



Use and perceived effectiveness of health information dissemination channels in secondary schools in Morogoro Region, Tanzania

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ABSTRACT

This study investigated the health information channels utilised by secondary school students in the Morogoro Region, Tanzania, assessed students' perceptions of channel effectiveness, and analysed how these perceptions influence channel use in accessing health information. The research was guided by Media Richness Theory and employed a cross-sectional mixed-methods design. The selected schools had a total population of 4,752 students. From the selected classes, 800 students constituted the sampling frame. The sample size of 271 was determined using Yamane's formula. Thereafter, proportionate sampling was used to allocate respondents to each school in proportion to its student population, ensuring fair representation. Finally, systematic random sampling was employed to select individual students from class registers because it provided an efficient and unbiased method for selecting participants after determining the required sample size for each school. Structured questionnaires collected quantitative data, while interviews and focus group discussions elicited students' voices and experiences. The quantitative findings were analysed using descriptive statistics, Analysis of Variance [ANOVA], Duncan's Multiple Range Test, and multiple linear regression in IBM SPSS Statistics. Meanwhile, thematic analysis of the qualitative data added depth and context to the numbers. The findings indicated that students primarily received health information from peers and teachers. Face-to-face communication and printed materials emerged as the most frequently used and most effective channels. Regression analysis demonstrated that students who perceived a channel as effective were more likely to utilise face-to-face communication, printed materials, radio, and television. Channels that were trusted, easily accessible, and perceived as effective were preferred, whereas digital platforms were used less frequently due to limited access and lower levels of trust. The study concludes that peers and teachers were the most frequently consulted sources of health information among secondary school students, whereas health experts were the least used. In addition, the findings reveal that face-to-face communication was the most commonly used channel for accessing health information, followed by printed materials and radio. Furthermore, the study found that printed materials and face-to-face communication were perceived as the most effective channels for disseminating health information. In contrast, modern channels such as mobile phones and social media were used less frequently and perceived as less effective at disseminating health information. The results indicated that students were highly using face-to-face, printed, and radio. The study recommends improving face-to-face health education in schools, providing higher-quality printed health materials, supporting peer health education groups, involving more school health staff, and making digital health platforms easier to access and more trustworthy. These actions can help students get reliable health information, make better health decisions, and improve their well-being. The study also adds new evidence on how students' views of effectiveness influence their use of health information channels in Tanzania.

Keywords: Dissemination Channels, Health Information, Perceived Effectiveness, Media Richness Theory, Secondary School Students, Tanzania.

I. INTRODUCTION

Health information empowers adolescents to make smart choices about disease prevention, healthy living, sexual and reproductive health, nutrition, mental well-being, and seeking care (World Health Organization [WHO], 2021). As they navigate a time of rapid change, timely and accurate information is essential. Schools are ideal for delivering this knowledge, reaching large numbers of young people through structured education (Kamangu & Mbago, 2024). When students receive health information in ways that resonate with them, they are more likely to build healthy habits, deepen their understanding, and make decisions that support lifelong well-being (WHO, 2022; Joseph et al., 2018). Schools share health information through face-to-face conversations, printed materials, mass media, and digital technologies. Face-to-face channels include interactions with teachers, peers, parents, family, and health professionals, which allow for immediate feedback and personal discussion (Cohen et al., 2025). Printed materials such as books, posters, brochures, and pamphlets, as well as radio and television, are also used (Lawal & Olawale, 2017). With greater access to mobile phones and the internet, students can now use digital platforms such as WhatsApp and Facebook to



access health information (Bach & Wenz, 2020; Huang et al., 2023; Kington et al., 2021). Each channel differs in how accessible, trusted, interactive, and high-quality the information is.

Around the world, adolescents access health information through face-to-face conversations, traditional media, and digital channels (Shoghili et al., 2023). In high-income countries, easy internet access means young people often use websites, social media, and mobile apps (Bach & Wenz, 2020). However, research shows that many still trust face-to-face conversations with teachers, parents, health professionals, and peers, especially when they need explanations or reassurance (Agyei et al., 2025). Digital tools add to, but do not completely replace, these traditional ways of sharing information (Freeman et al., 2023; Goodyear & Armour, 2021; Raeside, 2025). In many African countries, barriers such as poor internet connectivity, high costs, limited digital skills, and unequal access to technology make digital health information difficult to access. As a result, adolescents rely mainly on face-to-face communication with teachers, peers, parents, and health workers (Athumani & Mboineki, 2025). Research from Kenya, Ghana, Nigeria, South Africa, and beyond highlights the central role of schools in health education, with teachers and peer educators seen as trusted guides (Macharia et al., 2021; Agyei et al., 2025). Where digital tools fall short, printed materials provide steady and accessible sources of information.

How well health information is shared depends on both the availability of communication channels and students' views of those channels. Perceived effectiveness refers to how students judge whether a channel provides clear, trustworthy, relevant, accessible, and useful information for their health needs. Channels seen as effective are trusted, used often, and influence health decisions. In contrast, channels that seem unreliable or hard to access are less likely to affect adolescents' information-seeking, even when available (Ab Hakimee et al., 2023; Taba et al., 2022). Understanding how students see these channels is important for creating effective school-based health communication strategies. In Tanzania, several initiatives have aimed to improve adolescent health through school-based education and reproductive health programs. Previous studies have looked at health information sources, literacy, communication, and access in schools (Kaale & Muhanga, 2017; Kamangu & Mbago, 2024; Millanzi et al., 2023), highlighting these challenges. However, there is little research on how secondary school students see the effectiveness of health information channels and how these views affect their use. Understanding this link is important, as simply making information available may not increase use unless the channels are seen as credible, accessible, and effective.

Furthermore, limited empirical evidence exists in the Tanzanian context, particularly in Morogoro Region, on the relationship between perceived effectiveness and actual channel utilisation among secondary school students. This creates a contextual and conceptual gap that this study addresses. This study addresses the knowledge gap by examining how secondary school students in the Morogoro Region, Tanzania, use health information channels and how effective they perceive these channels to be. It identifies the main sources and channels, measures perceived effectiveness, and shows how these views affect channel use. The results provide health communication knowledge to the field of information science, evidence to help schools improve curriculum-based health information programs, health professionals with guidance on designing and using effective health communication channels for better dissemination, and policymakers with guidance on developing more effective strategies for providing adolescents with reliable health information and supporting healthier choices.

1.1 Statement of the Problem

Studies have reported that secondary school students have limited access to reliable health information to make informed decisions about their health behaviours (Ito et al., 2022; Kamangu & Mbago, 2024; Ngissa et al., 2024; Msovela et al., 2025). While studies in Tanzania and globally have examined sources of adolescent health information, health information needs and accessibility (Mkumbo et al., 2009; Macharia et al., 2021; Millanzi et al., 2023; Onyechi, 2023; Agu et al., 2023; Athumani & Mboineki, 2025; Gumede et al., 2025), most focus on sources and overlook how secondary school students perceive the effectiveness of health communication channels, which shape students' access and use of health information. Therefore, this study focused on how secondary school students use and perceive the effectiveness of health information channels. Addressing poor health communication in schools is therefore critical for improving adolescent health literacy, guiding effective interventions, and supporting healthier behavioural outcomes (Kaale & Muhanga, 2017).

1.2 Research Objectives

- i. To identify the main sources and channels secondary school students use to access health information.
- ii. To determine which channels secondary school students use to access health information.
- iii. To examine how secondary school students perceive the effectiveness of different health information dissemination channels.
- iv. To determine the influence of students' perceived effectiveness of health information dissemination channels on their use of those channels.



II. LITERATURE REVIEW

2.1 Theoretical Review

This study is guided by the Media Richness Theory (MRT) developed by Daft and Lengel (1986), which explains how different communication channels vary in their ability to convey information effectively. The theory posits that richer communication channels, such as face-to-face interaction, are more effective for complex and ambiguous messages due to immediate feedback, multiple cues, and personalised communication (Otondo et al., 2008). In this study, MRT is applied to understand how secondary school students select health information channels based on perceived effectiveness. Channels perceived as richer (e.g., face-to-face communication with teachers or health professionals) are expected to be used more frequently than less rich channels. However, MRT does not fully account for socio-demographic influences such as age, gender, and socio-economic status, which may affect both perception and usage. For example, younger students may prefer digital platforms, while others may rely more on interpersonal communication. Therefore, socio-demographic variables are included in this study to complement the theoretical model and provide a more comprehensive explanation of health information behaviour.

2.2 Empirical Review

2.2.1 Sources and dissemination channels through which secondary school students access health information.

A growing body of literature highlights multiple sources through which adolescents access health information, including peers, family members, teachers, media platforms, mobile technologies, and health professionals. Peers have been consistently identified as one of the most frequently used sources of health information among adolescents. Studies in China and other contexts show that peer educators facilitate open discussion and encourage sharing of health-related experiences, making health information more relatable and accessible (Huang et al., 2023). Similarly, research from India and Finland indicates that peers are perceived as approachable and credible, particularly for sensitive topics such as sexual and reproductive health, enabling free communication among students (Dodd et al., 2022).

Family members also serve as important sources of health information. In Sweden, Kantakoski (2021) found that adolescents consider family members to be credible sources that significantly shape their health attitudes and decisions. Mehus et al. (2022) further emphasised that parental involvement improves adolescents' health decision-making outcomes. However, communication barriers remain a major limitation. For instance, Champion et al. (2023) observed that cultural norms often discourage parents from discussing sexual and reproductive health, leading to information gaps. Likewise, Agyei et al. (2025) noted that limited parental knowledge further constrains effective health guidance, pushing adolescents to rely more on peers and teachers.

Teachers are another key source of health information in school settings. Studies in India, Nigeria, and other contexts demonstrate that teachers and school-based health personnel contribute significantly to students' knowledge of HIV/AIDS and sexually transmitted infections (Yadav & Kumar, 2023; Borawski et al., 2015). However, Lupton. (2021) argue that inadequate resources and limited training often restrict teachers' ability to deliver comprehensive health education, reducing the depth of information provided. Digital and technological sources have also become increasingly important. Mobile phones and applications are widely used to access health information due to their convenience and privacy. Ab Hakimee et al. (2023) highlight that mobile applications provide timely and accessible reproductive health information, improving adolescents' knowledge. Additionally, community outreach programs have been effective in improving access to health information in low-resource settings such as Kenya (Mutea et al., 2020).

Health professionals are widely recognised as highly credible sources of health information. Ninsiima et al. (2021) report that students trust health professionals; however, interaction remains limited due to accessibility challenges. Kharsynniang (2024) similarly found that although adolescents view professionals as reliable, they rarely consult them directly. Outreach initiatives have been shown to improve engagement between students and health professionals, suggesting the need for structured school-based health services (Uzayisenga et al., 2024).

2.2.2 Health Information Dissemination channels that are used in accessing health information

Health information is transmitted through multiple channels, including interpersonal communication, mass media, digital platforms, and school-based systems. Face-to-face communication remains one of the most influential channels for adolescents. Peer education programs, in particular, provide interactive environments where students can openly discuss health issues (Gumede et al., 2025). Studies from India and Finland similarly show that interpersonal communication enhances understanding and encourages open dialogue among adolescents. Teachers and school health personnel also play a central role in delivering structured health education. Evidence from India demonstrates that classroom-based discussions and demonstrations improve students' knowledge and promote healthier behaviours (Yadav & Kumar, 2023). Kantakoski (2021) further emphasises that face-to-face communication with trusted adults, such as teachers and family members, strengthens adolescents' decision-making.



Mass media channels, including television and radio, are also important sources of health information. Yeo (2023) and Bach and Wenz (2020) found that media exposure significantly influences adolescents' understanding of mental health issues and other health-related topics. Digital channels, particularly mobile applications and social media, have gained prominence in health communication. Ab Hakimee et al. (2023) and Knock et al. (2022) highlight that mobile technologies provide accessible, up-to-date health information, especially for reproductive health education. However, the effectiveness of these channels depends on content credibility and user trust. School-based health education programs that integrate classroom discussions, practical demonstrations, and interactive learning have also been shown to improve health literacy and promote preventive behaviours among students (Handebo et al., 2021). Community outreach programs complement these channels by extending health education beyond school environments. In Kenya, such programs have improved adolescents' access to reproductive health information through direct engagement and distribution of learning materials (Mutea et al., 2020).

2.2.3 Perceived Effectiveness of Health Information Dissemination Channels

Perceived effectiveness refers to how useful, credible, understandable, and accessible students consider a health information channel to be. This perception significantly influences both engagement and learning outcomes. Face-to-face communication through peers is often perceived as highly effective due to its interactive and relatable nature. Studies in Iran and the United States show that peer-led communication enhances knowledge acquisition and promotes healthy behaviours (Shoghli et al., 2023; Knock et al., 2022). Similarly, Levinson et al. (2019) found that structured peer education programs significantly improve adolescents' knowledge of sexual and reproductive health. Communication with trusted adults, including parents, teachers, and health professionals, is also perceived as effective because of their credibility and authority. Kantakoski (2021) emphasises that adolescents trust these sources, while Maina et al. (2020) report that parental communication remains a key source of reproductive health information. However, cultural taboos and communication discomfort may limit effectiveness (Ndugga et al., 2023).

Media channels such as television and social media are perceived as effective for increasing awareness due to their wide reach and accessibility (Yeo, 2023; Bach & Wenz, 2020). However, effectiveness depends on content accuracy and user trust. Mobile applications are perceived as highly effective due to their privacy, convenience, and accessibility (Ab Hakimee et al., 2023). Similarly, school curricula are considered effective when content is relevant and understandable, reinforcing knowledge and influencing behaviour (Ngissa et al., 2024). Overall, perceived effectiveness is shaped by trust, accessibility, relevance, and communication comfort, which collectively determine whether adolescents engage with a given channel.

2.2.4 The influence of students' perceived effectiveness of health information dissemination channels on their use of those channels.

The literature consistently shows that adolescents' use of health information channels is strongly influenced by how effective they perceive those channels to be. For example, a study in Kibaha, Tanzania, found that students preferred teachers and mothers as primary sources of health information, but expressed interest in school health clubs and health workers when available, indicating that perceived usefulness drives preferences (Msosela et al., 2025). Similarly, Bastien et al. (2009) found that adolescents in northern Tanzania ranked medical professionals, parents, and mass media as both credible and frequently used sources.

Digital platforms are increasingly used when perceived as relevant, accessible, and non-judgmental. Olamijuwon et al. (2021) found that adolescents engage more with social media health content when it is informal and relatable. However, Banounin et al. (2023) caution that mere access to digital platforms does not guarantee positive health outcomes; usage must involve credible health content. In the school context, Ngissa et al. (2024) found that students are more likely to engage with school-based reproductive health education when they perceive it as relevant and understandable. This confirms that perceived effectiveness directly influences actual usage behaviour. Overall, adolescents tend to use channels they perceive as trustworthy, accessible, and comfortable, while avoiding those perceived as unreliable or socially sensitive.

2.5 Research Gap

Although numerous studies have examined adolescent health information sources and dissemination channels in Tanzania and globally (Mkumbo et al., 2009; Macharia et al., 2021; Millanzi et al., 2023; Onyechi, 2023; Agu et al., 2025; Athumani & Mboineki, 2025; Gumede et al., 2025), most of these studies primarily focus on identifying sources and channels without adequately examining how secondary school students perceive the effectiveness of these channels and how such perceptions influence their actual usage of health information channels. Furthermore, limited empirical evidence exists in the Tanzanian context, particularly in Morogoro Region, on the relationship between perceived effectiveness and actual channel utilisation among secondary school students. This creates a contextual and conceptual gap that this study addresses.



III. METHODOLOGY

3.1 Research Design

This study adopted a cross-sectional descriptive and analytical research design involving secondary school students and teachers. A cross-sectional design was considered appropriate because it enabled data collection from participants at a single point in time, providing a snapshot of students' use of health information dissemination channels and their perceptions of their effectiveness. The descriptive component described the existing health information dissemination channels available to students and the frequency with which they were used. In contrast, the analytical component examined the relationship between students' perceived effectiveness of these channels and their actual use. Combining the two approaches enabled the study to address both the descriptive and explanatory objectives efficiently within the available time and resources (Creswell & Plano Clark, 2018).

3.2 Study Area

The study was conducted in the Morogoro Region of Tanzania, specifically in Morogoro Municipality and Ifakara Town Council. Morogoro Region was selected because previous studies have reported that secondary school students face challenges accessing reliable health information despite the increasing availability of communication channels (León-Himmelstine et al., 2021; Kavana, 2021; Msollo & Majaliwa, 2025). Morogoro Municipality was purposively selected because it represents an urban setting characterised by relatively better access to educational facilities, health services, media, and digital communication technologies. In contrast, Ifakara Town Council was selected to represent a semi-urban and rural setting where access to health information resources and communication infrastructure is comparatively limited. Including both study areas enabled comparison across different socio-economic and geographical contexts and enhanced the representativeness of the findings.

3.3 Target Population

The target population comprised secondary school students from 10 secondary schools in the selected districts. Students were chosen because adolescents are among the most active groups seeking health information and face numerous health-related challenges that require accurate, accessible information for informed decision-making. Teachers also served as key informants during interviews, providing contextual information on the availability, dissemination, and effectiveness of health information within schools, thereby supporting data triangulation.

3.4 Sampling Techniques and Sample Size

Both probability and non-probability sampling techniques were employed to obtain representative and information-rich data. Purposive sampling was first used to select Morogoro Municipality and Ifakara Town Council because these areas represented different geographical and socio-economic settings relevant to the study objectives. Purposive sampling was also used to select teachers for interviews owing to their knowledge and experience regarding health information dissemination in schools. Simple random sampling was then used to select ten secondary schools, five from each district. This technique ensured that every eligible school had an equal chance of being selected, thereby minimising selection bias. The selected schools had a total population of 4,752 students (URT, 2023). From the selected classes, 800 students constituted the sampling frame. The sample size of 271 was determined using Yamane's formula.

Thereafter, proportionate sampling was used to allocate respondents to each school in proportion to its student population, ensuring fair representation. Finally, systematic random sampling was employed to select individual students from class registers because it provided an efficient and unbiased method for selecting participants after determining the required sample size for each school.

3.5 Data Collection Instruments and Procedures

Both quantitative and qualitative data collection methods were employed to provide a comprehensive understanding of the research problem and strengthen the validity of the findings through methodological triangulation (Creswell & Plano Clark, 2018). Quantitative data were collected using a structured questionnaire consisting primarily of closed-ended questions. The questionnaire was appropriate because it enabled standardised data collection from a relatively large number of respondents, facilitated statistical analysis, and reduced interviewer bias. Qualitative data were collected through key informant interviews with teachers and focus group discussions with students. These methods provided detailed explanations regarding students' experiences, opinions, and perceptions of health information dissemination channels that could not be adequately captured through questionnaires alone.

The study measured two principal variables: Use of health information dissemination channels, measured on a 5-point Likert scale from 1 = Not used at all to 5 = Very frequently used. Perceived effectiveness of health information dissemination channels, measured on a 5-point Likert scale from 1 = Not effective to 5 = Very effective. These



measurement scales enabled respondents to report varying levels of use and perceived effectiveness, allowing the data to be analysed quantitatively.

3.6 Data Analysis

Quantitative data were coded, entered, cleaned, and analysed using IBM SPSS Statistics. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarise respondents' socio-demographic characteristics, sources of health information, levels of use, and perceived effectiveness of dissemination channels. One-way Analysis of Variance (ANOVA) was employed to determine whether significant differences existed in the mean use and perceived effectiveness scores across different health information dissemination channels. ANOVA was selected because it is appropriate for comparing the means of more than two groups (Stadtländer, 2009).

Whenever ANOVA indicated statistically significant differences, Duncan's Multiple Range Test (DMRT) at $p < 0.05$ was performed to identify which channel means differed significantly from one another. To determine the influence of perceived effectiveness on the use of health information dissemination channels, multiple linear regression analysis was conducted. The dependent variable was the overall usage index score obtained by summing respondents' usage scores across all dissemination channels. Independent variables included respondents' sex, age, form level, and perceived effectiveness index scores. Before fitting the regression model, the assumptions of multiple linear regression were assessed. Multicollinearity among independent variables was examined using Variance Inflation Factor (VIF) values, while autocorrelation of residuals was assessed using the Durbin–Watson statistic. These diagnostic tests ensured that the regression model satisfied the assumptions required for reliable statistical inference.

3.7 Ethical Considerations

Ethical approval and permission to conduct the study were obtained from the relevant authorities before data collection commenced. The study complied with the Sokoine University of Agriculture (SUA) Rules and Guidelines for Higher Degrees of 2021 and institutional research and publication requirements. Permission was obtained from regional, district, and school authorities before accessing participants. Students were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any stage without penalty. Informed consent was obtained before participation. Confidentiality and anonymity were maintained by excluding participants' names and other identifying information from questionnaires, interview transcripts, and research reports. Data were used solely for academic purposes and stored securely to protect participants' privacy.

IV. FINDINGS & DISCUSSION

4.1. Socio-demographic characteristics of respondents

Table 1 presents socio-demographic characteristics that provide important information about the study area.

Table 1

Socio-demographic characteristics (n=271)

	Categories	n	%
Sex	Male	108	39.8
	Female	163	60.2
Age	13 - 15	66	24.4
	16 - 18	195	72.0
	19 - 23	10	3.7
Study Year	Two	103	38.0
	Three	79	29.2
	Four	89	32.8

The respondents' socio-demographic characteristics provide important information about the study area. The results are presented in Table 1. The results showed that more than half (60.2%) were girls, while less than half (39.8%) were boys. Moreover, the age distribution shows that the majority of students (72%) are aged 16-18 years, while those aged 13-15 years account for 24.4%. Likewise, 38.0% were in Form Two and 32.8% were in Form Four.

4.1.1 Sources that are used in accessing health information in secondary schools

Table 2 presents the different sources from which secondary school students obtain health information. It highlights commonly accessed sources and provides insight into the roles of various information providers in meeting students' health information needs.

**Table 2***Sources used to access health information*

Source	Mean
Peer	2.50a
Teachers	2.44ab
Family Members	2.29b
Health experts	2.31b

Means with different superscripts are significantly different at $p < 0.05$. Sum square between =28.715, Sum square within=11707.526, Mean Square Between groups=9.572, Mean square within groups=2.889, F3, 4053 0.05=3.314, $p=0.019$

The results indicated significant differences in frequency of use across these sources ($p < 0.05$), suggesting that some sources were relied upon more than others. Specifically, peers ($\bar{x} = 2.50$) and teachers ($\bar{x} = 2.44$) were the most frequently consulted sources, underscoring the influential role of social and educational environments in disseminating health information. In contrast, health experts were reported to be the least frequently used source, which may reflect barriers such as limited access, perceived authority distance, or a lack of direct engagement. These results highlight the importance of incorporating peer and school-based interventions into public health strategies, while also addressing potential gaps in expert-driven health communication. Means with different superscripts are significantly different at $p < 0.05$

Sum square between =28.715, Sum square within=11707.526, Mean Square Between groups=9.572, Mean square within groups=2.889, F3, 4053 0.05=3.314, $p=0.019$

Prior to assessing the specific communication channels used to access health information, the study first sought to identify the primary sources from which respondents obtained it. It provides insight into the pathways through which health-related knowledge is acquired. The findings revealed that the significant sources of health information among the respondents were peers, teachers, family members, and health experts.

4.1.2 Health information dissemination channels that are used in accessing health information in secondary schools

Table 3 presents the health information channels accessed by students for obtaining health-related information. The findings provide insight into the communication pathways through which health messages reach secondary school students.

Table 3*Health information dissemination Channels that are used to access health information from different sources*

Source	Channel	Mean
Peer	Face-to-face	3.97a
	Personal Mobile Communication(Mobile phone calling, SMS)	1.80b
	Digital/Social Media Platforms (WhatsApp, Facebook)	1.71b
Family Members	Face-to-face	3.57a
	Personal Mobile Communication(Mobile phone calling, SMS)	2.01b
	Digital/Social Media Platforms (WhatsApp, Facebook)	1.72c
Teachers	Face-to-face	3.37a
	Personal Mobile Communication (Mobile phone calling, SMS)	1.78b
	Digital/Social Media Platforms (WhatsApp, Facebook)	1.71b
Health experts	Face-to-face	3.18a
	Personal Mobile Communication (Mobile phone calling, SMS)	1.97c
	Digital/Social Media Platforms (WhatsApp, Facebook, other social media tools)	1.94c
	Radio	2.22bc
	Television	2.12bc
	Printed materials	2.41b

Means with different superscripts are significantly different at $p < 0.05$. Sum square between =863.144, SS within=7195.026, Mean square between groups=172.629, Mean square within groups=1.773, F5, 4058 0.05=97.363, $p=0.000$. Furthermore, the Study aimed to assess the communication channels used to access health information from different sources. The results revealed that the primary channels used by respondents included face-to-face



communication; personal mobile communication (e.g., phone calls and SMS); digital and social media platforms (e.g., Facebook); other social media tools; radio; television; and printed materials.

When accessing health information from peers, face-to-face communication was the most commonly used channel ($\bar{x} = 3.97$), whereas personal mobile communication ($\bar{x} = 1.80$) and digital/social media platforms ($\bar{x} = 1.71$) were the least used. This suggests a preference for direct, interpersonal interactions among peers when discussing health-related matters.

Similarly, face-to-face communication was also the predominant channel for sharing health information with family members ($\bar{x} = 3.57$), indicating the continued importance of in-person interactions within familial settings.

Among health experts, face-to-face communication remained the most frequently used channel ($\bar{x} = 3.18$), followed by printed materials. However, mobile communication ($\bar{x} = 1.97$) and social media platforms ($\bar{x} = 1.94$) were the least utilised methods for accessing information from experts. These findings suggest that despite advancements in digital communication technologies, traditional face-to-face interactions continue to play a central role in health information exchange, particularly with trusted individuals such as family members, peers, and professionals.

4.1.3 Perceived effectiveness of health information dissemination channels that are used in accessing health information in secondary schools.

Table 4 presents students' perceptions regarding the effectiveness of different health information channels in delivering health-related messages. It shows the extent to which each channel is considered useful and reliable by the respondents.

Table 4

Perceived effectiveness of current health information dissemination channels that are used in secondary schools

Channel	Mean
Face to face	3.06a
Personal mobile communication	2.11bc
Social media platform	2.02c
Radio	2.28b
Television	2.16bc
Printed materials	3.09a

Means with different superscripts are significantly different at $p < 0.05$. Sum square between =863.144, SS within=7195.026, Mean square between groups=172.629, Mean square within groups=1.773, F5, 4058 0.05=97.363, $p=0.000$.

This section presents the findings on the perceived effectiveness of current health information dissemination channels used in secondary schools. The study examined the following communication channels: face-to-face interaction; mobile communication (e.g., phone calls and SMS); digital and social media platforms (e.g., WhatsApp, Facebook); radio; television; and printed materials (e.g., posters, brochures, textbooks).

The results revealed a statistically significant difference in respondents' perceptions of the effectiveness of these channels in delivering health information ($p < 0.05$). Among all the channels assessed, printed materials ($\bar{x} = 3.09$) and face-to-face communication ($\bar{x} = 3.06$) were perceived as the most effective.

4.1.4 Influence of sStudents' perceptions of the effectiveness of channels on their use of these channels to access health information.

Table 5 presents the analysis of factors influencing students' use of different health information channels. It demonstrates the relationship between the perceived effectiveness of channels and students' likelihood of using them for accessing health information.

**Table 5**

Influence of students' perceptions of channel effectiveness on their use of these channels to access health information.

Variable	Face to face	Face to face	Personal mobile communication	Personal mobile communication	Social media platform	Social media platform	Radio	Radio	Television	Television	Printed	Printed	Printed
Variable	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	p	Beta	p
(Constant)	8.81	.003	5.211	.000	3.531	.000	6.534	.000	6.591	.000	.000	2.314	.001
Age	-.332	.108	.226	.313	.125	.313	.223	.231	.401	.078	.078	.121	.112
Sex	.223	.662	.521	.143	.227	.441	.124	.143	.127	.124	.124	.124	.143
Class	.394	.224	.494	.3504	.172	.251	.294	.350	.226	.214	.214	.294	.003
Perceive effectiveness	.470	.000	.081	.165	.011	.651	.231	.001	.102	.023	.023	.571	.000

The results showed that the variance inflation factor (VIF) for all independent variables across all channels ranged from 1.03 to 2.22, which is below 10, indicating no multicollinearity according to Hair et al. (2013). Furthermore, the Durbin-Watson statistic ranged from 1.61 to 2.41, which falls within the acceptable range of $1.5 < d < 2.5$, indicating no autocorrelation. (Kutner et al., 2005). In addition, the R-squared value in the model for face-to-face was 0.24, Personal mobile communication (.123), Social media platform (.145), radio (.213), television (.102) and printed (0.31). This implied that the independent variables in the model accounted for 10.2%-31.0% of students' channel use.

The results showed a positive and statistically significant influence of perceived effectiveness on the use of face-to-face communication ($\beta = 0.470$, $p < 0.001$). This implies that a one-unit increase in students' perception of effectiveness is associated with a corresponding increase in their use of face-to-face communication. Moreover, the beta coefficient for students' perception of the effectiveness of printed materials was 0.571, statistically significant ($P < 0.05$), indicating that a one-unit increase in perception is associated with a 0.571 increase in use. Similarly, radio and television had beta coefficients of 0.231 and 0.102, respectively, and both were statistically significant. Finally, the results showed that the beta coefficient for the class-level variable was 0.294 and statistically significant, indicating that students in higher classes were more likely to use printed materials to access health information.

4.2 Discussion

4.2.1 Socio-demographic characteristics of respondents

The socio-demographic profile of respondents provides an important context for understanding the use and perceived effectiveness of health information dissemination channels among secondary school students. The findings show that female students formed the majority of respondents, suggesting a gender imbalance in school participation within the study area. This aligns with national trends in Tanzania where girls' enrolment has improved due to policy interventions promoting gender equity in education, although disparities in retention still exist, particularly among boys who are more likely to drop out due to economic activities and labour-related responsibilities (URT, 2023; World Bank, 2022; The Chanzo, 2023). Most respondents were aged between 16 and 18 years, representing late adolescence, a stage characterised by increased need for health-related information, particularly on reproductive health, puberty, and lifestyle behaviours. These socio-demographic factors are important because they shape both the access (use of channels) and perceptions of effectiveness, which are central to this study's dependent variables.

4.2.2 Sources used to access Health Information

The first objective examined the major sources and channels through which students access health information. The findings indicate that peers and teachers were the most frequently used sources, while health professionals and family members were less utilised. Peers emerged as the dominant informal source due to their accessibility, constant interaction, and perceived emotional safety when discussing sensitive issues. However, reliance on peers raises concerns about the accuracy and reliability of information shared among students. Qualitative findings strongly support this pattern. Students highlighted convenience and trust within peer networks,



"I ask my friends about health issues all the time because we see each other every day at school, and it is easier to ask them than to wait to talk to a parent" (Student 1, FGD3, 15/11/2024).

Teachers were identified as the most important formal source of health information, particularly through structured classroom teaching. One teacher explained,

"Most students ask about how to cope with puberty and body changes" (Teacher 7, Interview 7, 28/11/2024).

Health professionals were rarely accessed due to limited opportunities for interaction within school settings, while parents were minimally involved, especially in boarding schools, where communication on sensitive issues is limited. These findings align with previous studies indicating that adolescents rely heavily on peers and teachers for health information due to accessibility and trust in structured school environments (Ito et al., 2022). However, the study diverges from literature that emphasises the strong role of parents in adolescent health education, suggesting that boarding school contexts significantly reduce parental influence. This study contributes context-specific evidence from the Morogoro Region, showing that peer and teacher dominance in access to health information is shaped by the school environment and limited external interaction, reinforcing the importance of strengthening school-based health communication systems.

4.2.3 Health information dissemination channels that are used in accessing health information in secondary schools

The second objective assessed different health information dissemination channels used to access health information. Findings show that face-to-face communication and printed media were the most used channels, while digital platforms were considered the least used. Face-to-face communication was identified as the most commonly used channel for accessing information from peers ($\bar{x} = 3.97$). This preference is likely due to the immediacy of responses, which enables students to ask questions and receive clarification on complex or sensitive topics. The interactive nature of face-to-face communication facilitates real-time dialogue, encourages follow-up questions, and supports deeper comprehension and critical thinking. During a focus group discussion, one student reported:

"I usually ask my teachers or friends in person about health issues because I can get answers immediately and it is easier than trying to find information on my own" (Student 1, Interview 1, 28/11/2024).

Another reported that,

"We talk to each other in class or during breaks about health topics because it is quick, and we can ask questions whenever we do not understand something". (Student 10, Interview 2, 28/11/2024).

A related study by Schoenbach (2020) found that face-to-face was the most important source of health information among adolescents surveyed. Printed materials were the second most frequently used channel for accessing health information. This can be attributed to their widespread availability in school libraries, classrooms, and notice boards. In several schools, posters, brochures, and charts are displayed in common areas, providing students with repeated exposure to health messages. During a focus group discussion, one student indicated that,

"The library has books about health, and I find it easy to understand and take notes from them" (Student, Interview 3, 28/11/2024).

Likewise, the key informant reported that,

"We provide posters, brochures, and charts in classrooms and notice boards so students can easily read and learn about important health topics" (Student, Interview 4, 28/11/2024).

This is similar to a previous study by Lawal and Olawale (2017), who found that many adolescents preferred print-based media over electronic media for accessing sexual and reproductive health information. Radio and television were also commonly used channels for accessing health information. This may be due to the widespread ownership of these devices in households and the presence of televisions in boarding schools for entertainment and news. However, students' limited free time, primarily on weekends, may restrict their exposure to health-related programming. Radio and television frequently broadcast health information advertisements to raise awareness of various health issues. During a focus group discussion, one respondent indicated that,

"When I am watching for fun, or news, I sometimes learn about health from advertisements or short programs on TV such as those related to HIV/AIDs, exercise, etc." (Student 2, FGD5, 28/11/2024).

Personal mobile communication ($\bar{x} = 1.80$) and digital or social media platforms ($\bar{x} = 1.71$) were the least-used channels. Digital platforms were also perceived as the least effective. This may be attributed to limited access to digital devices, such as smartphones and computers, and unreliable internet connectivity, particularly in low-resource settings or boarding schools. Additionally, restrictions imposed by schools or families on digital device usage further reduce opportunities to access health information online. During a focus group discussion, one student indicated that,

"We do not have computers or tablets at school to look up health information, so I just ask my teachers or friends instead." (Student 3, FGD5, 28/11/2024).



One teacher reported that *“To maintain discipline and focus, we restrict the use of digital devices in boarding, so students rely more on face-to-face interactions for learning about health.”* (Teacher 10, Interview 5, 28/11/2024).

A previous study by Kreniske *et al.* (2021) revealed that few adolescents and young adults reported using their phones for health-related purposes.

4.2.4 Perceived Effectiveness of Health Information Dissemination Channels

The third objective assessed students' perceptions of the effectiveness of different health information dissemination channels. Findings show that face-to-face communication and printed materials were perceived as the most effective channels, while digital platforms were considered less effective. Face-to-face communication was highly valued for its interactive nature, immediate feedback, and ability to provide clarification, especially for sensitive health topics. Printed materials such as posters, brochures, and textbooks were appreciated for their visual clarity and ability to enhance understanding and memory retention. Students emphasised the importance of visual learning,

“I like the posters and brochures because they have pictures and diagrams that make it easier to understand health topics” (Student 2, FGD5, 28/11/2024).

“The charts and illustrations in the books help me see and remember important health information better than just reading words” (Student 4, FGD5, 28/11/2024).

Teachers supported this view, noting that visual materials improve comprehension,

“Posters and brochures help students understand better because they can see and remember the information” (Teacher 5, Interview 5, 28/11/2024).

These findings are consistent with Schoenbach (2020), who argues that interpersonal communication and visual aids enhance comprehension of health messages. However, they contrast with emerging global literature that emphasises digital platforms as highly effective dissemination tools (Kreniske *et al.*, 2021), suggesting that contextual factors such as access and trust significantly shape perceived effectiveness. This study contributes evidence that in low-resource school settings, traditional channels remain more effective than digital platforms, highlighting the continued relevance of face-to-face and printed communication in adolescent health education.

4.2.5 Influence of Perceived Effectiveness on Use of Dissemination Channels

The fourth objective examined how perceived effectiveness influences students' actual use of health information dissemination channels. The findings indicate that students are more likely to use channels they perceive as trustworthy, understandable, and interactive. Face-to-face communication was both highly used and highly preferred due to its perceived effectiveness. Students reported that direct interaction enhances understanding and builds confidence in the information received,

“I learn more when someone talks to me directly about health issues rather than just reading or hearing about them online” (Student 5, FGD1, 11/11/2024).

“Face-to-face is better because I can see their expressions and understand better” (Student 1, FGD5, 28/11/2024).

Printed materials were also widely used because they were perceived as reliable and easy to revisit. In contrast, digital platforms were underutilised due to concerns about misinformation and low trust. These findings support Hamidah and Kurniasari (2022), who found that perceived trustworthiness strongly predicts channel use. Similarly, Lupton (2021) highlights that adolescents often distrust digital health sources due to the risk of misinformation. However, the study diverges from global trends showing increasing adolescent reliance on digital platforms, suggesting that perceived effectiveness in this context is shaped more by trust and accessibility than by technological advancement. This study adds new empirical evidence demonstrating that perceived effectiveness is a strong predictor of channel use among secondary school students in Tanzania, reinforcing the importance of trust-building in health communication strategies.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study concludes that peers and teachers were the most frequently consulted sources of health information among secondary school students, whereas health experts were the least used. In addition, the findings reveal that face-to-face communication was the most commonly used channel for accessing health information, followed by printed materials and radio. Furthermore, the study found that printed materials and face-to-face communication were perceived as the most effective channels for disseminating health information. In contrast, modern channels such as mobile phones and social media were used less frequently and perceived as less effective at disseminating health information. The



results indicated that students were highly likely to use face-to-face, printed, radio, and television as they perceived them to be effective in disseminating health information.

5.2 Recommendations

Based on the study findings, the study recommends the following. The Ministry of Education, in collaboration with health stakeholders, should increase the availability of school health personnel, such as counsellors, who are accessible at predictable times. The Ministry of Education, in collaboration with district councils, should strengthen the production of durable printed materials to facilitate more effective dissemination of health information. Radio and TV administrators should schedule health-related programs during times when students are free, such as weekends or after school hours. School administration should create and strengthen Peer-to-Peer Health Information Groups. School administration should strengthen school-based health education sessions.

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