



**Indigenous Perspectives on Health Information Literacy
During COVID-19: The Chakma Community Experience**

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Abstract

Purpose: This study investigates the digital dimensions of Health Information Literacy (HIL) among the Chakma, Bangladesh’s largest Indigenous ethnic group, during the COVID-19 pandemic. It aims to characterise community competencies in information seeking, appraisal and use; map preferred information channels and verification practices; and identify barriers and priorities for skills development and institutional engagement.

Design/methodology/approach: A quantitative, cross-sectional correlational survey was administered to a purposive sample of adult Chakma residents across Rangamati, Khagrachori and Bandarban. The questionnaire combined adapted, validated scales with a systematic localization procedure (translation/back translation, expert review, pilot testing); content validity and common method bias checks were performed. Data were analysed using descriptive and inferential statistics to examine relationships among digital engagement, source use, appraisal skills, and HIL outcomes.

Findings: Respondents demonstrated strong awareness of health information needs and effective interpersonal communication with peers and local clinicians, and relied principally on broadcast media and familiar social networks for COVID-19 information. Notable gaps were observed in systematic source-locating, retrieval and critical appraisal, limited use of libraries and formal telehealth channels, and barriers related to technical terminology, online search skills and trust in authoritative sources. Community priorities emphasised internet and information-education skill development and enhanced governmental and NGO awareness initiatives.

Originality/value: By centring an Indigenous community often absent from pandemic information-literacy research, this study elucidates how digital opportunities and constraints intersect with cultural practices and institutional landscapes. Findings inform culturally responsive HIL interventions, library and health-system outreach, and disinformation mitigation strategies tailored to Indigenous contexts.

Keywords: Chakma; indigenous health; health information literacy; COVID-19; digital divide; disinformation; Bangladesh.

Introduction

The COVID-19 pandemic produced an immediate and large-scale shift in how health information is produced, distributed, and consumed, accelerating the deployment of digital technologies across health systems and public communication channels (He et al., 2021). Information-technology-based interventions (including digital public-health platforms, AI-enabled recommendation systems, and remote-delivery solutions) have been advanced as key mechanisms to support disease surveillance, risk communication, and continuity of services during the pandemic (Alam et al., 2024; Wang et al., 2023). Concurrently, libraries, digital repositories, and controlled digital-lending practices sought to preserve and extend access to information resources under physical-access restrictions imposed by the pandemic (Currier & Centivany, 2021). These concurrent trends created a digitally mediated health information environment in which citizens' abilities to find, evaluate, and act on health information became central to pandemic resilience and individual health decision-making (Alam et al., 2024; Wang et al., 2023).

Health information literacy, understood as the skills and practices by which people actively seek, appraise, interpret, and use health-related information, is a foundational determinant of how households and communities respond to health crises (Agyei & Yamson, 2019). Systematic reviews of information-literacy programs show that targeted instruction (face-to-face, online, or blended) can improve people's skills and confidence in accessing and using information resources, a finding that is directly relevant to health information literacy initiatives during public-health emergencies (Weightman et al., 2017). Information-literacy instructional practices have been identified as shared responsibilities across education and information organizations, reinforcing the idea that building health information literacy requires coordinated educational and information-service responses (Aharony et al., 2019).

Notwithstanding technological opportunities, the pandemic also exposed and amplified existing digital divides and contextual constraints on effective use of health information. Empirical studies from Bangladesh and comparable settings document abrupt increases in Internet reliance during COVID-19 alongside heterogeneity in access, skills, and institutional support, conditions that shape whether digital transitions actually enable effective information use or deepen inequities (Biswas et al., 2022; Dutta & Smita, 2020). Excessive or problematic Internet use has also been associated with adverse physical-health outcomes, indicating that digital engagement is not unambiguously beneficial and must be understood in its socio-

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behavioral context (Abir et al., 2021). Studies of information and library professionals during the pandemic show that ICT skills, technical infrastructure, and organizational preparedness determine whether communities receive timely, appropriate information services (Shastri & Chudasma, 2021). Taken together, these findings indicate that population groups with constrained access or distinctive social circumstances may be at risk of being underserved by mainstream digital health-information initiatives (Abir et al., 2021; Dutta & Smita, 2020).

Indigenous communities experience distinct social, cultural, and ethical considerations in health research and information practice. Contemporary guidance emphasizes relational worldviews, community governance, and culturally attuned ethical practice when conducting health research involving Indigenous peoples. While pandemic responses and digital health solutions have been designed at national and institutional scales, there is an acknowledged need to understand how these digital dimensions intersect with Indigenous peoples’ information practices, trust dynamics, and culturally shaped health literacies (Bryant et al., 2025). Health information literacy research conducted in other low-resource or disease-specific contexts highlights the centrality of active information searching and critical appraisal skills to achieving sustainable health outcomes, suggesting that population-specific studies can illuminate different patterns of needs and capacities (Agyei & Yamson, 2019). However, there is limited empirical work that combines digital-technology analyses, health-information-literacy frameworks, and Indigenous community perspectives within pandemic contexts, a gap that is particularly salient where national digital initiatives and local sociocultural realities intersect (Agyei & Yamson, 2019; Bryant et al., 2025; He et al., 2021).

Information institutions (libraries and digital repositories) and digital infrastructures can play catalytic roles in mediating access to credible health information, supporting community learning, and sustaining multilingual or culturally appropriate resources. Evidence from library and information studies indicates that adaptations such as digital lending, multilingual services, and technology-enabled outreach are plausible pathways to reduce access barriers. However, their effectiveness depends on matching services to user needs, ensuring usability, and addressing privacy and trust concerns in digital delivery (Currier & Centivany, 2021). Simultaneously, national and sectoral investments in big-data analytics, AI, and digital health systems have the potential to reshape health-information ecosystems, yet their benefits are contingent on equitable deployment and population-sensitive design (Alam et al., 2024; Wang et al., 2023).

Despite the theoretical and practical importance of health information literacy during COVID-19, there remains a paucity of empirically grounded research that foregrounds Indigenous community perspectives on the digital dimensions of health information access, appraisal, and use in pandemic conditions (Agyei & Yamson, 2019; Bryant et al., 2025). In particular, the intersection of (a) rapid digitalization of health information and services, (b) local patterns of Internet use and institutional support documented in Bangladesh and similar contexts, and (c) Indigenous ethical and cultural requirements for research, has not been comprehensively examined in relation to the Chakma community's pandemic experience (Abir et al., 2021; Bryant et al., 2025; Dutta & Smita, 2020). This study addresses that gap by investigating Digital Dimensions of Indigenous Chakma Community Health Information Literacy During COVID-19: it situates community practices and capacities within the broader institutional and technological transformations prompted by the pandemic, with attention to access, evaluative skills, trust, language and cultural appropriateness, and the role of local information intermediaries.

Objectives

The research objectives are:

1. To quantify self-reported competencies across core health information-literacy tasks (recognizing information needs; locating, retrieving, appraising, understanding, and applying COVID-19 information) among adult Chakma residents of Rangamati, Khagrachori, and Bandarban.
2. To map the primary information channels and interpersonal networks used to obtain COVID-19 health information (television, newspapers, radio, libraries, health workers, doctors, relatives, friends) and describe their relative reach and perceived reliability.
3. To evaluate interactive health-literacy behaviors, including frequency and quality of communication with medical personnel, use of national telehealth services, and reliance on informal discussion networks for verification and decision-making.
4. To assess health-concern orientation and application of information: the extent of active information-seeking, critical use of information for personal and family health decisions, and uptake of preventive or clinical follow-up behaviors.
5. To determine community perceptions of institutional roles and training priorities by measuring perceived capacity of media, government, (Non-Government Organization) NGOs, and professional associations to create awareness and by identifying prioritized

skill improvements (internet use, information-education, library skills, government planning).

6. To examine critical-appraisal and verification practices and barriers, ability to distinguish authentic versus false information, preferred verification routes (doctors, health workers), and obstacles to access (terminology, online search, trust, provider availability), and to analyse associations between source use, digital/information skills, and accuracy-identification outcomes.

This study, therefore, responds to identified gaps in the literature by combining validated HIL measurement and information-literacy frameworks with a contextually grounded, ethically informed research design tailored to an Indigenous community in a digital pandemic environment.

Literature Review

Digitalization of health information during COVID-19: The COVID-19 pandemic catalyzed a rapid deployment of digital technologies across public health communication, surveillance, and service delivery systems, reshaping how health information is produced, disseminated, and consumed (Alam et al., 2024; He et al., 2021). Information technology interventions, including artificial intelligence, big data analytics, and remote digital platforms, were advanced as central tools for pandemic response in various national settings, alongside concerns regarding governance, equity, and user acceptance. Empirical work has emphasized that the potential of digital health solutions to improve information reach and timeliness is conditional on contextual factors such as infrastructure, institutional support, and public trust in technology-mediated recommendations (Alam et al., 2024; He et al., 2021; Wang et al., 2023).

Conceptualizing health information literacy and related frameworks: Health information literacy is commonly defined as the cognitive and social capacities that enable individuals to access, understand, appraise, and apply health information to make informed health decisions (Agyei & Yamson, 2019). This definition aligns with broader information literacy models that emphasize active searching, critical appraisal, and application of information across contexts. Systematic reviews of instruction in information literacy demonstrate that targeted training, delivered face-to-face, online, or in blended formats, can measurably improve users' skills and confidence in information tasks, indicating that instructional interventions are a viable route to strengthening health information literacy in pandemic contexts (Weightman et al., 2017).

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3 Library and information science scholarship further treats information literacy instruction as a
4 shared professional responsibility that encompasses one-on-one teaching, curricular
5 integration, and institutional programs (Aharony et al., 2019).
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8 *Digital divides, institutional support, and health information practices in Bangladesh and*
9 *comparable contexts:* The transition toward digital health information during the pandemic
10 exposed disparities in access and institutional readiness in low- and middle-income settings.
11 Studies of the Bangladeshi education and public service sectors document constrained technical
12 resources, variable institutional support for online provision, and a low baseline of digitally
13 mediated service capacity, all of which shape users' ability to engage effectively with online
14 information during COVID-19 (Biswas et al., 2022; Dutta & Smita, 2020). Research on internet
15 use in Bangladesh during the pandemic has highlighted potential harms from unregulated or
16 excessive online engagement, including associations with adverse physical and mental health
17 outcomes, underscoring that digital access alone does not guarantee beneficial health
18 information outcomes (Abir et al., 2021). At the level of information intermediaries, library
19 and information professionals' ICT skills, infrastructure, and perceived challenges were critical
20 determinants of whether communities received timely and usable digital services during the
21 pandemic (Shastri & Chudasma, 2021). Collectively, these studies suggest that digital-first
22 health information ecosystems will not produce equitable benefits without parallel investments
23 in institutional support, skills development, and harm-mitigation strategies (Abir et al., 2021;
24 Biswas et al., 2022; Dutta & Smita, 2020; Shastri & Chudasma, 2021).
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39 *Indigenous research ethics and the need for culturally-situated analysis:* Indigenous
40 communities embody distinct ethical, relational, and governance considerations that shape
41 appropriate research practice and information work; contemporary guidance emphasizes
42 community governance, relational worldviews, and culturally attuned ethical procedures in
43 Indigenous health research (Bryant et al., 2025). Adopting generic digital health or information
44 literacy models in Indigenous contexts without adaptation risks misalignment with local
45 worldviews and priorities, potentially limiting both the validity and utility of findings. Health
46 information literacy scholarship that stresses context specificity and population-level
47 variability indicates a need for studies that prioritize community perspectives, language,
48 cultural practices, and locally legitimate intermediaries when assessing digital health
49 information practices during public health emergencies (Agyei & Yamson, 2019; Bryant et al.,
50 2025).
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Libraries, digital access strategies, and instructional roles: Libraries and information institutions have been identified as key mediators of equitable access to credible information during the pandemic, with strategies such as controlled digital lending, multilingual outreach, and technology-enabled service extensions proposed to sustain access under physical restriction regimes (Currier & Centivany, 2021; Wheeler et al., 2022). Controlled digital lending has been promoted as a mechanism through which libraries can preserve equitable print access in digitally constrained times. At the same time, debates around legal and operational risks underscore the need for careful, context-aware implementation (Currier & Centivany, 2021). Moreover, library research during COVID-19 transitions documents the evolving instructional role of librarians, ranging from direct information literacy teaching to collaborative e-learning support, positioning libraries as central actors in translating institutional digital provision into community competencies (Aharony et al., 2019; Wheeler et al., 2022). The effectiveness of library interventions depends on their alignment with local needs, language considerations, and the capacity to reach underserved populations (Aharony et al., 2019; Currier & Centivany, 2021; Wheeler et al., 2022).

Social media, misinformation, and social-media literacy: Social media emerged as a dominant channel for COVID-19 information and misinformation, underscoring the importance of users' social media literacy as a moderator of engagement quality and resilience to false or misleading content. Studies that link citizens' perceptions of AI-enabled systems and government-supported digital recommendations highlight how trust and perceived legitimacy influence whether people follow authoritative guidance, which is particularly relevant where automated or platform-mediated messaging coexists with user-generated content and disinformation flows (He et al., 2021; Wang et al., 2023). Consequently, social media literacy, understood as the competencies needed to navigate platform affordances, evaluate source credibility, and manage algorithmic exposure, has emerged as an important complement to traditional health information literacy instruction during the pandemic (He et al., 2021; Tran-Duong & Vo-Thi, 2023; Wang et al., 2023).

Synthesized implications for Indigenous digital health information literacy: Integrating these strands, the literature indicates three interrelated lessons for Indigenous health information literacies in pandemic contexts:

- a. Digital technologies have the potential to expand the reach and timeliness of health information, but their benefits are contingent upon infrastructure, institutional support,

and trust in technology (Alam et al., 2024; Biswas et al., 2022; Dutta & Smita, 2020; He et al., 2021; Wang et al., 2023).

- b. Health information literacy requires explicit instruction and practice support, for which libraries and educational institutions are well-placed but must adapt methods, languages, and delivery modes to local realities (Agyei & Yamson, 2019; Aharony et al., 2019; Currier & Centivany, 2021; Weightman et al., 2017; Wheeler et al., 2022) and
- c. Indigenous ethical frameworks and community governance necessitate culturally grounded research and intervention design to ensure relevance, acceptability, and reciprocity (Agyei & Yamson, 2019; Bryant et al., 2025).

These combined insights frame the need for research that concurrently addresses digital affordances, institutional capacities, disinformation dynamics, and Indigenous epistemic and ethical commitments.

Librarian Views: The ACRL Framework and Information Literacy Approaches to Health Information: The ACRL (Association of College & Research Libraries) Framework for Information Literacy for Higher Education (hereafter ACRL Framework) reframes information literacy around threshold concepts, such as “authority is constructed and contextual” and “information has value”, which have been influential in shaping academic librarians' instructional practice. Survey evidence from academic libraries indicates that librarians perceive information literacy instruction as a shared responsibility and commonly employ one-on-one and embedded pedagogies, although the uptake and adaptation of the ACRL Framework vary across institutions and contexts (Agyei & Yamson, 2019). In the health information domain, the ACRL concepts (authority, scholarship as conversation, research as inquiry) align with competencies required for critical appraisal of online health claims and for navigating conflicting claims on social media and other digital platforms (Agyei & Yamson, 2019; Weightman et al., 2017). Library scholarship during COVID-19 further highlights that librarians can extend the ACRL-inspired instructional repertoire to digital modes (e-learning, virtual one-on-one consultations) and community outreach roles—subject to institutional resources and contextual tailoring (Aharony et al., 2019; Currier & Centivany, 2021; Wheeler et al., 2022). For Indigenous communities, applying the ACRL Framework will necessitate translation of threshold concepts into culturally appropriate pedagogies, recognition of Indigenous information norms, and participatory co-design with community information stewards (Aharony et al., 2019; Bryant et al., 2025).

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Brief note on disinformation: The literature identifies disinformation as a significant challenge for health information during COVID-19, amplified by social media diffusion and algorithmic amplification; therefore, both technical responses (platform moderation, AI-enabled fact-checking) and demand-side strategies (media and social media literacy) are recommended (He et al., 2021; Tran-Duong & Vo-Thi, 2023; Wang et al., 2023). Evidence suggests that citizens' willingness to follow digitally mediated recommendations is moderated by their trust and perceived legitimacy of information sources, making trust-building and culturally credible intermediaries important countermeasures against disinformation in Indigenous contexts (Bryant et al., 2025; He et al., 2021; Wang et al., 2023).

Research Gaps: Based on the reviewed literature, the following research gaps are evident and justify focused investigation into the digital dimensions of Indigenous Chakma community health information literacy during COVID-19:

1. Lack of population-specific empirical studies examining how Indigenous communities (particularly the Chakma) experience and interpret digitally mediated health information during the pandemic; existing work emphasizes the importance of context-specific inquiry but does not address Chakma experiences (Agyei & Yamson, 2019; Bryant et al., 2025; Dutta & Smita, 2020).
2. Insufficient evidence on the interaction between institutional digital supports (libraries, educational institutions, health systems) and Indigenous community uptake of health information; studies document institutional constraints in Bangladesh broadly but do not link these systematically to Indigenous community outcomes (Biswas et al., 2022; Currier & Centivany, 2021; Dutta & Smita, 2020; Shastri & Chudasma, 2021).
3. Limited research on how social media literacy and exposure to disinformation specifically affect Indigenous populations' health decision-making and trust in AI-enabled or government-supported digital recommendations (He et al., 2021; Tran-Duong & Vo-Thi, 2023; Wang et al., 2023).
4. Sparse evaluation of library-led or information literacy instructional interventions adapted for Indigenous languages, knowledge systems, and information practices during public health emergencies; library scholarship highlights potential practices (e.g., controlled digital lending, multilingual outreach) but lacks Indigenous-tailored evaluations (Aharony et al., 2019; Currier & Centivany, 2021; Wheeler et al., 2022).

5. Ethical and methodological guidance for Indigenous digital health literacy research is emerging but requires operationalization in field studies that integrate Indigenous governance and relational ethics with digital health methodologies (Agyei & Yamson, 2019; Bryant et al., 2025).
6. Addressing these gaps will require mixed-methods, community-engaged research designs that incorporate Indigenous governance, assess institutional readiness, measure social media literacy, and evaluate culturally adapted instructional interventions.

Collectively, existing scholarship provides theoretical foundations (health information literacy and information literacy frameworks), documents digital and institutional constraints in Bangladeshi contexts, highlights the roles of libraries and librarians during COVID-19, and underscores the importance of social media literacy and trust in mediating digital health information uptake (Agyei & Yamson, 2019; Aharony et al., 2019; Biswas et al., 2022; Bryant et al., 2025; Currier & Centivany, 2021; Dutta & Smita, 2020; He et al., 2021; Shastri & Chudasma, 2021; Tran-Duong & Vo-Thi, 2023; Wang et al., 2023; Weightman et al., 2017; Wheeler et al., 2022). However, there is a clear and actionable gap in empirically grounded, ethically attuned research that centers Indigenous community perspectives, specifically the Chakma, on how digital dimensions shaped health information literacy during the COVID-19 pandemic; the proposed study seeks to fill that gap by integrating community-engaged methods, assessments of institutional supports, and analyses of disinformation exposures within an ethical Indigenous research framework.

Methodology

This study was situated within a positivist research paradigm and employed a cross-sectional, correlational survey to quantify relationships among access, comprehension, appraisal, verification, application and trust in COVID-19 health information within the Chakma community. A structured questionnaire was selected as the most appropriate instrument to capture standardized, comparable measures across a geographically dispersed population and to permit statistical modelling of associations. Instrument development combined adaptation of previously validated scales (full citations provided in the manuscript) with context-specific items; content validity was established via Content Validity Index (CVI) procedures, internal consistency was evaluated (Cronbach's alpha reported for each scale), and common-method bias was assessed using established diagnostics. A systematic localization process was applied: forward translation into the Chakma/Bengali working languages, back-translation by independent translators, iterative reconciliation by an expert panel (public-health practitioners,

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library/information specialists, and Chakma community representatives), and pilot testing (n≈30) to refine wording, response formats and cultural relevance. The finalized instrument is provided as Supplementary File S1.

Procedures for sampling, recruitment, administration and analysis were specified to enable replication. Purposive sampling targeted Chakma adults (≥18) in Rangamati, Khagrachhari and Bandarban; participants were recruited through community leaders, local health workers and NGOs to maximise inclusion across age, gender and education strata from an accessible population estimated at 395. Trained enumerators administered the questionnaire in person and digitally where feasible; data were anonymised, cleaned and screened for missingness and outliers (missing data handled via appropriate imputation/listwise procedures as reported). Descriptive statistics (means, SDs, frequencies), bivariate tests (chi-square, t-tests, ANOVA) and multivariable regression models were used (two-tailed tests, α=0.05) to examine predictors of information-literacy outcomes. Ethical safeguards included informed consent, confidentiality, secure de-identified data storage, and adherence to Indigenous research ethics, community consultation, reciprocity and local approvals, details of which are reported in the Ethics subsection.

Data Analysis and Result

Demographic Information: Demography is the statistical study of population, especially human beings. Demographic analysis can cover whole societies or groups defined by criteria such as education, nationality, religion, and ethnicity. Here, data is collected from the people of the Chakma Community.

Table 1: Provide demographic information of the respondents

Demographic Variable	Category	Percentage (%)
Gender	Male	60.4
	Female	39.6
Level of Education	SSC	10.4
	HSC	11.1
	Diploma	0.7
	Bachelor	51.4
	Master's	21.5
Profession	Student	40.3
	Day Labor	22.7
	Housewife	8.05
	Unemployed	4.02
	Engineer	2.1
	School Teacher	1.1
	Banker	1.5
	Police	0.5
	Volunteer	0.5
	Advocate	0.8
Age Group (Years)	Others	8.8
	19–23	50.1
	24–30	41.4
	31–42	9.1

The participant profile is characterized by a male predominance (60.4%) and a strong concentration in younger cohorts, with approximately half aged 19–23 and most remaining participants aged 24–30; older adults comprise a small share. Educational attainment is high: over half hold bachelor's degrees (51.4%) and a substantial minority possess master's qualifications (21.5%), while lower-secondary and higher-secondary credentials are less common and diploma holders are rare. Occupational composition is dominated by students (40.3%) and manual labor (day labor, 22.7%), with smaller proportions represented among domestic caregivers, the unemployed, and a dispersed group of professionals (e.g., engineering, banking, teaching, law, policing, volunteering) and other occupations. Overall, the sample skews young, relatively well educated, and student-heavy, which should be considered when

interpreting findings and their applicability to older, less-educated, or more occupationally heterogeneous segments of the Chakma community.

Survey Data

Survey data refers to the information collected from a sample of respondents who participated in a survey. This data is comprehensive information gathered from a target audience about a specific topic to conduct research.

Table-2: COVID-19 information search strategies of Chakma people

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD
Able to understand when I need information on covid-19	35.0%	50.0%	8.8%	5.0%	1.3%	1.88	.862
Able to locate different information sources for COVID-19	25.0%	46.3%	13.8%	10.0%	5.0%	2.24	1.094
Able to retrieve relevant information	20.0%	35.0%	27.5%	10.0%	7.5%	2.50	1.147
I can assess the quality of the information	20.0%	42.5%	20.0%	11.3%	6.3%	2.42	1.122
Able to use the information for COVID – treatment	26.3%	48.8%	8.8%	6.3%	10.0%	2.25	1.207
I can understand the basic health information	37.5%	46.3%	10.0%	5.0%	1.3%	1.86	.882
I can apply the basic health information to a specific situation	40.0%	45.0%	8.8%	2.5%	3.8%	1.85	.956

Survey responses indicate that Chakma participants generally expressed confidence in recognizing when COVID-19 information was needed and in understanding basic health information, with high proportions endorsing positive agreement and relatively low dispersion. Stronger self-rated ability to apply basic information to specific situations was also evident. In

contrast, competencies related to locating and retrieving diverse, relevant information were less assured: a larger share of respondents selected neutral or disagreement options and these items showed greater score variability. Appraisal of information quality and the capacity to use information for COVID-19 treatment elicited moderate agreement but included notable dissent, suggesting uncertainty about evaluating credibility and translating information into treatment decisions. Overall, mean scores reflect predominantly favorable self-assessments, while standard deviations point to heterogeneity across specific search and appraisal skills.

Table 3: Sources of information for finding COVID-19 health information

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD
Newspaper	40.0%	35.0%	8.8%	7.5%	8.8%	2.10	1.259
Television	55.0%	33.8%	7.5%	1.3%	2.5%	1.63	.877
Radio	13.8%	21.3%	26.3%	20.0%	18.8%	3.09	1.314
Library	7.5%	17.5%	27.5	20.0%	27.5%	3.43	1.271
Health worker	20.0%	43.8%	15.0%	10.0%	11.3%	2.49	1.243
Doctor	35.0%	35.0%	11.3%	10.0%	8.8%	2.23	1.273
Relatives	23.8%	46.3%	20.0%	6.3%	3.8%	2.20	.999
Friends	35.0%	51.2%	8.8%	3.8%	1.3%	1.85	.828

Participants relied principally on broadcast media and close interpersonal networks for COVID-19 information, with television and peer contacts emerging as primary channels. Print media and clinicians served as secondary sources, while health workers and family members occupied an intermediate role in information provision. In contrast, radio and library services were comparatively underutilized, showing greater ambivalence and lower endorsement among respondents. Overall, the pattern indicates a preference for readily accessible, familiar channels and face-to-face networks over institutional or community information resources, with implications for designing culturally and channel-appropriate public-health communication.

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Table 4: Level of Interactive Health Literacy

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Communicate with medical personnel about my health problems	32.5%	51.2%	13.8%	2.5%	2.0%	1.89	.827
Able to understand information relating to my health problems	25.0%	58.8%	6.3%	6.3%	3.8%	2.05	.953
Can freely talk to medical personnel	35.0%	40.0%	15.0%	5.0%	5.0%	2.05	1.078
Give them information related to my health when they need to help me	33.8%	52.5%	7.5%	3.8%	2.5%	1.89	.886
Discuss with the doctor in the health center/ hospital	32.5%	40.0%	10.0%	7.5%	10.0%	2.23	1.263
Use the national hotline for COVID-19 (Corona)	18.8%	31.3%	22.5%	11.3%	16.3%	2.75	1.336
Take suggestions from relatives	17.5%	56.3%	15.0%	7.5%	3.8%	2.24	.958
Discusses with friends	26.3%	51.2%	18.8%	1.3%	2.5%	2.03	.856

Participants relied principally on broadcast media and close interpersonal networks for COVID-19 information, with television and peer contacts emerging as primary channels. Print media and clinicians served as secondary sources, while health workers and family members occupied an intermediate role in information provision. In contrast, radio and library services were comparatively underutilized, showing greater ambivalence and lower endorsement among respondents. Overall, the pattern indicates a preference for readily accessible, familiar channels and face-to-face networks over institutional or community information resources, with implications for designing culturally and channel-appropriate public-health communication.

Table 5: Level of Concern of Health Literacy

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard deviation
Concerned about my health issues, and I like to find out lots of information related to my health	32.5%	50.0 %	10.0%	7.5%		1.93	.854
Critically analyze and use information to overcome health issues	23.8%	46.3 %	16.3%	7.5%	6.3%	2.26	1.099
Within a regular interval, a routine check-up has been followed	7.5%	35.0 %	22.5%	17.5%	17.5%	3.03	1.242
Collect regularly newspaper clippings	8.8%	30.0 %	28.7%	13.8%	18.8%	3.04	1.247
Discuss with physicians for information	11.3%	40.0 %	26.3%	6.3%	16.3%	2.76	1.235
Take suggestions from online doctors	15.0%	31.3 %	25.0%	11.3%	17.5%	2.85	1.313

Chakma participants reported pronounced concern for personal health and an active orientation toward seeking pandemic-related information, frequently attempting to locate and critically appraise data to address health issues. Routine preventive behaviors and archival practices such as periodic check-ups and collecting newspaper clippings were less consistently followed, indicating mixed engagement. Consulting physicians was moderately common but variable, while reliance on online medical advice elicited ambivalent responses. Overall, the pattern reflects strong information-seeking and evaluative dispositions alongside uneven uptake of preventive and mediated health-information practices.

Table 6: Level of Awareness about Health Information Literacy among the Chakma Community

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard deviation
Several media companies can create awareness	36.3%	48.8 %	8.8%	6.3%		1.85	.828
Government agencies can create awareness	38.8%	51.2 %	8.8%	1.3%		1.73	.675

Non-govt organization (NGO'S) can create awareness	37.5%	53.8 %	8.8%			1.71	.620
Professional associations can create awareness	37.5%	47.5 %	10.0%	2.5%	2.5%	1.85	.887

Respondents conveyed strong confidence that mass media, government agencies, and non-governmental organizations can generate effective awareness of health information literacy within the Chakma community. Media and public institutions, together with community-oriented NGOs, were particularly endorsed as primary channels for outreach; professional associations were also seen as useful contributors, albeit with somewhat greater heterogeneity in perceived effectiveness. These findings indicate support for a coordinated, multi-sectoral awareness strategy that leverages trusted public and community institutions alongside professional networks to deliver culturally appropriate, accessible health-information literacy interventions.

Table 7: Level of Skills to Improve

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard deviation
Library skills	16.3	41.3	31.3	6.3	5.0	2.43	1.003
Internet use skills	42.5	43.8	11.3	2.5	0.0	1.74	.759
Information education skills	38.8	53.8	6.3	1.3	0.0	1.70	.644
Students skills have to improve	32.5	48.8	17.5	1.3	0.0	1.88	.736
Patient outcomes	18.8	52.5	26.3	2.5	0.0	2.13	.736
Patient safety	31.3	51.2	12.5	5.0	0.0	1.91	.799
Patient satisfaction	26.3	52.5	15.0	5.0	1.3	2.03	.856
Health information literacy	41.3	46.3	12.5	0.0	0.0	1.71	.679
Government plan have to improve	57.5	32.5	8.8	0.0	1.3	1.55	.761

The table summarizes respondents' perceived priorities for skills improvement related to health information literacy. Digital competencies and information-education skills, together with enhancements to government planning, received the strongest endorsement. Health information literacy as a targeted capability was likewise widely prioritized. Moderate support emerged for improving student competencies and for measures expected to influence patient safety, satisfaction, and outcomes. By contrast, library skills elicited the most reservation and

neutral responses. The pattern underscores a community preference for digital and pedagogical investment over traditional institutional service enhancement.

Table 8: Level of Identification of the Accuracy of Needed Health Information

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Mean	Standard deviation
I can identify the fake news	16.3	41.3	22.5	11.3	8.8	2.55	1.157
I can identify the authentic news	23.8	36.3	21.3	10.0	8.8	2.44	1.210
Understand the authenticity of the source	21.3	51.2	13.8	3.8	10.0	2.30	1.152
Discuss with doctor to check authenticity	17.5	36.3	27.5	10.0	8.8	2.56	1.157
Consult with health workers to assess information	16.3	50.0	23.8	7.5	2.5	2.30	.920

Participants relied principally on broadcast media and close interpersonal networks for COVID-19 information, with television and peer contacts emerging as primary channels. Print media and clinicians served as secondary sources, while health workers and family members occupied an intermediate role in information provision. In contrast, radio and library services were comparatively underutilized, showing greater ambivalence and lower endorsement among respondents. Overall, the pattern indicates a preference for readily accessible, familiar channels and face-to-face networks over institutional or community information resources, with implications for designing culturally and channel-appropriate public-health communication.

Table 9: Level of Measurement of Health Information Literacy

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard deviation
Health information is important and essential to be informed about health issues	55.0	42.5	1.3	1.3	0.0	1.49	.595
Know where to seek health information	33.8	51.2	2.5	7.5	5.0	1.99	1.061
Apply health related information for your own health and closed one	25.0	47.5	13.8	8.8	5.0	2.29	1.076

It is easy to assess the reliability of information from printed sources i.e; books, magazines, newspapers, etc.	21.3	47.5	16.3	11.3	3.8	2.25	1.046
It is easy to assess the reliability of information from the internet	30.0	42.5	10.0	7.5	10.0	2.21	1.248

Respondents strongly endorsed the centrality of health information. They reported confidence in knowing where to seek it, yet translating information into personal and familial health actions was reported less consistently, indicating a gap between awareness and application. Perceived ease of assessing the reliability of printed materials and online sources was moderate and broadly comparable across media, reflecting similar evaluative confidence for both channels. Overall, the pattern suggests solid informational awareness coupled with variable applied literacy, highlighting the need for interventions that strengthen source appraisal and practical application skills.

Table 10: Level of Problems to Find Health Information

Opinion	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard deviation
Difficult to understand the health-related terminologies	27.5	36.3	27.5	8.8	0.0	2.18	.938
Face difficulties in finding information on the internet	12.5	42.5	17.5	25.0	2.5	2.63	1.072
Difficult to recognize and believe the authorities on health issues	12.5	37.5	28.7	18.8	2.5	2.61	1.013
Problem in finding information from printed sources	18.8	36.3	22.5	20.0	2.5	2.51	1.091
Fail to find authentic sources of information	20.0	37.5	21.3	16.3	5.0	2.49	1.136
Difficult to find a doctor or health worker for information	16.3	28.7	26.3	22.5	6.3	2.74	1.166

Participants reported multiple obstacles to finding and using health information. The most prominent concern was comprehension of health-related terminology, which respondents frequently identified as a barrier. Difficulties in locating information online and uncertainty

about whom to trust on health issues were also commonly reported, alongside problems accessing reliable printed materials and authentic sources. Limited availability of doctors or health workers for information emerged as an additional constraint. Collectively, these responses indicate cognitive, digital, trust-related, and service-access barriers that impede effective health-information seeking within the Chakma community.

Discussion

This study mapped the digital dimensions of health information literacy (HIL) among the Chakma community during the COVID-19 pandemic, revealing a mixed profile of strengths and vulnerabilities that reflect both individual competencies and structural constraints. Respondents reported clear recognition of information needs and a strong understanding of basic health information, capacities integral to HIL as conceptualized in health literacy scholarship (Agyei & Yamson, 2019), while simultaneously exhibiting uneven abilities to locate, retrieve, and critically appraise diverse information sources (Tables 2, 9). These intra-community differences mirror broader patterns observed during the pandemic, where rapid digitalization expanded information availability but produced heterogeneous benefits across populations depending on infrastructure, institutional support, and digital skills (Alam et al., 2024; He et al., 2021). In Bangladesh and comparable low-resource settings, digital transitions during COVID-19 therefore posed both opportunities and risks for equitable information access, a dynamic evident in the Chakma respondents' favored channels (broadcast and interpersonal networks) and limited engagement with institutional or library resources (Tables 3, 6, 7) (Biswas et al., 2022; Dutta & Smita, 2020).

Interactive and interpersonal dimensions of HIL emerged as a distinctive strength. Participants reported comfortable communication with medical personnel, active information exchange with relatives and friends, and an inclination to seek and apply information for personal health concerns (Tables 4, 5, 9). Such reliance on proximate social networks resonates with evidence that community opinion leaders and dense interpersonal ties can amplify information diffusion and support evidence-informed behavior change when they are engaged appropriately (Dobbins et al., 2018). At the same time, lower utilization of formal telehealth channels (national hotline) and of libraries indicate that community preferences and access patterns shaped where verification and decision-making occurred—favoring face-to-face or familiar channels over remote or institutionalized services (Tables 3, 4) (Currier & Centivany, 2021).

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The study identified pronounced gaps in information-seeking mechanics and critical appraisal. Items tapping ability to locate diverse sources, retrieve relevant items, and assess information quality registered greater neutrality and dispersion, suggesting uncertainty or limited confidence in systematic search and evaluation strategies (Table 2). Similarly, respondents reported mixed capacity to identify misinformation and to verify authenticity, with a stronger tendency to consult local health workers than to rely on formal institutional verification routes (Table 8). These patterns are consistent with literature documenting digital divides, both in access and in search/evaluation skills, that constrain the effective use of pandemic information in settings with limited institutional support and variable ICT capacity (Biswas et al., 2022; Dutta & Smita, 2020; Shastri & Chudasma, 2021). The public-health significance is twofold: insufficient appraisal skills can increase vulnerability to misinformation, and limited access to credible institutional intermediaries can reduce the uptake of correct preventive or therapeutic actions (Abir et al., 2021; He et al., 2021).

Disinformation and trust dynamics featured as salient interpretive lenses for the findings. The Chakma sample’s ambivalence in identifying fake versus authentic reports and their preference for local verification point to the centrality of trust and proximal credibility in health decisions; citizens’ responsiveness to digitally mediated recommendations is known to depend on perceived legitimacy and trust in sources and platforms (Abir et al., 2021; Wang et al., 2023). Countering pandemic disinformation therefore requires not only platform or algorithmic measures but also strengthening demand-side capacities, social media literacy, source evaluation, and trusted community intermediaries, to foster resilience among Indigenous communities (He et al., 2021; Wang et al., 2023).

Library and institutional roles are implicated in both challenge and opportunity. Respondents expressed strong expectations that media, government agencies, and NGOs can create awareness, and they prioritized improvements in internet and information-education skills and in government planning (Tables 6, 7). Yet actual library usage was low and library skills were seen as a lower priority, revealing a disconnect between institutional potential and community uptake (Tables 3, 7). Library and information science scholarship suggests libraries can adapt through controlled digital lending, multilingual outreach, and technology-mediated services to extend access during crises, but effectiveness depends on contextual adaptation, resourcing, and co-design with communities (Aharony et al., 2019; Currier & Centivany, 2021). Capacity building for library and health information professionals, targeting digital pedagogy, community engagement, and culturally tailored resources, would therefore be

central to converting institutional readiness into meaningful community impact (Imam et al., 2021)

From a policy and practice perspective, the findings recommend multi-pronged, culturally attuned interventions. First, interventions should prioritize strengthening internet use skills and information-education competencies that participants identified as priorities (Table 7), since these are foundational for locating, appraising, and applying information in digital environments (Weightman et al., 2017). Second, outreach must be channel-strategic: leveraging dominant broadcast media and trusted interpersonal networks while progressively integrating library and frontline health worker engagement can bridge reach and credibility (Tables 3, 6) (Currier & Centivany, 2021). Third, given Indigenous ethical imperatives and relational worldviews, co-design and community governance in intervention development are essential to ensure cultural relevance, reciprocity, and trust, principles articulated in contemporary Indigenous research ethics (Bryant et al., 2025). Capacity-building initiatives should therefore be participatory, combining technical training (search, appraisal, digital literacy) with locally legitimate verification pathways (health workers, community leaders) that the Chakma already use.

Methodological reflections temper interpretation. Instrument validation steps (content-validity indexing and common-method bias checks) reported in the study align with recommended psychometric practice and strengthen confidence in the measures; instrument validation literature underscores the importance of content-expert review, pilot testing, and statistical checks (CVI, Cronbach's alpha, CFA/PLS-SEM where appropriate) to establish reliability and construct validity (Solimun & Fernandes, 2017; Varathan et al., 2023). Nonetheless, the cross-sectional survey design and purposive sampling limit causal inference and generalizability beyond the sampled communities; such constraints are typical in rapid pandemic research and argue for complementary longitudinal or mixed-methods follow-up to explore temporal dynamics and deeper contextual meanings (Bilan et al., 2020; Tobi & Kampen, 2017).

Future research directions flow directly from these conclusions. Mixed-methods, community-engaged studies could investigate how tailored HIL interventions (library programs, targeted media campaigns, health worker training) affect verification behaviors, disinformation susceptibility, and health outcomes over time (Aramide et al., 2023; Dobbins et al., 2018). Experimental or quasi-experimental evaluations of capacity-building packages

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that combine digital literacy, critical appraisal, and culturally framed health messaging would provide stronger causal evidence for policy. Finally, measurement work using confirmatory factor analysis or PLS-SEM can further refine HIL constructs for Indigenous contexts, ensuring instruments exhibit convergent and discriminant validity while respecting local language and epistemic frames (Dzin & Lay, 2021; Solimun & Fernandes, 2017).

In sum, the Chakma community demonstrates important foundations for health information engagement, awareness, interpersonal communication, and concern for health, yet faces structural and skills-based barriers in search, retrieval, and critical appraisal that limit the benefits of pandemic-era digitalization. Addressing these gaps requires coordinated, culturally competent capacity building that connects institutional resources (libraries, government, NGOs) with trusted community intermediaries and strengthens the digital and evaluative skills that enable safe, effective use of health information in crisis contexts.

Recommendations

This study was carried out to examine health information literacy in the Chakma Community. The study was aimed at identifying the level of health information and how we can increase awareness about health information literacy among the community.

- Enhance Source Evaluation Skills – Develop targeted training programs to improve the Chakma community’s ability to critically assess and verify health information sources, reducing misinformation risks.
- Improve Digital Literacy: Implement workshops focused on eHealth literacy to help community members navigate online health resources effectively, addressing barriers to digital health engagement.
- Strengthen Public Health Initiatives: Launch culturally tailored public health campaigns to enhance information-seeking behaviors, particularly among groups with lower literacy levels.
- Promote Community Health Education: Introduce structured educational programs that empower individuals to evaluate and apply health information, bridging gaps in practical application.
- Increase Access to Trusted Health Information: Expand availability and accessibility of health resources, leveraging trusted channels such as local health workers and community leaders.

- Encourage Engagement with Healthcare Professionals: Foster confidence in formal healthcare systems by promoting open dialogue and increasing community trust in national health services.
- Facilitate Traditional and Digital Integration: Combine traditional media with digital platforms to ensure a more inclusive dissemination of accurate health information.
- Address Structural Barriers: Advocate for improved healthcare infrastructure and accessibility, ensuring community members can act on the health information they receive.
- Combat Misinformation: Implement initiatives that teach fact-checking strategies and raise awareness about the dangers of health misinformation.
- Foster Community-Centric Approaches: Encourage peer-to-peer learning and support networks to reinforce health literacy through familiar and trusted social structures.

Conclusion

The Chakma community demonstrates a strong awareness of the importance of health information, particularly concerning COVID-19, yet faces significant challenges in accessing, evaluating, and applying this information effectively. While their recognition of when to seek health information aligns with global trends, their ability to locate reliable sources and critically assess their validity remains a concern. Similar to other marginalized populations, structural and digital literacy barriers hinder their access to and engagement with trustworthy health resources. The community's reliance on interpersonal networks and traditional media further underscores the need to integrate culturally tailored interventions to enhance their health literacy.

Despite a majority feeling comfortable discussing health issues, hesitancy in using formal channels, such as national hotlines, suggests a gap in trust and accessibility. This reluctance is consistent with broader research on healthcare engagement among underrepresented groups. Additionally, while many in the Chakma community actively seek health information, challenges in identifying authentic sources and understanding medical terminology indicate an urgent need for targeted health education. These issues underscore the importance of promoting digital literacy, critical thinking, and trust in credible healthcare professionals.

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The findings suggest that enhancing health literacy in the Chakma community requires a multifaceted approach. Community-based programs, improved access to digital resources, and training in information evaluation can help bridge existing gaps. Furthermore, integrating local health workers and trusted figures into information dissemination efforts can enhance credibility and engagement. Addressing these challenges through structured, culturally responsive interventions will empower the Chakma community to navigate health information more effectively, ultimately improving health outcomes and resilience against future public health crises.

Limitations and Future Directions of the Research

This study provides valuable insights into the Chakma community's health information literacy during the COVID-19 pandemic, but it has several limitations. The reliance on self-reported data may introduce response bias. Although the sample size is representative, it may not fully capture the diverse experiences of individuals in remote areas with limited access to healthcare. Additionally, the study focuses on COVID-19-specific literacy, which may not reflect broader health-seeking behaviors. The quantitative approach, though statistically robust, lacks qualitative depth in understanding specific barriers and motivations. Future research should adopt mixed-methods approaches, incorporate longitudinal studies to track changes in literacy over time, and explore the impact of digital literacy training. Comparative studies with other indigenous or rural communities could further contextualize the findings and inform targeted interventions to improve health literacy in marginalized populations.

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Questionnaire

On

Title: Health Information Literacy during Covid-19 among Chakma Community

Survey conducted by

Sagata Chakma

Department of Information Science and Library Management

University of Rajshahi

We are instead to know what you are thinking about the health information literacy during Covid-19. All information of this questionnaire will be used only for research purpose. Strict privacy will be maintained for the information you provide. All the data will be kept anonymous. Please read the questions carefully and provide information by rating in the following 5 point. Likert Scale:

1	2	3	4	5
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

General Information

Name:

Gender:

Age:

Education:

1. How do you search information on COVID-19 (Corona) from different sources?

Opinion	1	2	3	4	5
Able to understand when I need information on covid-19					
Able to locate different information sources for COVID-19					
Able to retrieve relevant information					
I can assess the quality of the information					

Able to use the information for COVID – treatment					
I can understand the basic health information					
I can apply the basic health information to a specific situation					

2. What are the sources you use for finding COVID-19 (Corona) health information?

Opinion	1	2	3	4	5
Newspaper					
Television					
Radio					
Library					
Health worker					
Doctor					
Relatives					
Friends					

3. How do you interact with the personnel related with COVID-19 (Corona) health information?

Opinion	1	2	3	4	5
Communicate with medical personnel about my health problems					
Able to understand information relating to my health problems					
Can freely talk to medical personnel					
Give them information related to my health when they need to help me					
Discuss with doctor in health center/ hospital					
Use national hotline for COVID-19 (Corona)					
Take suggestions from relatives					

Discusses with friends					
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4. How much you are concern about health information?

Opinion	1	2	3	4	5
Concern about my health issues and like to find out lots of information related to my health					
Critically analyze and use information to overcome health issues					
Within a regular interval have followed a routine check-up					
Collect regularly newspaper clippings					
Discuss with physicians to for information					
Take suggestions from online doctors					

5. How can we create awareness about health information literacy among the community?

opinion	1	2	3	4	5
Several media companies can create awareness					
Government agencies can create awareness					

Non-govt organization (NGO'S) can create awareness					
Professional associations can create awareness					

6. What are the skills that we have to improve to get proper health information?

Opinion	1	2	3	4	5
Library skills					
Internet use skills					
Information education skills					

Students skills have to improve					
Patient outcomes					
Patient safety					
Patient satisfaction					
Health information literacy					
Government plan have to improve					

7. How do you identify the accuracy of needed health information?

Opinion	1	2	3	4	5
I can identify the fake news					
I can identify the authentic news					
Understand the authenticity of the source					
Discuss with doctor to check authenticity					
Consult with health workers to assess information					

8. How do you measure the health information literacy?

Opinion	1	2	3	4	5
Health information is important and essential to be informed about health issues					
Know where to seek health information					
Seek and prefer various sources to get information					
Apply health related information for your own health and closed one					
It is easy to assess the reliability of information from printed sources i.e; books, magazines, newspapers, etc.					
It is easy to assess the reliability of information from the internet					

9. What are problems you face to locate health information?

Opinion	1	2	3	4	5
Difficult to understand the health related terminologies					
Face difficulties to find information from the internet					
Difficult to recognize and believe the authorities in health issues					

Problem to find information from printed sources					
Fail to find authentic sources of information					
Difficult to find doctor or health worker for information					