



## OPEN **Determinants of health information seeking behavior among people at risk of statelessness in Ghana**

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Health Information Seeking Behavior [HISB] has developed into one of the crucial components of a person's awareness and responsibility for their health. However, populations at risk of statelessness are often excluded from opportunities and services, particularly those related to health. Using Longo's Model and the Health Belief Model [HBM], this study investigated their HISB and associated determinants, with emphasis on the individual's socio-demographic, psychosocial and health belief factors. The study's data came from a cross-sectional household survey undertaken in the Awutu Senya East Municipality and Gomoa East District of Ghana's Central Region between March 9 and June 26, 2021. Descriptive statistics and binary logistic regression models helped establish the prevalence and predictors of HISB from a sample of 384 at-risk individuals. Prevalence of health information seeking [HIS] was nearly 44% and associated with sex, age, level of education, and internet literacy. Additionally, various constructs of psychosocial resources [self-esteem and trust in health information] and health beliefs [perceived severity, benefits, and perceived barriers] were associated with HIS within our sample. To improve positive HISB, healthcare providers and health promoters must tailor health information to different socio-demographic groups, focus on building trust and rapport with patients, offer social support, and address psychosocial barriers to HIS. Finally, providing accurate and relevant health information must be prioritised.

**Keywords** Health information-seeking behavior, People at risk of statelessness, Social determinants of health, Vulnerable populations, Social inclusion

### Abbreviations

AOR	Adjusted odds ratio
CI	Confidence interval
GHS	Ghana Health Service
HBM	Health belief model
HICs	High-income countries
HIS	Health information seeking
HISB	Health information seeking behavior
HIV/AIDS	Human immunodeficiency virus/Acquired immune deficiency syndrome
HuSSREC	Humanities and Social Sciences Research Ethics Committee
LMICs	Low and middle-income countries
QoL	Quality of life
SDGs	Sustainable development goals
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
VIF	Variance inflation factor
WHO	World Health Organisation

Statelessness implies the lack of recognition as a citizen of any state, per legal frameworks prescribed in their constitution or subsidiary regulations on citizenship<sup>1</sup>. It is a possibility for persons whose citizenship status is uncertain or contested. Without nationality, comprehensive, and guaranteed statutory recognition, stateless people and individuals at risk of statelessness struggle for civic participation, including legal protections, leaving them vulnerable to representation, exploitation and discrimination. Statelessness, among other things,

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stems from discrimination, gaps in citizenship laws, loss of nationality, and administrative barriers that hinder individuals from legally obtaining citizenship<sup>1</sup>. Such persons occupy the fringes of inclusion, with curtailed rights and limited access to social services like education, employment, and healthcare<sup>2</sup>. The global estimate for stateless people is about 12 million, and over 1 million in Africa alone<sup>3–5</sup>. Côte d'Ivoire leads the global stateless figures with 955,399 people as of 2019<sup>6</sup>, but there is no available data on stateless populations in Ghana<sup>7</sup>. Yet, notable populations at risk of statelessness in Ghana include former refugees from Liberia and Sierra Leone, some migrants in Zongo communities, and some residents of border towns like Aflao at the eastern borders of Ghana<sup>7</sup>.

As characteristic of vulnerable groups, stateless people, including those at risk of statelessness have a poorer quality of life (QoL), often residing in slums with sub-standard and inadequate sanitary conditions and are predisposed to disease outbreaks<sup>8</sup>, for which reason, the United Nations High Commissioner for Refugees (UNHCR) has been working to tackle statelessness. Nevertheless, their vulnerability and continuous exclusion from societal functioning remain<sup>2,7,8</sup>. Consequently, compared with their non-stateless counterparts, stateless people and those at risk are less likely to seek health information and treatment, due to their multifaceted health-related vulnerabilities and the significant healthcare utilisation barriers they face. Given this exclusion<sup>2</sup>, statelessness-related policy and health research must prioritise the kinds of health information they seek, in addition to how they navigate that; a knowledge which can immensely help in the early diagnosis of diseases and the uptake of both preventive and curative health services among this vulnerable population<sup>2</sup>.

Generally, emphasis on self-care, self-monitoring and the resurging interest in health promotion and illness prevention have contributed to renewed research efforts into Health Information Seeking Behavior (HISB)<sup>9,10</sup>. Mukherjee and Bawden<sup>11</sup> described HISB as a process that entails gathering information about one's health and required health behaviors. Captured differently, HISB is the individuals' use of specific channels and strategies to acquire health information<sup>12,13</sup>. Currently, HISB has become a crucial component of an individual's responsibility towards self-care<sup>14</sup>, fuelled by health-related distress, risks—perceived and actual, and curiosity<sup>15</sup>. Researchers and clinicians have concerned themselves with why, when and where individuals seek health information, the kinds of information sought and how these are used<sup>10</sup>. While information sources were limited in the past<sup>16</sup>, today's world presents a plethora of resources for health information seeking [HIS]<sup>17</sup>. Primarily, in low and middle-income countries (LMICs) where access to healthcare providers, health-related media education and internet penetration is low, people obtain their chunk of health information from informal sources such as family and friends<sup>18–20</sup>.

Yet, high-income countries [HICs] with available and adequate healthcare infrastructure and better functioning health systems have been the focus of past research on HISB<sup>21,22</sup>. These insights from HICs if usable in other contexts at all, are limited. This means that developing countries—LMICs need more research into HISB to tailor interventions, practices, and policies in that regard for their citizens<sup>23</sup>. The importance of HISB is enormous, setting up the appropriate health and social policy<sup>18</sup>, reducing patients' uncertainty and anxiety<sup>24</sup>, and resulting in positive changes in a person's behavior and medical treatment<sup>25</sup>. Meanwhile, in these HICs-skewed studies, scholars have reported several determinants of HISB, including individual's structural factors like demographic, and socioeconomic status, and religion; relational factors like social support; spatial/locational/geographical factors; health-related factors such as perceived health status, severity of the condition and trust; and the political economy of health and healthcare delivery; as well as the nature and perceived quality of health systems' response<sup>18,25–27</sup>. Moreover, the quality of care, communication barriers and sources of information are some of the challenges that minority groups some of whom are at risk of statelessness face regarding their HISB<sup>28–30</sup>. Literacy and digital literacy have also been associated with HISB, where higher scores on both and high internet penetration positively influence individuals' HISB<sup>31–33</sup>, sometimes resulting in self-treatment and medication<sup>34–36</sup>.

Globally, the main sources of health information are physicians and health practitioners<sup>37,38</sup>, radio and television<sup>39</sup>, family and friends<sup>18–20,40</sup> and the internet<sup>31–33,41–44</sup>. The plethora of past studies on HISB has focused on both vulnerable and non-vulnerable populations, such as older urban African American women<sup>45</sup>, parents and caregivers<sup>46</sup>, health managers<sup>47</sup>, patients<sup>48</sup> and rural communities<sup>49</sup>. Other notable groups include refugees<sup>50–52</sup>, culturally and linguistically diverse women<sup>53</sup>, and inmates<sup>54,55</sup>. Only a handful addressed the same among stateless or at-risk populations<sup>50–52</sup>. In Ghana, Agyemang-Duah et al.<sup>56</sup> explored the dynamics of HISB among older adults with very low income and found that healthcare providers, family members, media and friends were the sources of information for this group of vulnerable people. The study of Owusu-Addo and Morhe<sup>57</sup> on pregnant teenagers in Ghana also revealed friends, health professionals and the media (print materials) as the most preferred sources for health information. Copiously missing in the Ghanaian literature is the HISB of people at risk of statelessness who are predisposed to diseases due to their unsanitary conditions and lack of access to healthcare<sup>58</sup>. Indeed, the paucity of scholarly evidence on statelessness and health services research has been widely acknowledged<sup>2,59</sup>, and it is essential to understand HISB and its associated factors within this vulnerable population to aid health promotion.

Therefore, this study was conceptualised to explore and fill this knowledge gap on the HISB of people at risk of being stateless in Ghana—focusing on the prevalence, types and predictors. In actualising this dream, we posed the question: How are persons at risk of statelessness in Ghana's HISB shaped by socio-demographic factors, psychosocial influences, and the constructs of the Health Belief Model (HBM)? To the best of our knowledge, this is part of the few available studies that capture the perspectives of stateless and at-risk populations on HISB<sup>50–52,60,61</sup>, making it vital towards understanding the kinds of health information available to such a vulnerable population, with many healthcare accessibility barriers. Additionally, the study modelled the factors associated with HISB, thereby deepening our understanding of how this vulnerable community seeks health information and offers help to policymakers on health systems' planning and decision-making. The study also contributes to the literature by extending the conceptual boundaries and operational foundations of HISB concerning stateless

people. Our study's strength also lies in the emphasis on both structural—socio-demographic and perceptual factors influencing HISB, which are important domains as far as health behavior is concerned<sup>62,63</sup>. Finally, the study's focus on the methodical dimension of HISB, as against the information dimension, provides additional information and adds to the seemingly unclear definition of HISB<sup>12</sup> and a departure from several studies on cancer, HIV/AIDS and patients with cardiovascular diseases.

### Research question

In this study, the question posed is: How do socio-demographic factors, psychosocial influences, and the various constructs of the HBM shape HISB among individuals at risk of statelessness in Ghana?

### Literature review

#### Theoretical framework

This study is jointly underpinned by Longo's expanded model of health-seeking behavior<sup>64</sup> and the HBM. Originally developed to understand the source, nature and how health information is used within the management of chronic diseases, Longo's model applies to health information behavior in other domains<sup>64,65</sup>. This model considers both the personal (e.g. demographics, language, behaviors and socio-economic) and contextual factors (health structure, delivery of healthcare, information for friends and family members) that affect information-seeking behavior<sup>64,65</sup>. Under this model, both passive and active HIS tendencies are considered<sup>66</sup>, with an emphasis on the usefulness of the information sought. Again, literature on HISB shows that people in developing countries are not only passive information seekers but also active<sup>49,67</sup>, and this method helps to evaluate that claim. The model has been applied elsewhere in a study of HISB involving university students and ethnic minorities in Finland<sup>65</sup>. Yet, we did not capture medical information and the healthcare systems of Ghana, as contained in Longo's model. Despite its prospects, the model does not account for psychological and perceptual factors, for which we included the HBM. HBM explains how individuals at risk of statelessness decide to seek health-related information based on perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy<sup>68</sup>. Research suggests that self-efficacy and perceived benefits play a crucial role in HIS, while perceived barriers can discourage engagement<sup>69–71</sup>. Merging both models offered a good fit by considering structural factors—demographic and socio-economic variables, and health belief variables—perceptual factors.

#### Operationalisation of HISB

HISB has been variously operationalised in the literature. According to Lambert and Loiselle<sup>12</sup> and the National Cancer Institute<sup>72</sup>, HISB is often operationalised in terms of four key areas— These are (1) the specific type of health information sought, (2) the amount of health information sought, (3) the sources of information used and (4) the discrete actions sorted. In this study, we operationalised HISB through the description of sources used, including the types and numbers used<sup>22,27,45,73</sup>. This study ascertained how individuals seek health-related information from both personal and impersonal sources and a combination of both. These sources, according to Johnson<sup>9</sup> referred to as an individual's "information field" The personal sources include self, friends and family, whereas the impersonal ones are sources from books, the internet and other radio and television. Of the two dimensions of HISB identified in the literature—information and method dimensions, we focused on the method dimension.

### Study setting

The study was conducted in the Awutu Senya East Municipality and Gomoa East District of the Central Region of Ghana, home to several marginalised people with a higher predisposition to statelessness<sup>7</sup>. Numerous Zongo communities and Ghana's largest refugee camp (the Buduburam Refugee Camp) are all within these enclaves. The selected districts are part of the 22 Districts in the Central Region of Ghana: Gomoa East District with a population of 207,071 (9.4% of the region's total population) and Awutu Senya East with a population of 131,531 (4.9% of the region's population). The study sites were Buduburam in the Gomoa East District and Kasoa Zongo, Kaamibre Zongo, Lamptey Mills Zongo, and Walantu in the Awutu Senya East Municipality (see Fig. 1), purposively selected due to the prevalence of people at risk of statelessness<sup>7</sup>.

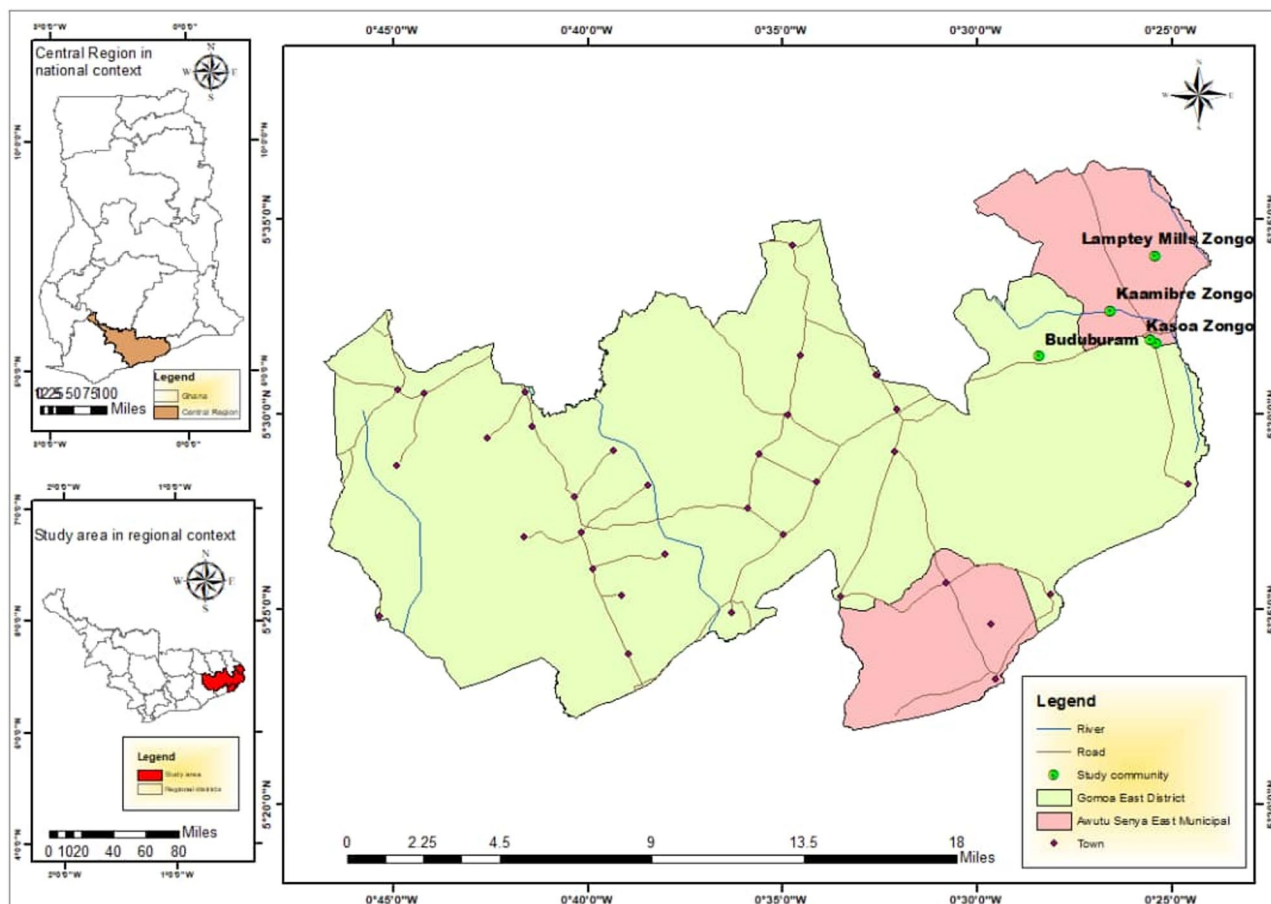
### Methods

#### Study design

The study's data came from a cross-sectional research design, which helped us obtain one-off data on the HISB among this vulnerable population. Cross-sectional designs are proven to help establish associations between exposure and outcome variables<sup>75</sup>. The cross-sectional design helps in establishing the associations between the various sociodemographic and health belief variables and HISB within the sample, which enables us to study different variables simultaneously, by providing valuable insights into population characteristics.

#### Study variables

The socio-demographic variables include sex (1 = male, 2 = female), age (1 = below 25 years, 2 = 26–35, 3 = 36–45, 4 = 46–56, 5 = 56–65, 6 = 66 and above), marital status (1 = single, 2 = married, 3 = divorced, 4 = widowed), religion (1 = Christian, 2 = Islam), educational attainment (1 = no formal education, 2 = basic education, 3 = high school, 4 = tertiary), employment status (1 = not employed, 2 = employed), length of stay in the community (1 = < 5 years, 2 = = or > 5 years < 10), and computer and internet literacy (1 = yes, 2 = no). The health information factors constitute sources of health information (1 = health professional, 2 = family and friends, 3 = internet, 4 = Media), type of health information (1 = cause of diseases/illness, 2 = diet, 3 = medication dosage), the reason for chosen



**Fig. 1.** Map of the study communities. *Source* Adopted from Quartey et al.<sup>74</sup> (Publisher: Springer Nature; License: CC BY-NC-ND 4.0; Link: <https://creativecommons.org/licenses/by-nc-nd/4.0/>).

health information source (1 = trust, 2 = ease of accessibility, 3 = cost) and barriers to seeking health information (1 = inadequate knowledge on the benefits of seeking, 2 = communication/language problem, 3 = perceived poor attitude of healthcare providers, 4 = lack of trust in health information). Psychosocial psychological or perceptual factors of social integration, emotional support, perceived control, self-esteem, and trust were measured as 1 = high, 2 = low and health belief variables of perceived susceptibility, perceived severity, perceived benefits and perceived barriers were measured as 1 = high, 2 = low.

### Sampling and recruitment procedure

In this study, the purposive and snowballing sample techniques were used in selecting the participants. The total sample size was 384, estimated using Lwanga and Lemeshew<sup>76</sup> with a 9.9% non-response rate. Purposively, only marginalised people with characteristics that mimic the issue under investigation were recruited<sup>74,76</sup>. This was complemented by the snowball sampling technique, allowing the researchers to depend on known persons—at-risk populations for recommendations to other potential participants, based on homogeneity. Snowball sampling with exponential discrimination was used to avoid oversampling a network of peers<sup>77</sup>, which required subjects to give numerous references, from which only one was chosen. An at-risk population consists of individuals who have lived in Ghana for over five years but lack official birth registration, recognised Ghanaian citizenship documents, or proof of citizenship in another country, leaving them without legal status.

### Data collection instrument and procedure

Closed-ended questionnaire and an interview guide aided data collection, where the former required respondents to select from a restricted number of multiple-choice questions with options. The close-ended survey instrument boosted response rates through the “quick-fix filling” of the questionnaire<sup>78</sup>. The questions span demographic, socio-economic, psychosocial and health belief variables, HISB, and barriers to HIS. Part A covered the socio-demographic characteristics, where the information sought centred on sex, age, marital status, and the highest level of education you have completed. The purpose was to categorise respondents based on personal attributes that may influence their access to and preferences for health information. Part B comprised internet literacy, which assessed participants’ familiarity with digital tools and online health resources, and helped ascertain digital accessibility and literacy’s impact on online HISB. Part C captured sources of health information; participants identified the channels they relied on for health-related knowledge, the type of health information sought,

helping map participants' health-related concerns and priorities; and the barriers to seeking health information. Part D covered psychosocial factors, where the emphasis was on social and emotional influences on HISB. This helped assess the role of social integration, emotional support, self-esteem, and trust in health information-seeking behavior. Part E captured the HBM constructs to understand how psychological perceptions influence health information-seeking behavior among respondents.

Six research assistants, in addition to the first and third authors, were involved in the data collection between March 9 and June 26, 2021. The six research assistants had prior knowledge of mixed methods data collection and were taken through the questionnaire to help them familiarise themselves with the questions. A pilot study established the reliability and validity of the questionnaire and the minimum estimated time required to complete a questionnaire. Originally developed in the English Language, the questions were translated into Twi, Ga, and Hausa, depending on the preference of the respondents. The translation was conducted by three professional translators, using a back-translation—reverse translation method to ensure accuracy. Careful review and linguistic validation preserved the substance of questions across languages, maintaining clarity and intent. Since we collected the data during the COVID-19 pandemic, the participants and the research team adhered to strict World Health Organisation (WHO) and Ghana Health Service (GHS) guidelines—physical distancing, wearing of nose masks, and frequent hand washing from the<sup>79,80</sup>.

### Analytical framework

Descriptive statistical methods helped summarise the data. Binary logistic regression was performed on the determinants of HISB, wherein three separate models were built. In Model 1, the determinants of HISB were demographic factors (sex, age, level of education, employment status and internet literacy). In Model 2, psychosocial factors (social integration, emotional support, perceived control, self-esteem, and trust) were added to the Model 1 variables. The third and Final Model comprised health belief variables (perceived susceptibility, perceived severity, perceived benefits and perceived barriers). Hosmer and Lemeshow's homogeneity test and the Omnibus Tests of Model Coefficients confirmed the models' robustness, with a p-value greater than 0.05 indicating a good fit. The comparison between the baseline model and the present model with explanatory variables showed a significant difference ( $p \leq 0.05$ ). Variance Inflation Factor (VIF) and tolerance values were within acceptable limits, confirming no multicollinearity issues. All analyses were performed in SPSS software (version 20).

### Ethical consideration

Ethical approval was granted by the Humanities and Social Sciences Research Ethics Committee (HuSSREC) of the Kwame Nkrumah University of Science and Technology (KNUST) (HuSSREC/AP/264/VOL.4). All procedures in the study were performed in accordance with the relevant guidelines and regulations of HuSSREC. By this, participation was voluntary and written informed consent and verbal informed consents were obtained from the respondents, while their responses were anonymously reported.

## Results

### Profile of the respondents

Up to 58.3% of the respondents are females while 41.7% are males. The age distribution revealed that 39.6% of the respondents were aged 26–35 years whereas 21.9% were aged below 25 years. The study further revealed that 48.4% of the sampled respondents were married. Those who profess the Islamic faith (51.8%) were the most dominant, and up to 31.8% have a high school education or equivalent. Further, 58.1% were employed and 86.7% have been in their respective communities for a period equal to 5 years, but less than 10 years and 41.7% are internet literate. See Table 1 for details.

### Health information-seeking dynamics

Table 2 presents information on the respondents' HIS dynamics. Up to 43.7% of the participants sought health information in the last year—twelve months preceding the study. Health professionals (29.9%), family and friends (22.7%), the internet (39.1%) and the media (8.3%) were the sources of health information. Trust (57.6%) and easy access to health information (36.7%) were the major reasons for the choice of their source of health information. The respondents mainly sought health information on the causes of diseases/illness (43.8%), diet (17.7%) and medication dosage (38.5%). We found the perceived poor attitude of healthcare providers (32.6%), inadequate knowledge of the benefits of seeking health information (29.2%) and lack of trust in health information (22.8%) as barriers to HIS among people at risk of statelessness in Ghana.

### Factors associated with health information seeking behavior

Determinants of HIS in the sample was also established in this paper. From model 1, in Table 3, females (AOR: 1.547, CI 1.021–2.357,  $p = 0.002$ ) and senior high school graduates (AOR: 1.019, CI 1.171–2.249,  $p = 0.009$ ) were significantly more likely to seek health information than their respective counterparts. In model 2, females (AOR: 1.571, CI 1.245–3.538,  $p = 0.016$ ) and tertiary graduates (AOR: 1.700, CI 1.448–2.454,  $p = 0.033$ ) were significantly more likely to seek health information, while individuals with low self-esteem (AOR: 0.052, CI 0.055–0.962,  $p = 0.010$ ) were significantly less likely to do so. In the final model, females (AOR: 1.633, CI 1.097–3.355,  $p = 0.007$ ), persons aged 66 years or more (AOR: 1.892, CI 1.992–3.972,  $p = 0.005$ ), and those with senior high school education (AOR: 1.268, CI 1.027–2.645,  $p = 0.034$ ), and tertiary education (AOR: 1.785, CI 1.389–8.186,  $p = 0.003$ ) were significantly more likely to seek health information. Furthermore, persons with low internet literacy (AOR: 0.890, CI 0.603–0.845,  $p = 0.018$ ), low self-esteem (AOR: 0.067, CI 0.057–0.077,  $p = 0.001$ ), low trust in health information (AOR: 0.045, CI 0.034–0.073,  $p = 0.027$ ), low perceived severity of health condition (AOR: 0.719, CI 0.577–0.806,  $p = 0.004$ ), and low perceived benefits of health information

Variable	Response	Frequency (384)	Percentage (%)
Sex	Males	224	41.7
	Females	160	58.3
Age	Below 25 years	84	21.9
	26–35 years	152	39.6
	36–45 years	46	12.0
	46–55 years	61	15.9
	56–65 years	30	7.8
	66 years and above	11	2.9
Marital status	Single	141	36.7
	Married	186	48.4
	Divorced	23	6.0
	Widowed	34	8.9
Religion	Christianity	146	38.0
	Islam	199	51.8
Educational attainment	None	115	29.9
	Basic education	115	29.9
	Senior high school	122	31.8
	Tertiary	32	8.3
Employment status	Unemployed	161	41.9
	Employed	223	58.1
Length of stay in the community	< 5 years	51	13.3
	= or > 5 years < 10 years	333	86.7
Internet literacy	Yes	160	41.7
	No	224	58.3

**Table 1.** Background information on the respondents.

Variable	Response	Frequency (384)	Percentage (%)
Have you sought health information in the last year?	Yes	168	43.7
	No	216	56.3
Where do you seek health information	Health professionals	115	29.9
	Family and friends	87	22.7
	Internet	150	39.1
	Media	32	8.3
Why do you choose where you seek your health information?	Trust	221	57.6
	Ease of accessibility	141	36.7
	Cost	22	5.7
What kind of health information do you seek?	Causes of diseases/illnesses	168	43.8
	Diet	68	17.7
	Medication dosage	148	38.5
Barriers to health information seeking	Inadequate knowledge of the benefits of seeking health information	112	29.2
	Communication/language problem	59	15.4
	Perceived poor attitude of healthcare providers	125	32.6
	Lack of trust in health information	88	22.8

**Table 2.** Health information-seeking dynamics.

(AOR: 0.660, CI 0.231–0.926,  $p = 0.041$ ) were significantly less likely to seek health information. However, people with a low perceived barrier to HIS (AOR: 1.880, CI 1.262–2.510,  $p = 0.001$ ) were significantly more likely to seek health information.

## Discussion

This study investigates the HISB among people at risk of statelessness in Ghana, where emphasis was placed on the socio-demographic, psychosocial and health belief variables that were associated with HISB. Approximately 44% of the respondents sought health information in the last twelve months preceding the study, mainly from the internet and health professionals on the causes of diseases/illnesses. Females, older adults—66 years or

Variables	Model 1				Model 2				Model 3			
	Sig	Exp(B)	95% C.I.for EXP(B)		Sig	Exp(B)	95% C.I.for EXP(B)		Sig	Exp(B)	95% C.I.for EXP(B)	
			Lower	Upper			Lower	Upper			Lower	Upper
Socio-demography												
Sex												
Male (ref)		1.00				1.00				1.00		
Female	<b>0.002</b>	<b>1.547</b>	<b>1.021</b>	<b>2.357</b>	<b>0.016</b>	<b>1.571</b>	<b>1.245</b>	<b>3.538</b>	<b>0.007</b>	<b>1.633</b>	<b>1.097</b>	<b>3.355</b>
Age (years)												
Below 25 (ref)		1.00				1.00				1.00		
26–35	0.078	0.368	0.121	0.420	0.164	0.283	0.048	0.675	0.210	0.272	0.036	0.478
36–45	0.835	0.852	0.189	0.834	0.529	1.415	3.027	6.439	0.480	1.289	4.009	9.056
46–56	0.068	1.253	1.058	1.108	0.124	1.191	1.023	1.576	0.164	1.182	1.016	2.006
56–65	0.089	1.164	1.020	1.320	0.265	1.246	2.021	2.896	0.123	1.116	1.007	1.795
66 and above	0.063	1.671	1.435	1.784	0.067	1.234	5.963	6.129	<b>0.005</b>	<b>1.892</b>	<b>1.992</b>	<b>3.972</b>
Education												
No formal education (ref)		1.00				1.00				1.00		
Basic	0.319	1.080	1.322	3.626	0.558	1.837	2.240	4.093	0.619	0.560	1.057	5.507
Secondary	<b>0.009</b>	<b>1.019</b>	<b>1.171</b>	<b>2.249</b>	0.714	0.294	0.099	4.883	<b>0.034</b>	<b>1.268</b>	<b>1.027</b>	<b>2.645</b>
Tertiary	0.401	1.108	1.159	2.708	<b>0.033</b>	<b>1.700</b>	<b>1.448</b>	<b>2.454</b>	<b>0.003</b>	<b>1.785</b>	<b>1.389</b>	<b>8.186</b>
Employment												
Employed (ref)		1.00				1.00				1.00		
Not employed	0.123	2.179	2.809	5.869	1.045	1.716	0.210	0.539	0.162	2.253	2.030	3.366
Internet literacy												
High (ref)		1.00				1.00				1.00		
Low	0.091	0.430	0.162	0.745	0.671	0.078	0.472	0.674	<b>0.018</b>	<b>0.890</b>	<b>0.603</b>	<b>0.845</b>
Psychosocial resources												
Social integration												
High (ref)						1.00				1.00		
Low					0.061	1.102	1.003	1.924	0.453	1.732	0.962	1.673
Emotional support												
High (ref)						1.00				1.00		
Low					0.451	2.410	0.042	0.852	0.367	0.082	1.062	2.256
Perceived control												
High (ref)						1.00				1.00		
Low					0.432	0.783	1.062	2.738	0.753	1.286	0.963	1.962
Self-esteem												
High (ref)						1.00				1.00		
Low					<b>0.010</b>	<b>0.052</b>	<b>0.055</b>	<b>0.962</b>	<b>0.001</b>	<b>0.067</b>	<b>0.057</b>	<b>0.077</b>
Trust												
High (ref)						1.00				1.00		
Low					0.119	0.862	0.012	0.056	<b>0.027</b>	<b>0.045</b>	<b>0.034</b>	<b>0.073</b>
Health belief												
Perceived susceptibility												
High (ref)										1.00		
Low									0.615	1.660	1.231	2.926
Perceived severity												
High (ref)										1.00		
Low									<b>0.004</b>	<b>0.719</b>	<b>0.577</b>	<b>0.806</b>
Perceived benefits												
High (ref)										1.00		
Low									<b>0.041</b>	<b>0.660</b>	<b>0.231</b>	<b>0.926</b>
Perceived barriers												
High (ref)										1.00		
Low									<b>0.001</b>	<b>1.880</b>	<b>1.262</b>	<b>2.510</b>
Continued												
Model fitting information												
Percentage with correct classification	87%				89%				92%			

Variables	Model 1				Model 2				Model 3			
	Sig	Exp(B)	95% C.I. for EXP(B)		Sig	Exp(B)	95% C.I. for EXP(B)		Sig	Exp(B)	95% C.I. for EXP(B)	
			Lower	Upper			Lower	Upper			Lower	Upper
Omnibus tests of model coefficients (sig.)	58.062 (0.000)				77.831 (0.001)				95.042 (0.000)			
Hosmer and Lemeshow Chi-square test (sig.)	5.156 (0.653)				4.096 (0.753)				1.653 (0.821)			
-2 log likelihood	102.142				88.753				72.953			
Nagelkerke R square	0.502				0.676				0.691			

**Table 3.** Factors associated with health information seeking behavior. Significant values are in bold. \*Indicates  $p < 0.05$ .

more, and persons with senior high school or higher qualifications were significantly more likely to seek health information than their respective counterparts. Additionally, participants with low internet literacy, self-esteem, low trust in health information, low perceived severity of health condition and benefits of health information were significantly less likely to seek health information than their respective counterparts, while low perceived barriers to HIS significantly increased HISB. The study underscores that the identified socio-demographic characteristics, psychosocial variables, and HBM constructs not only influence HISB but also shape individual motivations toward health information-seeking motives (HISM). These underlying drivers—ranging from personal efficacy and digital engagement to perceived health risks—serve as critical lenses through which vulnerable populations approach health literacy and behavior. As such, they merit focused attention in the formulation of public health strategies and interventions aimed at enhancing HISB. A nuanced understanding and targeted response to these factors could facilitate more inclusive, responsive, and effective health communication frameworks that resonate with the lived experiences of at-risk individuals.

### Sociodemographic factors

The study examined how socio-demographic factors influence HISB among individuals at risk of statelessness, recognising that population-level disparities can shape access and motivation. The study revealed that sex, age, and educational attainment significantly impacted HISB. Specifically, females, individuals aged 66 and above, and those with at least a senior high school education were more inclined to actively seek health information. These findings underscore the importance of tailoring public health strategies to address demographic differences to promote equitable engagement with health resources across vulnerable groups.

The association between sex and HISB is an interesting finding, as females, rather than males, were more likely to seek health information. This may stem from several factors. First, females consume a lot of health services compared to males, hence the need to seek information on their health<sup>81</sup>. Past studies have reported females as more likely than males to seek diagnosis or health information on a healthy lifestyle from online sources<sup>82–86</sup>. It, however, could mean that, contrary to the findings of de Groot<sup>87</sup> and Ybarra and Suman<sup>88</sup>, who discovered that males are marginally more likely than females to use the internet and have a pleasant seeking experience for health-related information, the males in our study seldom use the internet to seek health-related information. Again, the reproductive and nurturing role conferred on women partly makes them more active than men in seeking personal health information<sup>89,90</sup>, as they frequently feel responsible for the health and well-being of their family members. Finally, the lesser inclination of men than women to visit a medical expert or seek professional treatment when they believe they need it, as reported by Broom<sup>91</sup>, could also explain the finding. The association between sex and HISB among people at risk of statelessness implies that interventions to promote HIS among the aforesaid population should assume a gendered approach, with much emphasis on men to lessen the inequality in HISB.

The association between ageing and HISB contradicts the finding of Nangsangna and Vroom<sup>91</sup>, who found no relationship between age with HISB. However, this supports a plethora of evidence on the association between age and HISB<sup>92–95</sup>. Contrary to the association between the older age cohort and HISB in our study, Maon, Hassan and Seman<sup>95</sup> revealed that young people were more likely to seek health information than older adults. The finding could be interpreted to mean the elderly consume a lot of health services due to the numerous health challenges they face. Hence, there is a higher predisposition to seek health information for these health problems. This is not, however, to suggest that ageing is synonymous with frailty and poor health, but a disposition to these conditions. Given this, elderly-friendly health-seeking interventions are in high demand to meet the high usage among people at risk of statelessness. These interventions, such as online pharmacies and clinical services, must consider the diversity of Ghana's population in terms of age, literacy, and language.

We found an association between the educational attainment of the respondents and HISB, supporting a large strand of scholarly evidence<sup>50,92,95</sup>. Using a diverse multi-lingual cohort, Khoong et al.<sup>96</sup> found that higher education is associated with increased odds of seeking health information<sup>96</sup>. Again, Nangsangna and Vroom<sup>92</sup> found an association between educational attainment and online HISB. Our finding also aligns with a wide array of studies that portray the high use of traditional websites to search for health information among highly educated people<sup>50,97</sup>. While many of these studies reported on online HISB, we postulate that the variation between that and overall HISB from both online and offline sources is insignificant. Again, a significant proportion of the respondents sought health information from online sources, which could explain the association between level of education and HISB. With higher education, the respondents could, on the one hand, understand the need for and importance of health information (hence seek such, to boost their well-being), or on the other hand, have

a high self-care predisposition and search online for health information. Either way, education could empower and lead to high self-care predisposition and action<sup>50,92,95</sup>. This implies that interventions aimed at promoting HISB among this cohort should have education-focused dimensions. These policies and interventions must promote online HIS through online pharmacy and telehealth initiatives, where trained and certified medical practitioners can provide accurate and up-to-date information that meets clients' demands. Furthermore, offline interventions should be strengthened through expansion and equipping the information desk divisions of health facilities to provide information to the public on a variety of health conditions and behaviors. Phone numbers of designated health professionals who can communicate in several local languages and the English language should be made available to the public for that purpose.

### Internet literacy

Internet literacy was significantly associated with HISB. Greater internet literacy empowers individuals who are better equipped to navigate the vast amount of health information available online and to make informed decisions about their health<sup>31–33,94</sup>. Internet literacy allows individuals to access a wide range of health information from various online sources such as reputable websites, health forums, and social media groups. This enables individuals to gather information about health conditions, symptoms, treatments, and preventive measures, which can empower them to make informed decisions about their health<sup>33,94</sup>. It also helps individuals understand health information more effectively. This includes being able to read and interpret medical terminology and understanding the potential risks and benefits of different treatments<sup>85,86</sup>. Further, individuals with higher internet literacy can evaluate the quality of health information available online and for informed decisions about their health. More so, internet literacy can facilitate better communication between patients and healthcare providers, by engaging in online communication with their healthcare providers, through patient portals or online consultations, where they may seek clarifications and ask questions<sup>93</sup>. This fosters a collaborative relationship between patients and healthcare providers, leading to improved health outcomes. However, the internet is replete with inaccurate and unreliable information, and individuals may struggle to discern trustworthy and misleading information, with consequences such as health anxiety, stress, misapplication of procedures, and inappropriate health behaviors. Developing internet literacy skills can help individuals make informed decisions and take appropriate actions to maintain their health.

### Psychosocial determinants

The study sought to understand and deconstruct the nature of the relationship between psychosocial influences and HISB among this vulnerable population. Five constructs were tested in this study: they are social integration, emotional support, perceived control, self-esteem, and trust. Of these, self-esteem and trust in health information were the two psychosocial factors that influenced HISB within our sample. Trust can significantly impact HISB, since individuals who have confidence in health information sources, such as healthcare providers, government agencies, or credible websites, are more likely to seek and use such services<sup>98</sup>. Conversely, individuals who lack trust or confidence in these sources may be less inclined to engage in HISB, leading to lower health literacy and poorer health outcomes. Again, confidence in the information itself is a means through which HISB is influenced by perceived trust. People who perceive health information to be accurate, reliable, and trustworthy are more likely to engage in HISB<sup>98</sup>. Trust in the healthcare system can influence HISB, where people seek and follow healthcare recommendations, out on their believe and confidence in it. Trust in health-related information provided by other social networks may also produce similar effects. Therefore, building health information trust, promoting health literacy, and providing clear and reliable health information can improve HISB and health outcomes among people at risk of statelessness.

Furthermore, self-esteem was associated with HISB, impacting an individual's self-efficacy and belief in their ability to achieve a goal. People with higher self-esteem may have greater self-efficacy when it comes to seeking and using health information, leading to increased HISB. Self-esteem may also impact an individual's motivation to engage in HISB as part of their overall health and wellness efforts compared with their counterparts<sup>99</sup>. They may be more likely to engage in proactive health behaviors, including seeking health information to help them make informed health decisions and take an active role in managing their health<sup>99</sup>. To that end, strategies to promote self-esteem, such as building confidence and self-worth, may help encourage HISB and improve overall health outcomes. Tailoring health information and interventions to individuals' knowledge, attitudes, beliefs, and self-efficacy can help promote active engagement in HISB and improve health outcomes overall.

### Health belief variables

The study also aimed to project the relationship between the constructs of HBM and HISB to better understand the motivational and perceptual drivers of information engagement among individuals at risk of statelessness. Identifying these connections was essential to inform targeted health interventions that resonate with the beliefs, attitudes, and barriers influencing this vulnerable population's health-seeking decisions. We found that the health belief variable, including perceived benefits, perceived severity, and perceived barriers, influences HISB in several ways. Research has shown that individuals with positive health beliefs are more likely to seek out health information to maintain their health or prevent illness<sup>99,100</sup>. They are also more likely to engage in healthy behaviors and seek medical care when necessary. Conversely, individuals with negative health beliefs may avoid seeking health information or delay seeking medical care, which can lead to negative health outcomes<sup>100–102</sup>. For example, people who believe that regular exercise is crucial for good health are more likely to seek information about different exercise programs, tips for staying active, and ways to overcome barriers to exercise.

Also, perceived benefits play a significant role in influencing HISB, wherein individuals with beliefs in the efficacy and benefits of acquiring health information, such as improved health outcomes, better disease management, or increased knowledge about preventive measures, have a higher likelihood of seeking health

information<sup>100–104</sup>. People at risk of statelessness who perceive improved health outcomes from seeking health information may do so to improve their health outcomes, such as managing a chronic condition, preventing diseases, or reducing symptoms. Our finding that perceived benefits predict HISB validates evidence from previous studies, where perceived usefulness had a positive influence on HISB<sup>94</sup>, where seeking health information can give individuals a sense of empowerment and control over their health<sup>103,104</sup>. For instance, a patient diagnosed with a chronic condition may seek information about self-management strategies to control their symptoms and improve their QoL. Furthermore, seeking health information can also increase an individual's knowledge about health-related topics, which can in turn help them make informed decisions about their health. As a result, health communicators and policymakers must develop targeted strategies to promote HISB, particularly through health promotion initiatives to improve health outcomes.

Furthermore, we found an association between perceived severity and HISB, with respondents who have low perceived severity less likely to seek health information, an alignment with past evidence on the subject<sup>101,104</sup>. We postulated that perceived severity influences HISB through pathways such as urgency, fear, information seeking, and preventive behavior. Individuals who perceive a health issue as severe may feel an urgency to seek health information immediately. For example, a person who experiences severe chest pain may seek information about heart attacks or other heart-related issues<sup>101,104</sup>. Also, perceived severity can elicit fear and motivate a person to seek health information to alleviate their fears and anxieties related to perceived severe health issues. Perceived severity can also motivate individuals to seek information about preventive measures, to gain a better understanding of a severe health issue<sup>101,104</sup>. Our finding reinforces the view that perceived severity plays a critical role in influencing an individual's HISB, for which health policymakers must develop targeted strategies to promote HISB and improve health outcomes.

Finally, we found that perceived barriers such as lack of access to health information or low health literacy hinder HISB among people at risk of statelessness. People who believe that accessing health information is difficult or that they lack the necessary skills to understand health information may be less likely to act<sup>100</sup>. These barriers significantly impact HISB in several ways. These pathways may include reduced motivation, limited access to information, limited understanding of health information, and limited trust in health information. Other pathways may include stigma, embarrassment, and the cost associated with HISB. They are sponges that soak up potential interactions that should ensue between the demanders and the suppliers of health information, and as such, health communicators and policymakers should consider perceived barriers when developing strategies to promote HISB. Providing accessible, clear, and trustworthy information and addressing perceived barriers can help promote HISB and improve health outcomes among people at risk of statelessness in Ghana.

### Strengths and limitations

Being the first study on HISB among people at risk of statelessness in Ghana, this paper has broadened our knowledge frontiers on the determinants of HISB and brought a largely forgotten group of marginalised people into the limelight of health literature<sup>59,105</sup>. This in part, strengthens the resolve to “leave no one behind” as enshrined in the health-related Sustainable Development Goals (SDGs), for which HISB policies and research, among other things, are imperative. Additionally, the identified association between socio-demographic factors, psychosocial influences, and HBM constructs shows that, by and large, health behavior is influenced by health beliefs, attitudes supporting competencies, and personal factors. For that reason, these factors must be leveraged towards achieving the universal health declarations contained in the SDGs and country-specific goals<sup>105</sup>. However, several limitations are worth considering. A major limitation was the lack of defined criteria for identifying individuals at risk of statelessness in Ghana, for which we relied on respondents' evidence, using possession of identification documents or citizenship cards for inclusion and exclusion<sup>106</sup>. This variation in criteria may affect comparability across studies, requiring a standardised definition of statelessness to improve consistency in future research. Furthermore, the purposive sampling technique introduced potential researcher bias due to the lack of randomness, affecting the generality of the sample to the population. Despite these weaknesses though, the study makes a significant contribution to the literature, with implications for policy, practice and intervention.

### Conclusion

Less than half of our participants sought health information in the last twelve months preceding the study. Our findings further revealed that socio-demographic factors, internet literacy, psychosocial and health belief variables are associated with HISB among people at risk of statelessness in Ghana. The findings suggest that these factors should be central to strategies and interventions aimed at promoting HISB among this vulnerable population. Such interventions should involve various strategies that aim to improve an individual's motivation, self-efficacy, and self-esteem through health literacy enhancement programs. People at risk of statelessness, despite their health vulnerabilities may have lower levels of health literacy due to language barriers, lack of education, or limited access to health information. As a result, seeking health information can increase their health literacy especially through accurate and reliable health information in a language and format they understand. Furthermore, there is a need to build self-efficacy by helping these vulnerable people set achievable goals and offering them positive feedback and supportive resources to overcome barriers to HIS. Supportive resources, such as online health information and community support programs, for instance, can limit some of the socio-cultural barriers to HIS through tailored health communication. Through these measures and interventions, people at risk of statelessness can be empowered to take control of their health and well-being.

## Data availability

The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

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### Author contributions

TQ contributed to the conception and design, acquisition and analysis of data, and manuscript drafting. AKM contributed to the conception and design, acquisition and analysis of data, and manuscript drafting. CP contributed to the study conception, design, and proofreading of the manuscript. All authors read and approved the manuscript.

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### Declarations

### Competing interests

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### Ethical approval and consent to participate

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### Consent for publication

Not applicable.

### Additional information

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