popular type of physical activity, possibly due to its ease and minimum resource requirements. These findings correspond with earlier studies stressing walking as a favored activity among university students. The data demonstrated a significant incidence of sedentary behavior, with 48.5% of students sitting for 8–12 hours every day and 14.9% sitting for over 12 hours. This increased sitting time underlines the need for efforts to minimize sedentary behavior and encourage active lives. Sedentary behavior is related with several health hazards, including cardiovascular and metabolic disorders, as emphasized in previous study. A survey indicated that walking is the most prevalent type of physical exercise among university students, attributable to its accessibility and ease of incorporation into everyday routines³⁴. Prior research showed the global prevalence of sedentary lifestyles among university students, with longer sitting periods connected to academic stress and lifestyle changes³⁵. A research stressed the relationship between sedentary activity and increased risk of depressed symptoms and chronic health conditions³⁶. A systematic review revealed successful techniques for encouraging physical activity among university students, including campus-wide programs and behavioral interventions³⁷. The results of our investigation align with previous research, demonstrating that walking is a widely accessible type of physical exercise among students, whereas sedentary behavior remains a serious problem. Targeted therapies, such as boosting walking programs and limiting sitting time, are vital to support active lives and decrease health risks.

The study presents several measures to increase health literacy among students. It advises incorporating health literacy education into university curricula, especially for humanities students, and adopting enhanced communication strategies to promote clarity and understanding of health information. Universities can also encourage physical exercise programs to combat sedentary behavior, strengthen digital literacy to enable students identify and utilize accurate health information from internet sources, and establish smoking cessation programs to improve health literacy.

The study has strengths, including a complete examination of health literacy using proven instruments including the Brief Health Literacy Screen and the Short examination of Health Literacy. It also studies several dimensions of health literacy, including functional, interactive, and critical health literacy, alongside health behaviors including physical exercise and sedentary behavior. However, the study has limitations, such as its cross-sectional design, dependence on self-reported data, and the sample's representation of younger students. Despite these limitations, the study provides useful insights into the determinants of health literacy and health behaviors among Saudi university students, stressing the need for focused interventions.

Conclusion

This study reveals significant gaps in health literacy among college students at King Faisal University. While many students are confident in dealing with medical information, a considerable percentage struggles with understanding, retention, and independent navigation of healthcare systems. Additionally, sedentary behavior and inadequate involvement in physical activity are alarming trends. Addressing these challenges with focused interventions will be vital for enhancing students' overall health and well-being.

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Data Availability

The datasets produced and/or examined in this work are not publically accessible to maintain patient anonymity; however, de-identified data may be provided upon reasonable request to the corresponding author.

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