

## Evaluation of Health Literacy in Academics at the University of Ghana: A Cross-sectional Study

### ABSTRACT

**Background and Objectives:** Research has shown that low health literacy levels can result in delayed access to information for timely disease diagnosis, diminished self-care abilities, and a higher prevalence of chronic diseases, ultimately contributing to increased mortality rates. In this study, we explored the determinants of health literacy among academics at the University of Ghana, assessed the prevalence of chronic diseases, and analysed health literacy factors based on the sex of the academics.

**Materials and Methods:** This cross-sectional study involved academics from the University of Ghana, selected using an enhanced voluntary response sampling method. A self-administered health literacy survey questionnaire was distributed to participants via staff emails. Bivariate and multivariate analyses were conducted to address the study objectives.

**Results:** The study reveals that a smaller proportion of the academics (31% of the sample) have chronic conditions. While having a chronic condition is positively associated with health literacy, it does not significantly impact it. The findings indicate that “actively managing health” and “appraising health information” positively and significantly influence health literacy, although their impact is relatively modest. Conversely, “navigating the healthcare system” has a substantial and significant effect on health literacy. Interestingly, “social support for health” negatively affects the likelihood of health literacy among academics.

**Conclusion:** The study concludes that health literacy among the university academics is shaped by factors including sex, “actively managing health”, “social support for health”, “and appraisal of health information”, and “navigating the healthcare system”. The prevalence of chronic diseases among the sampled academics was low. In terms of health literacy differences by sex, male academics were mainly influenced by “having sufficient information to manage health” and “navigating the healthcare system”, while female academics were primarily influenced by “having sufficient information to manage health”.

**Paper Type:** Research Article

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## Introduction

Health literacy (HL) has multiple definitions (1, 2) that emphasize the essential skills needed to obtain and process health information. HL is defined as “people’s knowledge, motivation, and competencies to access, understand, appraise, and apply health information to make decisions about healthcare, disease prevention, and health promotion, thereby maintaining or improving quality of life throughout the life course” (3). HL is a critical concept in public health research and healthcare reform, serving as a key determinant of individual health outcomes and treatment (4). It’s an emerging field that requires a deep understanding of health to empower individuals with the knowledge necessary to lead healthy lives (5).

To engage people actively in their health and treatment, a more comprehensive approach to HL is necessary (1, 6, 7). Effective healthcare, disease prevention, and health promotion are crucial for maintaining or improving quality of life (8). The World Health Organization (WHO) aims to create integrated, human-centered healthcare systems that reduce costs while enhancing quality of life. This goal involves developing strategies to empower patients and increase their involvement in healthy decision-making processes, making health education more accessible and comprehensible (9, 10). Individuals with low HL are at a higher risk of engaging in unhealthy behaviours. Improving HL is essential for reducing risky behaviours like smoking, poor nutrition, alcohol consumption, physical inactivity, and obesity (11). Poor HL increases the likelihood of making harmful choices, leading to risky behaviours, diminished self-care abilities,

longer hospital stays, and a higher risk of chronic diseases (12, 13). Consequently, inadequate HL places a significant strain on healthcare resources (14).

The Nutbeam Health Literacy Framework underpins this study, categorizing HL into three levels: functional, interactive, and critical (6). Functional HL involves basic reading and writing skills necessary for navigating healthcare environments. Interactive HL includes advanced cognitive skills that enable active participation in everyday healthcare activities. Critical HL involves the ability to critically analyse information and use it to exert greater control over life events. This framework is vital to the study, as it highlights the importance of not only understanding health information but also engaging with healthcare providers and navigating the healthcare system.

The study investigated the determinants of health literacy among academics at the University of Ghana, assessed the prevalence of chronic diseases, and examined the health literacy factors by sex of the academic. Academics with chronic diseases are expected to effectively manage their health (15, 16). This study contributes to the literature by providing an overview of health literacy among academics and identifying necessary interventions to improve their health status. We explore how being diagnosed with a chronic condition as an academic affect one’s health literacy, particularly among those with higher academic ranking, to determine if intellectual development correlates with health literacy. This study is crucial for developing effective health interventions and educational

programs within academic institutions. Academics play a significant role in these environments and enhancing their health literacy is vital for creating a healthier academic community. The study adds to the literature by examining the influence of chronic conditions and demographics of the academic on health literacy.

### Materials and Methods

The University of Ghana, established in 1948, is the premier and largest university in Ghana. It offers a diverse range of programs across four colleges, namely, the College of Basic and Applied Sciences, Education, Health sciences and Humanities. The University is renowned for its research output and academic excellence, with several research institutes and centers. The University of Ghana employs approximately 1,450 academic senior members who are dedicated to teaching, research, and community service. The College of Humanities had 551 academic senior members per the 2021/2022 human resource statistics of the university. The institution's commitment to education and research makes it a leading hub for intellectual and professional development in Ghana and the West African region.

A survey was conducted to assess the education levels and health literacy of academics from the University of Ghana (UG) using a nine-dimension Health Literacy Questionnaire (HLQ) created in google forms. The HLQ was sourced from established empirical studies (17, 30, 31) and is a widely recognized tool for measuring health literacy across multiple dimensions. The survey took place from October 1st to 31st, aligning with Health Literacy Month, which aims to raise

awareness about the importance of understanding health information.

To analyse the data, logistic regression was employed to explore the relationship between health literacy and whether respondents had been diagnosed with a chronic disease in the past year. This method helped determine if higher health literacy was associated with a lower likelihood of developing chronic conditions. Additionally, a bivariate analysis was performed using Stata 16 statistical software to assess the connection between various health literacy factors and whether respondents could be considered health literate. This combination of analyses provided a comprehensive understanding of how education and health literacy levels influenced the overall health awareness of the academic population studied.

The respondents for this study were primarily academics from the humanities, with no background or major in medical or health-related fields. To gather participants, an enhanced voluntary response sampling method was used. This involved sending emails to faculty members at the university, which included a google form link to the questionnaire. Faculty members were given one month to complete and submit their responses after receiving the initial email. To encourage participation, a follow-up email and periodic reminders were sent to the university's faculty email list. The final sample size reached 78 participants, which exceeded 10 percent of the total number of academics in the College of Humanities. This sample size was considered sufficient, and representative of the overall population being studied, reflecting a balanced male-female ratio as

well as diversity in academic ranks, ensuring that the findings could be generalized to the broader group of humanities academics.

The respondents were assessed for their general knowledge and understanding of their health, as well as whether they had any chronic conditions. Each participant was fully informed about the study's purpose, procedures, and their rights as participants through a detailed consent form. This form explained all relevant information, including their right to confidentiality and the option to ask questions. Participants were given the freedom to decide whether to take part in the survey and could withdraw from the study at any time without any consequences.

The Health Literacy Questionnaire was divided into three sections. Section I focused on the respondent's demographics, including sex, age, education level, academic rank, living situation (whether they live alone or not), and any long-standing illness or disability. Section II examined the incidence of chronic diseases among the Academics (i.e. whether he/she has been diagnosed with a chronic disease, the type of chronic disease, and the number of chronic diseases). Following this, Section III featured a 5-point Likert scale addressing various health literacy attributes: 'feeling understood and supported by healthcare providers, having sufficient information to manage my health, actively managing my health, social health support, appraisal of health information, ability to actively engage with healthcare providers, navigating the healthcare system, ability to find good health information, and understanding health information well enough to know what to do. The confidentiality and anonymity of all data

gathered from the study were guaranteed. The collected data was stored and confidentially kept by the principal investigator. The validity and reliability of the questionnaire were ensured through a rigorous development process. The questionnaire was reviewed by experts in the field to ensure content validity, ensuring that it comprehensively covered all relevant aspects of health knowledge and chronic conditions. To ensure reliability, the questionnaire was pre-tested with a small sample of academics to identify and correct any issues related to question clarity and consistency.

## Results

The demographic characteristics of the respondents, as shown in Table 1, provide a diverse and representative snapshot of the academic community at the University of Ghana. According to the Table 1, male academics outnumbered female academics, which is consistent with the general gender distribution at the university. Most of the respondents held PhDs, reflecting the institution's high level of academic qualification, while a smaller proportion held master's degrees, likely representing those who are in the process of pursuing a doctorate degree.

This demographic profile aligns with the broader composition of the academic staff at University of Ghana, ensuring that the sample is representative of the larger academic community. In addition to gender and educational qualifications, Table 1 also includes other key demographic distributions such as age, academic rank, and years of experience, further contributing to an all-inclusive understanding of the participants

involved in the study. These details provide a valued framework for interpreting the survey findings and ensuring their relevance to the entire academic population at the university.

**Table 1. Demographic Characteristics**

Characteristic	Frequency (%)
Sex	
Female	36 (46%)
Male	42 (54%)
Age range	
31-40years	20 (26%)
41-50years	36 (46%)
51-60years	19 (24%)
Above 60years	3 (4%)
Education level	
Masters	6 (8%)
PhD	62 (79%)
Post-Doctorate	10 (13%)
Academic rank	
Assistant Lecturer	9 (12%)
Lecturer	16 (21%)
Senior Lecturer	31 (40%)
Associate Professor	13 (17%)
Professor	9 (12%)
Chronic Condition	
No	54 (69%)
Yes	24 (31%)
Work experience at UG	
Less than 1year	3 (4%)
1-3years	6 (8%)
3-4years	11 (14%)
5years and above	58 (74%)
Marital Status	
Single	5 (6%)
Married	70 (90%)
Divorced	3 (4%)

The logistic regression results in Table 2 show the relationship between different factors linked to health literacy and the likelihood of an academic being health literate. The findings indicate that having a chronic condition increases the likelihood of higher health literacy by about 3.217 times,

but this effect is not statistically significant. On the other hand, male academics are less likely to be health literate compared to female academics, with an odds ratio of 0.027. This means that male academics have lower odds of being health literate than their female colleagues. The marginal effect reveals that being male reduces the probability of higher health literacy by about 19.9%, which is significant.

Among the health literacy factors, the ability to “navigate the healthcare system” significantly boosts the likelihood of higher health literacy. The marginal effect shows a meaningful increase in the probability of being health literate due to this factor. Additionally, factors like “appraisal of health information” and “ability to actively engage with healthcare providers” slightly raise the odds of higher health literacy, though these effects are only marginally significant. The marginal effect shows a small increase in the likelihood of higher health literacy for these factors. However, “social support for health” slightly lowers the likelihood of higher health literacy, with the marginal effect showing a slight decrease in probability. Thus, gender significantly affects health literacy, with male academics being less likely to be health literate than females. Factors like “navigating the healthcare system” have a strong positive impact on health literacy.

The bivariate analysis results (chi-square test), presented in Table 3, examine the health literacy factors by sex of academic. For the full sample of academics, the factor “having sufficient information to manage my health” emerged as highly significant, indicating a strong connection to health literacy.

Table 2. Logistics Regression Results

Variables	(1) Odds ratio	(2) Margin dydx	Robust standard errors	
			odds ratio	Margin dydx
Chronic Condition (Ref: No Chronic condition)...	3.217 (5.147)	0.078 (0.099)	3.217 (4.958)	0.078 (0.079)
Sex: Male (Ref: Female)	0.027* (0.053)	-0.199*** (0.068)	0.027 (0.061)	-0.199*** (0.044)
Work experience at UG				
1-2 years	0.840 (1.877)	-0.017 (0.217)	0.840 (1.494)	-0.017 (0.172)
3-4 years	5.338 (14.389)	0.146 (0.246)	5.338 (18.785)	0.146 (0.272)
Above 5years	35.656 (82.081)	0.249 (0.195)	35.656 (89.846)	0.249 (0.175)
Academic rank (Ref: Assistant Lecturer)				
Lecturer	1.586 (3.610)	0.031 (0.155)	1.586 (2.704)	0.031 (0.104)
Senior Lecturer	0.836 (2.181)	-0.013 (0.183)	0.836 (1.441)	-0.013 (0.120)
Professor	9.229 (39.078)	0.113 (0.179)	9.229 (17.424)	0.113 (0.082)
Feeling understood and supported....	0.922 (0.225)	-0.005 (0.016)	0.922 (0.162)	-0.005 (0.011)
Actively managing my health	1.181 (0.168)	0.011 (0.009)	1.181 (0.156)	0.011* (0.006)
Social support for health	0.763 (0.166)	-0.018 (0.014)	0.763 (0.166)	-0.018* (0.009)
Appraisal of health information	1.393 (0.415)	0.023 (0.019)	1.393* (0.263)	0.023* (0.012)
Ability to actively engage with....	1.479 (0.529)	0.027 (0.023)	1.479* (0.327)	0.027 (0.019)
Navigating the healthcare system	1.750** (0.484)	0.038** (0.016)	1.750** (0.466)	0.038*** (0.008)
Ability to find good health information	0.745 (0.183)	-0.020 (.016)	0.745 (0.223)	-0.020 (0.013)
Understanding health information well.	0.747 (0.256)	-0.020 (0.022)	0.747 (0.277)	-0.020 (0.031)
Constant	0.001 (0.004)		0.001 (0.003)	

Dep Variable: Health Literacy, Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Academics who reported having enough information to effectively manage their health were more likely to demonstrate higher levels of health literacy. This suggests that access to comprehensive health information is crucial for improving one's understanding and management of personal health.



Additionally, the factor “appraisal of health information” was found to be significant, suggesting that the ability to critically evaluate and assess health information plays an important role in determining higher health literacy among academics. Similarly, the “ability to find good health information” also showed a significant relationship, meaning that academics who are skilled in locating reliable health information tend to have higher health literacy.

When the data was further disaggregated by gender, some interesting patterns emerged. For male academics, both “having sufficient information to manage health” and “navigating the healthcare system” were highly significant, showing a strong

association with health literacy. This suggests that for male academics, both access to health information and the ability to effectively use healthcare services are key factors influencing their health literacy.

For female academics, only the factor “having sufficient information to manage my health” was highly significant, highlighting that access to sufficient health-related information is a particularly important factor in determining health literacy for women academics. This difference between male and female academics suggests that while both groups benefit from having sufficient health information, men may rely more on navigating the healthcare system, whereas women are more strongly influenced by the availability of health information itself.

Table 3. Bivariate analysis of factors associated with health literacy

Variable	Full Sample		Male		Female	
	$\chi^2$	P	$\chi^2$	P	$\chi^2$	P
Having sufficient information to manage my health	55.72	0.000	30.77	0.001	26.18	0.002
Feeling understood and supported by my healthcare.....	20.19	0.124	15.73	0.204	18.00	0.082
Actively managing my health	13.90	0.606	19.54	0.107	6.83	0.742
Social support for health	15.95	0.386	7.99	0.630	16.36	0.230
Appraisal of health information	29.18	0.023	20.48	0.084	7.53	0.821
Ability to actively engage with healthcare providers	17.19	0.308	15.53	0.159	6.00	0.815
Navigating the healthcare system	28.24	0.079	23.22	0.039	20.73	0.189
Ability to find good health information	23.95	0.046	18.08	0.154	10.91	0.365
Understanding health information well enough.....	7.89	0.723	7.29	0.698	8.83	0.638

## Discussion

The findings from this study present mixed results when compared to existing literature, highlighting the complex and essential role of health literacy. The study shows that having a chronic condition does not significantly affect an academics’ health literacy. This result differs from previous research, which indicated that managing chronic conditions typically demands higher health literacy.

People with chronic conditions often need to understand medical instructions, perform self-care, and navigate the healthcare system regularly (18, 19) which over time, can improve their health literacy. Previous studies found that dealing with chronic conditions makes individuals engage more with healthcare services, which can boost their health literacy (18).

Work experience can provide individuals with critical thinking skills and familiarity with health-related information (20). Moreover, work environments that demand frequent interaction with information and decision-making can enhance one's ability to understand and use health information effectively (21). Higher academic ranks, particularly being a professor, are associated with higher health literacy. This can be attributed to the higher education levels and greater access to information typically associated with higher academic positions (22). Professors often have better access to resources and are more engaged in continuous learning, which enhances their health literacy. This is supported by research indicating that higher educational attainment is a strong predictor of health literacy (18). Also, gender difference is fundamental as being male is associated with lower health literacy, a finding that echoes the broader literature on gender disparities in health literacy (23, 24). Studies have consistently shown that women generally have higher health literacy levels, possibly due to their more frequent use of healthcare services and greater involvement in family health management (23).

The factors underpinning health literacy are imperative in the academic institution. The ability to appraise health information positively contributes to health literacy. This is supported by Nutbeam model of health literacy (6), which emphasizes the importance of critical skills in evaluating health information. Individuals who can critically appraise health information are better equipped to make informed health decisions, thus demonstrating higher health

literacy. Actively managing one's health is another factor that enhances health literacy. This aligns with the concept of self-efficacy in health literacy, where individuals who take active roles in managing their health are more likely to engage with and understand health information (25). Studies have shown that proactive health management behaviours are associated with higher health literacy levels (26). The ability to navigate the healthcare system is significantly associated with higher health literacy. This finding is supported by research that identifies navigation skills as a crucial component of health literacy (2). Effective navigation skills help individuals access appropriate healthcare services, understand health insurance, and communicate with healthcare providers, all of which are essential for maintaining health literacy.

Empirical studies have established the need for health literacy to curtail poor health conditions (27, 28). Our findings show that having a chronic condition does not significantly influence health literacy. The findings of this study contradict previous research, which suggests that chronic conditions such as cardiovascular diseases and diabetes typically require patients to have a certain level of literacy or involvement in their management (28). Also, chronic conditions, such as coronary artery disease, heart failure, high blood pressure, high cholesterol, and diabetes, are intricate and challenging health conditions that demand patients to possess knowledge and skills to manage effectively (27). A previous study outlines five levels of health literacy, reflecting a patient's increasing ability to actively participate in their healthcare. These



levels also assist healthcare providers in identifying effective educational strategies (29). These levels include effective communication, knowing which questions to ask, what information to share, decision-making abilities, and shared decision-making.

### Conclusion

In conclusion, we found that “actively managing health”, “social support for health”, “ability to appraise health information”, and “navigating the healthcare system” were significant determinants of health literacy. The study identifies the “ability to navigate the healthcare system” for better care as a key factor influencing health literacy among the academics. Male academics exhibited lower health literacy compared to their female counterpart, a significant finding as well. However, chronic conditions, while increasing the likelihood of higher health literacy, did not significantly influence it in this case, emphasizing the importance of active health management.

To enhance health literacy among academics, the management of the University of Ghana should implement targeted health education programs that focus on active health management, effective health information appraisal, and navigating the healthcare system. Management of the University should also emphasize on gender-specific strategies that can help address the disparities observed between the male and female academics. The key limitation to this study is the use of self-reported data which may introduce bias when survey participants underestimate or overestimate their health literacy status. Also, academics with health or medical background were not included in the study since they have enough knowledge on

healthcare issues, thus limits the generalizability of the findings. Future studies should expand the study to include dissimilar sample with various professional fields to make the study more generalizable. Further studies should also include a qualitative aspect to derive deeper understanding of the experiences of the academics in relation to the health literacy factors.

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**Consent for publication:** Not applicable.

**Ethics approval and consent to participate:** The study adhered to the principles outlined in the Declaration of Helsinki. Since formal ethical approval was not necessary for this research, no ethical code was issued. Participation was entirely voluntary, with individuals given the option to opt in or out, and their anonymity was fully safeguarded.

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**Author contributions:** PAA conceptualized the study and provided the initial draft. CKT revised the draft and conducted the analysis. PAA collected the data. Both PAA and CKT revised the manuscript.

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