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Knowledge and sources of information on COVID-19 among children in Ghana

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The few works on COVID-19 in Ghana have a strong emphasis on the knowledge, attitudes, and practices of adults regarding the disease. As a supplement to the inadequate knowledge, this study examined children's knowledge and sources of information regarding COVID-19. It was a cross-sectional study that employed mixed research methods for data collection and analysis. The study utilized remote research methods, including a web survey and phone interviews, for data collection from a sample of 385 children in two COVID-19 hotspot cities, Accra and Tema, in Ghana. The results show that almost all children sampled were aware of COVID-19. The qualitative aspects, however, reveal that some children do not have accurate knowledge about the causes and prevention of the virus and disease. This is evident from some children's claims that bacteria, mosquitoes, and insect bites are the causes of the transmission of the virus and disease. The study reveals the internet, social media, and television are the most common methods for children to learn about COVID-19. The findings also show differences in the information sources across the major subgroups of sex, age, and educational attainment. The study further concludes that precautions should be taken by parents and carers regarding information consumed by children on social media. Hence, there is a need for the government and its partners to increase educational drives aimed at strengthening children's knowledge about the transmission and prevention of the virus in educational institutions and in settings where children and young people are the dominant groups.

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Introduction

Knowledge of the new Corona virus's mode of transmission and preventive measures is essential for safeguarding against and avoiding infection. In this regard, it is crucial that all individuals have the necessary knowledge to enable them to protect themselves effectively from COVID-19. Numerous studies have shown that children are well-informed about COVID-19. For instance, the findings of a cross-sectional study on children aged 10 to 17 in ten provinces in both rural and urban parts of Cambodia revealed universal knowledge, with no discernible disparities between male and female participants or between rural and urban areas (Save the Children, 2020a). Students in an Indian study (Singh et al., 2022) and children in a Chinese study (Xue et al., 2021) both showed evidence of universal knowledge. In Africa, a cross-sectional study that also evaluated young people's knowledge in Egypt and Nigeria found that most respondents had sufficient awareness about COVID-19 prevention methods (Asemota et al., 2022; Hager et al., 2020). Evidence from the Department of Children (DOC) suggests a high level of knowledge among children both in rural and urban parts of Ghana on COVID-19 (Department of Children {DOC}, 2020). The findings of this prior research show that children have a significant amount of COVID-19 information.

Despite the nearly universal knowledge among children around the world, there have been instances of incorrect information and misconceptions regarding the spread of the virus and sickness as well as its prevention among populations of children. The literature suggests that while the knowledge of children is high, significant gaps still exist between their knowledge and their practice of preventive measures (Hatami et al., 2021; Xue et al., 2021). Approximately half of the children interviewed in a Save the Children (2020a) study conducted in Cambodia said that there is a low chance that they will catch COVID-19. A Portuguese study also found that some participants in the survey believed that Chinese scientists created the virus and spread it across the world (Persici et al., 2021). These earlier results indicate that misinformation and false beliefs about the disease exist and appear to have been widely disseminated on social media, where most children acquire their information about COVID-19 (DOC, 2020; Persici et al., 2021; Save the Children, 2020a).

There is limited research on COVID-19 in Ghana that focuses on children's knowledge and the sources of their information, despite worldwide claims of some misconceptions, myths, and falsehoods about COVID-19 among children. Currently, the few works on COVID-19 in Ghana have a strong emphasis on the knowledge, attitudes, and practices of adults (Agyemang and Yaro, 2023; Jnr et al., 2023; Tabong and Segtub, 2021). Examining children's knowledge of COVID-19, its transmission, prevention, and knowledge sources will close knowledge gaps and aid in the development of policy and public awareness of COVID-19-related issues and their implications for child development and safety. The purpose of this study, therefore, was to assess the level of knowledge and ascertain the sources of information on COVID-19 among children in Ghana.

Methods

Study setting. The research was carried out in Ghana. In 2021, Ghana had a total population of 30,832,019, of which 6.8 million (22.1%) were between the ages of 8 and 17. Ghana is a country in West Africa, bordered by Cote d'Ivoire to the west, Togo to the east, Burkina Faso to the north, and the Gulf of Guinea to the south. Ghana's total land area is 238,540 km² (92,101 mi²), while the total length of its shoreline is 539 km (334.9 mi). The study areas were Tema and Accra, which are both located in the Greater Accra Region and constitute two of Ghana's COVID-19 hotspot

locations. The first study area is Accra, the capital and largest economic and political center of Ghana (Accra Metropolitan Assembly {AMA}, 2020), while the second study area, Tema, is a coastal city that is located about 30 kilometers east of Accra and forms part of the Tema Metropolitan Area (TMA, 2019).

Study design and sampling procedure. This study is a cross-sectional one conducted among children aged 10–17 in Ghana using convenience sampling techniques. KoboToolbox was used to design an online, self-administered questionnaire. Kobo Toolbox is a free, open-source mobile data-gathering application that enables the gathering of data using paper and other mobile devices, including smartphones, tablets, and PCs (Mansoor et al., 2019). It was not possible to carry out a population-based survey because of the COVID-19 restrictions, which made it challenging to make personal contact. To gather data, the research managers had to devise a novel strategy. First, a sample frame was made, which included a list of contact information for parents and guardians who lived in Accra and Tema, two of Ghana's COVID-19 hotspots. Two research assistants were tasked with collecting the phone numbers, and they ultimately came up with a list of 640 numbers for Tema and Accra-based parents of eligible children. The second stage was to inform the parents and legal guardians of the study's purpose and objectives. To do this, a message explaining the purpose of the study and asking for permission to allow their children, aged 10 to 17, to participate in the study was sent to each of the listed telephone numbers. During the third stage, research coordinators sought parental and legal guardians' consent to permit their children's participation in the study. After their parents approved their participation in the study, the fourth step consisted of obtaining the children's consent. On the first page of the online survey questionnaire, the objectives of the study, inclusion and exclusion criteria, and consent statement were provided in a brief introduction. The children gave their written assent by selecting "I consent to participate in this study" in the consent statement section. Access to the Kobo toolbox online survey platform was accessible to the children who gave consent to participate.

Inclusion criteria for the study include the respondent being a child between the ages of 10 and 17 who resided in Tema and Accra, whose parents or legal guardian had granted permission for participation, and having access to a phone, tablet, or computer with internet connectivity. All eligible children were given a month to fill out the online questionnaire. They were initially given two weeks to complete the questionnaire, but at the end of the two weeks, only a handful of questionnaires had been completed, leading to an extension of the questionnaire completion time. At the end of the additional two weeks, the link was closed. Respondents were allowed to use any electronic device, such as a phone, tablet, laptop, or any other that allows them to access the internet link, to respond to the survey. Since children were the main subjects, the questionnaire was designed in very simple language to allow all respondents to understand and complete it without any difficulty. In cases where children required assistance to complete the online questionnaire, parents were permitted to assist them. The total number of children who completed the survey questionnaire was 385 (188 males and 197 females), and that served as the sample size for the study.

Key informant interviews were also carried out subsequently on phones since the children could not be communicated with directly. The phone interviews (PI) were conducted with fifty-nine (59) children selected from each of the residential areas in the two study sites of Tema and Accra using a convenient sampling method (refer to Table 1). The reason for selecting a

Table 1 Number of participants of survey and telephone interviews by sex.

Category	Male	Female	Total
Survey participants	188	197	385
Phone interview participants	30	29	59
Total participants of both quantitative and qualitative	218	226	444

Source: Fieldwork, July 2020.

child from each of the residential areas was to have varying perspectives about children’s experiences of the lockdown in all the areas. Additionally, it was done to cross-check and confirm the data that had been acquired using the quantitative approach. The children who took part in the phone interviews were not among the 385 who filled out the online survey questionnaire.

Data collection. The data for the study was collected over a six-month period from June to November 2020. The semi-structured questionnaire asked questions about the children’s ages, sexes, levels of education, and religions, among other information about their backgrounds. The survey questionnaire included questions about children’s knowledge, attitudes, and practices regarding COVID-19 and safety protocols. The key informant interview guide includes similar questions from the semi-structured questionnaire as cross-checks. Children who were selected to participate in the PIs also responded to questions about their attitudes, knowledge, and practices regarding the novel Corona virus. The duration of each PI was, on average, thirty minutes, compared to an average of twenty minutes for the online survey questionnaire. The language used for all phone interviews was English.

Data analysis. Since the study used a mixed-methods approach, two processes were used for analyzing the data. Regarding the qualitative, the data collected through the PIs was analyzed thematically. The themes included (i) awareness of COVID-19, (ii) knowledge of causes, (iii) inaccurate knowledge about the cause of the disease, (iv) knowledge of who can be infected, (v) sources of information, and (vi) sources of false knowledge and incorrect beliefs. All the PIs were recorded, transcribed, and organized under the relevant themes of the study. The recorded conversions were transcribed and read thoroughly to get a basic idea of and understanding of the participants’ narratives. Codes were assigned to statements and sentences that related to the study’s themes. Codes that describe comparable experiences were categorized into basic themes. Additionally, similar basic themes were grouped into organizing themes.

The quantitative data gathered from the web survey was also analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics, specifically frequencies and percentages, were used to analyze the quantitative data. Pearson’s chi-square test was also used to examine four associations. First, the association between knowledge of COVID-19 and demographic characteristics of sex, age, and education. Second, the association between knowledge of the causes of COVID-19 and demographic characteristics of sex, age, and education. Third, the association between knowledge of the causes and who can be affected by COVID-19 and demographic characteristics of sex, age, and education. Finally, the association between sources of COVID-19 knowledge and demographic characteristics of sex, age, and education. Important quotes from the PIs that arose during the transcription stage were used to provide more clarification in the analysis.

Table 2 Demographic characteristics of respondents.

Sex	Frequency	Percent
Male	188	48.8
Female	197	51.2
Age		
10-12 years	69	17.9
13-15 years	135	35.1
16-17 years	181	47.0
Mean	13.5	
Education		
Primary	70	18.2
JHS	99	25.7
Secondary/vocational and tertiary	216	56.1
Religion		
Christianity	337	87.5
Islam	38	9.9
African Traditionalist	5	1.3
No religion	5	1.3

Source: Fieldwork, July 2020.

Ethical clearance. The research instruments had to go through a series of reviews and be given approval by the National Child Protection Committee (NCPC) of the Department of Children in April 2020. As part of ethical processes, a letter (which included a link to the questionnaire) was sent to the parents of prospective participants, requesting permission to allow their children to participate in the study. After obtaining parental consent, eligible children who wished to participate provided written consent and were then granted access to the online questionnaire using a hyperlink.

Results

Demographic characteristics. Table 2 shows the findings from the analysis of the demographic characteristics of 385 children with respect to their age, sex, level of education, religion, and place of residence. Overall, as shown in Table 2, the sex distribution reveals that significantly more females (51.2%) than males (48.8%) were sampled. Additionally, Table 2 demonstrates that children between the ages of 16 and 17 made up the largest percentage of respondents (47.0%), then those between the ages of 13 and 15 (35.1%), and finally those who reported being between the ages of 10 and 12 (17.9%). The mean age was 13.5. Nearly two out of every ten children (18.2%) were in primary school, while 56.1 percent of the children surveyed were in senior high school, vocational school, or a higher institution. The survey also determined the children’s religious affiliations, and from Table 2, nearly nine out of ten children (87.5%) identify as Christians, followed by those who identify as Muslims (9.9%). Children who had no religious affiliation (1.3%) and those who practiced the African Traditional Religion (1.3%) made up the remaining percentages.

Awareness of COVID-19. Table 3 shows the percentage distribution of children aware of COVID-19. The table indicates that 99.0 percent of the children have heard of the disease, with more females than males being aware, although this was statistically insignificant (99.5% vs. 98.4%; $P < 0.293$).

Knowledge of causes of COVID-19. Children were asked to identify the causes of COVID-19, as shown in Table 4. According to Table 4, 93.2 percent of children believe that COVID-19 is not caused by bacteria, 96.3 percent believe that COVID-19 is caused by a virus, and 96.9 percent believe that it is an illness caused by

the Novel Corona virus. Table 4 further indicates that the percentages of males and females who are aware of the causes of COVID-19 are almost identical. In terms of age, a higher proportion of 10–13-year-olds (21.0%) than 14–17-year-olds (3.0%) believe that COVID-19 is caused by bacteria. Regarding children who believe that COVID-19 is caused by bacteria, the proportion of respondents in primary school is greater than that of those in junior high school, SHS/vocational, and higher. Similar proportions of males (96.2%) and females (96.4%) believed that COVID-19 was caused by a virus. Regarding age, a slightly lower proportion of children aged 10–13 (93.8%) believed that COVID-19 was caused by a virus than those aged 14–17 (97.0%) (Table 4). Similarly, a slightly lower proportion of children in JHS (93.9%) than those in primary school (94.2%) and SHS/vocational and higher (98.1%) believed that COVID-19 is caused by a virus. Table 4 reveals that a higher proportion of males (97.3%) than females (95.9%) identified COVID-19 as the illness caused by the novel coronavirus, while a lower proportion of children aged 10–13 (92.6%) than those aged 14–17 (97.7%) confirmed this. In terms of education, a smaller percentage of children in primary school (94.2%) reported so than those in JHS (94.9%) and SHS/vocational and higher (98.7%).

During phone interviews, some children expressed some incorrect information about the causes of the disease. During the PIs, some of the children expressed the following:

Bacteria are the cause of COVID-19 disease. This is why we need to keep our surroundings clean to avoid it. I believe if we keep our surroundings clean, the bacteria will not survive. (PI 1, boy, 12 years)

The disease can be spread through mosquito or insect bites. This implies that if a mosquito bites an infected person, it can spread the disease to that person if that mosquito bites them. I am very sure people are getting infected more and more because we have a lot of mosquitoes in the country. (PI 2, girl, 13 years)

By placing lime in hot water, wrapping oneself in a blanket, and breathing in the heat from the hot water, the disease would be eliminated, and the person employing the method's immune system would be boosted. (PI 3, boy, 16 years)

When asked who could contract COVID-19, 95.5 percent said that healthy-looking people could, 97.1 percent said that children could, 96.1 percent thought that Africans (people of black descent) could, and 86.1 percent thought that people residing in hot climates could (Table 5). When the opinions expressed are considered in their context, most of the respondents generally had good knowledge of the disease's potential victims. Both male and female respondents recorded a lower percentage knowledge rate in terms of those who believed COVID-19 infected people living in places with hot weather. A similar trend is observed in terms of age, where the 10–13-year-olds recorded lower percentage rates in terms of those who believe COVID-19 infects people living in places with hot weather. There is a notably lower rate of knowledge in terms of education. For instance, 88.4 percent of children in primary school, compared to 93.9 percent in JHS and 98.6 percent in SHS/vocational and higher, reported that healthy-looking people can have COVID-19. Again, from Table 5, it can be observed that the children have lower percentages regarding the belief that COVID-19 infects people living in places with hot weather. Though, generally, the rate of misconception among the children is very low, there are still gaps (though marginal) in knowledge of who can be infected among the children surveyed.

Sources of information. Having expressed their knowledge of the causes and who can be infected, the children indicated their sources of information on COVID-19. From Table 6, most (39.1%) children use the Internet or social media (WhatsApp, Twitter, Facebook, etc.) as their sources of information on COVID-19. Following closely in Table 6 are children citing television (37.0%) as their source of information. The other sources

Table 3 Children who have heard of COVID-19 by Sex.

Socio-demographic characteristics	Frequency	Have heard (%)	Have not heard (%)	P-value
Sex				0.293
Male	185	98.4	1.6	
Female	196	99.5	0.5	
Total	381	99.0	1.0	

Source: Fieldwork, July 2020.

Table 4 Knowledge of causes of COVID-19 by sex, age, and education.

Socio-demographic characteristics	Is COVID-19 caused by bacteria?		P-values	Is COVID-19 caused by virus?		P-values	Is COVID-19 the illness caused by the Novel corona virus ?		P-values
	Yes	No		Yes	No		Yes	No	
Sex			0.988			0.912			0.459
Male	7.0	93.0		96.2	3.8		97.3	2.7	
Female	6.6	93.4		96.4	3.6		95.9	4.1	
Age			<0.001			0.178			0.026
10–13-year-olds	21.0	79.0		93.8	6.2		92.6	7.4	
14–17-year-olds	3.0	97.0		97.0	3.0		97.7	2.3	
Education			<0.001			0.105			0.166
Primary	23.2	76.8		94.2	5.8		94.2	5.8	
JHS	6.1	93.9		93.9	6.1		94.9	5.1	
SHS/Vocational and higher	1.9	98.1		98.1	1.9		98.1	1.9	
Total %	6.8	93.2		96.3	3.7		96.6	3.4	

Source: Fieldwork, July 2020.

Table 5 Knowledge of causes and who can be affected by COVID-19 by Sex, age and educational background.

Socio-demographic characteristics	Healthy-looking persons can have COVID-19	P-values	COVID-19 affect children	P-values	COVID-19 affects Africans (people of black descent)	P-values	COVID-19 affects people living in places with hot weather	P-values
Sex		0.899		0.835		0.072		0.045
Male	95.7		97.3		98.4		86.0	
Female	95.4		96.9		93.9		86.2	
Age		<0.001		<0.001		<0.001		0.027
10-13	88.9		91.4		85.2		80.2	
14-17	97.3		98.7		99.0		87.7	
Education		<0.001		<0.001		<0.001		0.013
Primary	88.4		91.3		85.5		79.7	
JHS	93.9		95.9		94.9		86.7	
SHS/Vocational and higher	98.6		99.5		100		87.9	
Total %	95.5		97.1		96.1		86.1	

Source: Fieldwork, July 2020.

Table 6 Source of Knowledge of COVID-19 by sex, age, and educational background.

Background characteristics	Television	Radio	Publications	Friend	Internet/Social media	P-values
Sex						<0.402
Male	36.8	17.3	1.1	3.8	41.1	
Female	37.2	15.8	3.6	6.1	37.2	
Age						<0.001
10-13	54.3	14.8	1.2	7.4	22.2	
14-17	32.3	17.0	2.7	4.3	43.7	
Education						<0.001
Primary	56.5	11.6	1.4	8.7	21.7	
JHS	50.0	16.3	4.1	3.1	26.5	
SHS/Vocational and higher	24.8	18.2	1.9	4.7	50.5	
Total	37.0	16.5	2.4	5.0	39.1	

Source: Fieldwork, July 2020.

mentioned include radio (16.5%), friends (5.0%), and publications (2.4%) such as newspapers, pamphlets, posters, etc. The data presented suggests that the internet, social media, and television constitute the most common sources of information on COVID-19 for children. Although the survey findings suggest that most children learned about COVID-19 from the Internet, the PIs demonstrate that children who might not always have access to the Internet also found out about COVID-19 from TV and radio. Children spoke about how radio and television were crucial sources of COVID-19 information during the country's lockdown:

Although most of the time, my friends and I use the internet to find out information on COVID-19, there are instances when we run out of data and can't use the internet. When I needed to hear news about COVID events around the country and around the world during the lockdown at home, TV served as a dependable and essential channel. (PI 4, boy, 17 years).

Since I don't have a phone or a TV in my room, the radio was my primary source of knowledge on COVID. I enjoy listening to the radio since I can quickly change from one FM station to another whenever I need information on COVID-19. I scrambled the radios for a variety of news so I could brag about it to my friends since, throughout the lockdown, my friends and I competed over who was the first to obtain the most up-to-date information on COVID.

I wasn't the only child who looked for COVID news on the radio, which proved to be a highly dependable source of information. (PI 5, girl, 12 years).

Table 6 further indicates sex differentials in the sources of COVID-19 information among the respondents. From the table, a higher percentage of males (41.1%) than females (37.2%) access social media channels for COVID-19 information, whereas more females (37.2%) than males (36.8%) use television as a source of information. The use of radio is higher among males, while more females than males prefer the use of publications (newspapers, pamphlets, posters) and friends as a source of information on COVID-19. The PIs attest to the disparities between sexes in the children's COVID-19 information sources. Some of the male participants in the PIs mentioned that they were not interested in watching TV for COVID-19 information. One child explained that:

Every time I watched TV with my mother and sister in the living room, they would talk and be noisy. This occurs frequently; therefore, I prefer exploring COVID information in the privacy of my room while browsing the radio, internet, and social media. (PI 6, boy, 17 years).

Another child had the following to say:

My father and brothers hardly come to the main hall to watch TV, except when there is a football match or sports show. They spend most of the time on their phones in their rooms, while I am either watching TV alone in the hall or

conversing with my older sister. We spend most of our time together in the hall, where the household TV is, so we can find out about COVID-19 as we watch. (PI 7, girl, 15 years).

Age is significantly associated with sources of information on COVID-19 ($P < .001$). For example, while television constitutes a major source among children aged 10–13, the use of social media is more popular among the 14–17-year-old age group. Again, while children aged 10–13 prefer getting information from their friends, those aged 14–17 prefer radio as a source, as seen in Table 6. Respondents to the PIs explained that younger children rely more on TV for COVID-19 information compared to older children, who prefer the use of social media and the internet. Some of the respondents expressed that:

Most evenings, my parents and younger siblings gather in our sitting room. This is typical in most houses where older children, who typically desire their own space, sit in their rooms or other places in their homes away from their parents and use their phones to surf the internet for amusement and news about COVID. (PI 8, boy, 12 years).

The chi-square test result in Table 6 indicates a significant association between educational attainment and the source of COVID-19 information among the respondents ($P < 0.001$). The use of television and friends is seen to be more common amongst children in primary and junior high school (JHS), whereas the use of social media channels is highest among children in senior high school (SHS), vocational school, and higher education.

The PIs additionally learned that some false information and incorrect beliefs regarding COVID-19 were spread through social media platforms including WhatsApp, Facebook, Instagram, and Twitter, from which most children obtain their information. In one of the interviews, a child made the following observation:

Just this morning, my friends shared a message on WhatsApp that COVID-19 kills only adults and not children. I am tempted to believe it because we have not yet heard any reports of child deaths. Most of the mortality cases involve aged and persons with underlying disease. (PI 9, Boy, 17 years).

Another child stated in the PIs the following remarks:

Yes, I've heard on Instagram and TikTok that the illness was created by Chinese scientists working in America who were hired to create a virus that would kill people to lower the world's population. (PI 10, Girl, 12 years).

Discussion

This study examined children's knowledge of COVID-19 and the sources of their knowledge. Nearly all the children sampled in the survey had heard of COVID-19, showing a high degree of awareness among the children. The result is consistent with earlier works conducted in Cambodia (Save the Children, 2020a), China (Xue et al., 2021), and India (Singh et al., 2022), which showed that every child sampled was aware of the disease. The data also demonstrate that females are more knowledgeable about the disease than males, supporting earlier findings (Ganaprakasam et al., 2021; Li et al., 2022). From the qualitative results, boys spend most of their free time alone using their phones and have less access to other information sources. It is not unexpected that girls have higher awareness rates because they watch more television, spend more time with their parents, and most likely get reliable and up-to-date information about COVID-19 from them and other family members. The results, however, contrast with other studies (Save the Children, 2020c; Xue et al., 2021), which revealed that more males than females were aware of COVID-19.

In comparison to the younger respondents, the older respondents knew more about the disease's causes. Also, children with higher education levels have more knowledge than those with lower education levels. The findings suggest that maturity accounts for the older and more educated children's better knowledge. The study found that 95.5 percent of respondents knew healthy-looking people could have COVID-19, 97.1 percent were aware the disease can infect children, 96.1 percent thought it could also affect Africans (people of black descent), and 86.1 percent believed it could affect those who live in hot climates. When the opinions given are put into perspective, the survey results generally show that the study participants had good knowledge about the virus and the disease, which is consistent with earlier works in Nigeria (Noyne, 2022), Bangladesh (Ferdous et al., 2020), and China (Xue et al., 2021). Although the quantitative results show respondents have good knowledge, the qualitative findings show that a few survey participants have an incorrect understanding of COVID-19, supporting previous studies by Ferdous et al. (2020) and Save the Children (2020a). This finding suggests that despite the high level of knowledge, there are still knowledge gaps that need to be filled to raise children's knowledge about COVID-19 in the country. Also, while the present study's finding that social media is the primary source for children's information on COVID-19 is encouraging, it is also concerning because it can be a source of misleading information about the virus for some children. The results of this study are in line with other studies (Hager et al., 2020; Mansur et al., 2021; Persici et al., 2021; Save the Children, 2020a).

The results also reflect the children's knowledge sources' diversity. For instance, whereas television is a significant source for children aged 10 to 13, social media use is more prevalent among those aged 14 to 17. Social media use increases with age, which is consistent with earlier studies and suggests older adolescents use social media more frequently than the younger adolescents surveyed (Save the Children, 2020b). Once more, children aged 10 to 13 prefer to obtain their information from peers, while those aged 14 to 17 prefer to listen to the radio. The results of the chi-square test show a significant association between respondents' educational level and the source of their COVID-19 information. From the survey results, the use of television and friends is seen to be more common amongst children in primary and JHS, whereas the use of social media channels is highest among children in SHS, vocational, and higher education.

Limitations and strengths

The study has some limitations. First, no causal relationship could be inferred from the cross-sectional design used. Second, only children with access to computers, phones, tablets, and the internet make up the study sample. This raises issues of social classification, as in developing countries, access to the internet and internet-ready devices may be restricted by social class (Marler, 2018). Given this, it is obvious that generalizability was impacted by the sample's exclusion of the opinions of children who lacked access to the devices mentioned. Future research should include a more representative sample. Despite its shortcomings, this study adds significant knowledge regarding the sources and knowledge of children about COVID-19 in Ghana.

Conclusion

The study's findings indicate that almost all participants were aware of COVID-19, indicating that the children sampled had a very high level of knowledge, with females having greater knowledge than males. The qualitative aspects, however, revealed inaccuracies in the knowledge of some children about the causes of COVID-19, indicating gaps. Though, generally, the rate of

misconception among the children is very low, there are still gaps in knowledge about who can be infected among the children surveyed. The telephone interviews provided explicit findings concerning several misconceptions regarding the disease's transmission. This was evident from some children's claims of bacteria, mosquitoes, or insect bites transmitting the disease. This finding suggests the need for an increased educational drive to strengthen children's knowledge of the risk of transmission of the virus in educational institutions as well as other settings where children and younger people may be targeted. According to the findings, social media, which is the main source of information for children on COVID-19, is where the small number of children who have false and inaccurate information on the disease are receiving it. Since social media platforms are where children go to learn about COVID-19, parents, teachers, and individuals in charge of children should take precautions to keep them from consuming misinformation from these channels. Due to the variance across sources of information within groupings of age, gender, and educational level, it is advocated that public awareness campaigns targeted at children should be multifaceted. This will employ the use of different strategies and modes of outreach to ensure the proper dissemination of COVID-19 information by the government. Although the COVID-19 pandemic has been formally proclaimed to be over, evidence from the current study can serve as background and a guide for handling potential future public health problems.

Data availability

The dataset is in SPSS format and can be obtained upon request. The study collected data using qualitative as well as quantitative methods, which are available as supplemental material.

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Author contributions

SKG and ZKG contributed to the study's conception, design, and analysis. In addition, the authors worked on the first draft of the work. Finally, SKG and ZKG participated in the manuscript's editing as well as reviewing and approving the final version. The authors agreed to accept responsibility for all parts of the work, including ensuring that any questions about the accuracy or integrity of any portion of the work were thoroughly examined and resolved.

Competing interests

The authors declare no competing interests.

Ethical approval

The study involved children; hence, it was deemed that ethical approval was required. In view of this, permission to start fieldwork was sought and granted. The approval for the commencement of the study was granted by the National Child Protection Committee (NCPC) of the Department of Children in April 2020.

Informed consent

Informed consent was obtained from parents, legal guardians, and children. A letter was sent to the parents or legal guardians of prospective participants, requesting permission to allow their children to participate in the study. After obtaining parental consent, eligible children who wished to participate provided written consent and were then granted access to the online questionnaire using a hyperlink. All participants were informed that their participation in the study was voluntary and that they were free to

leave at any point and skip any questions they did not wish to answer. The principles of the Helsinki Declaration were followed during the data collection, and the obtained data were anonymized to preserve children's rights.

Additional information

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