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Gender discrepancies in sources of information and COVID-19 pandemic knowledge: Insight from some districts and municipalities in Ghana

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Abstract

The aim of the study was to investigate gender variations in the sources of information and knowledge about COVID-19. The study took place in Okere District, Akuapem South District, and Akuapem North Municipal Assemblies in the Eastern Region of Ghana. A convenient sampling method was employed to select 800 participants, who were given a self-designed questionnaire on COVID-19 knowledge (SMQKC). The hypothesis posited that there would be no significant difference in information sources, knowledge of causes and transmission, symptoms, prevention and control, and other management protocols of COVID-19 between males and females in the urban areas of the studied Municipal and District Assemblies (MDAs). The results revealed that social media and radio were the two main sources of information on COVID-19, and the difference in information sources between males and females was statistically significant. An independent t-test indicated a significant difference in knowledge of causes and transmission, symptoms, prevention and control, and other management measures between males and females regarding COVID-19 at a 95% confidence interval. The study suggests, among other things, a targeted effort to disseminate information on diseases, particularly COVID-19, to females, considering their gender roles that bring them closer to risks associated with infectious diseases compared to their male counterparts.

Keywords: COVID-19; Gender; Pandemic; Knowledge; Information sourcing

1. Introduction

In recent times there have been proliferation of disease outbreaks most of which have assumed an epidemic status. Notable but latent among the factors increasing the pandemic is climate change. In the last four decades, studies [4, 28] have observed that several emergent and re-emergent infections including Human Immunodeficiency Virus/AIDS in 1981, Severe Acute Respiratory Syndrome Coronavirus in 2002, H1N1 influenza virus in 2009, the Middle East Respiratory Syndrome Coronavirus in 2012 inter alia have afflicted the globe.

These pandemics have huge adverse impact on health; continually exacerbating poverty, starvation and hunger [27, 22]. These challenges invariably severely militate against the attainment of the Sustainable Development Goals (SDG) (SDG 3: good health and wellbeing and SDG 5: gender inequality).

Even though the impacts of pandemics pose a global challenge, the impact is very devastating in developing nations as a consequence of their high vulnerability and low adaptive capacity [17]. Countries located in the Sub-Saharan Africa

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feel the effects of the pandemic even the more. Studies from Nigeria have indicated that the COVID-19 adversely affected education and exacerbated poverty in the country [26, 24]. In Ghana, the situation is not too different since pandemics have over the years brought about entrenched poverty and other discomforts [7].

In spite of the extensive studies that have been conducted on pandemics, gender issues in pandemic seem to have received little attention. For instance, [6] noted in a study that very scanty studies have employed gender-based perspectives in their evaluation of mental health and pandemics. Other studies have further lamented on the rather paucity of studies on gender, sex, epidemics and pandemics [21, 14,30]. Thus, studies on gender and pandemic-related issues have been overlooked (Lawry, et al., 2021) and not been adequately explored. This study therefore bridges the gap in literature by investigating epidemic knowledge discrepancies and gender nexus from the perspective of a developing nation. This will help inform policy to put adequate measures in place towards the attainment of the SDG 3 and 5 in the context of developing nation.

1.1. Knowledge on awareness of pandemics and gender

The importance of knowledge on the etiology, mode of transmission, effects and prevention of diseases cannot be underestimated. Knowledge and awareness of diseases is a *sine qua non* in preventive health practice. Good level of awareness of diseases and good health practices has been noted to have positive impact on the adoption of healthy life style [12]. When people are empowered through adequate knowledge on diseases, it enhances their coping and adaptive capacity; reducing sensitivity and vulnerability to ill-health in the process.

A study by [9] has posited that most of the deaths that occurred in Nigeria from COVID-19 were attributable to factors including ignorance and non-availability of requisite information on the pandemic. Again, studies in Ethiopia, South Nigeria and other African countries are conclusive on the fact that high morbidity and mortality linked to the COVID-19 pandemic was occasioned by the rather low level of knowledge and ignorance of the citizenry [31, 29]. The Ghanaian context is not too different from other countries. In Ghana, [15] in a study on level of awareness among adults on HIV and AIDS between 1998 to 2014 concluded that there is a rather low awareness on etiology and other pertinent knowledge on the HIV AIDS pandemic.

Additionally, that gender imposes certain vulnerabilities and inequalities that limit the adaptive capacities requisite for moderating susceptibility to morbidity and mortality from pandemics is incontestable. The differences in anatomy of males and females, the physio-biological characteristics that define them present opportunities and threats which results in discrepancies in their response to health-related disaster risks [35].

Knowledge about pandemics may be obtained from many sources. Notably among the sources include the print and the electronic media, school, social groups (religious organizations, the social media). Most of these resources for knowledge acquisition can easily be accessed equally by females in developed nations (where ownership to assets is usually independent on gender) more than females in developing nations where the reverse holds. This injustice and inequality places limitation to the extent to which women can own certain personal assets pertinent for information acquisition on public health. Thus, through injustice and inequality including ownership of assets inter alia which favors men in most developing nations, females are deprived of many privileges including access to quality education; a recipe for their relatively low awareness on pandemics. In spite of these challenges, some studies aver that women have higher awareness on pandemic relative to their male counterparts [1, 11]. The differences in awareness of diseases is further elaborated by [5] who have posited through a web survey in Chile that females by virtue of their extreme fear and worry for pandemic outbreaks demonstrate superior preventive knowledge.

Conducting additional research is essential to investigate gender-based knowledge disparities in a developing nation, aiming to illuminate these differences. This exploration will contribute to a more comprehensive understanding of the phenomenon globally, with the potential to influence policy. The study is built upon four hypotheses:

- No significant disparity exists in knowledge about sources of information on COVID-19 between males and females in the studied district.
- There is no significant difference in knowledge regarding the causes and transmission of COVID-19 between males and females in the studied district.
- No significant difference is observed in knowledge about symptoms and prevention of COVID-19 between males and females in the studied district.
- There is no significant difference in knowledge concerning the control and management of COVID-19 between males and females in the studied district

2. Material and methods

The research was conducted in two districts and one municipality in Ghana, specifically the Okere District, Akuapem South District, and Akuapem North Municipal Assemblies. A self-developed questionnaire, known as the Self-Made Questionnaire on Knowledge of COVID-19 (SMQKC), was administered to a sample of 800 participants within the aforementioned districts and municipality. The questionnaire aimed to assess the participants' knowledge and awareness regarding sources of information on the COVID-19 pandemic, its causes, symptoms, mode of transmission, and methods of prevention.

Purposive sampling was employed to select the participants, and a quantitative research design was adopted. A pilot test was conducted in the Suhum Municipality involving 30 participants who shared similar characteristics with the main study districts and municipality. The pilot test aimed to ensure the reliability and validity of the questionnaire items. The questionnaire underwent scrutiny by expert researchers at the Presbyterian University Ghana, who provided valuable suggestions.

Six research assistants, trained for the task, distributed questionnaires to residents in both urban and rural areas of the studied districts and municipality. In cases where respondents faced difficulty reading, the questionnaire items were read and explained in local languages. Consent was obtained based on their understanding, and respondents were assisted by educated family members in providing accurate answers, especially when there were Junior High School (JHS) and above students in the households.

Most questionnaires were collected after the fifth day of administration, coded, and entered into SPSS version 21 and Microsoft Excel for further analysis. At the univariate level, descriptive statistics were employed to determine the demographic characteristics of the respondents. Additionally, at the bivariate level, student's t-test and chi-square statistics were performed to ascertain whether differences in respondents' knowledge of COVID-19 and sources of information were statistically significant or merely by chance, with a confidence level of 95% ($p=0.05$).

3. Results

3.1. Sources of information on COVID-19

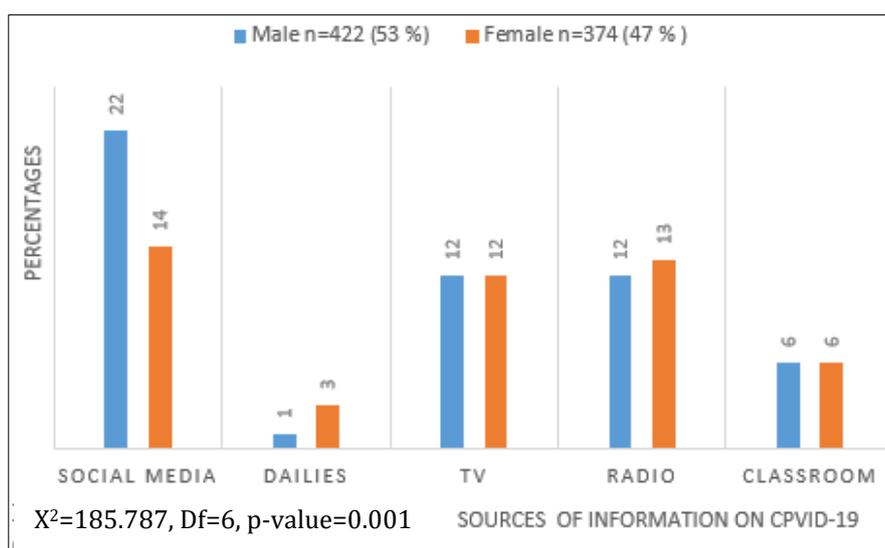


Figure 1 Respondent sources of information on COVID-19

Figure 1 presents the results of respondents' sources of information on COVID-19. The participants comprised 53 % males and 47 % women. Figure 1 further shows that majority of the respondents got information on COVID-19 from social media. More males (22 %) than females (14 %) resort to the social media as their source of information on the pandemic. The second highest source of information on COVID-19 was the radio, followed by television (TV). The results from Figure 1 further reveals that whereas the same percentage of male and females (6 %) use the television as their source of information on the pandemic, more females (13 %) than males (12 %) use the radio to gather information on the pandemic. Also, about 6 % of both females and male indicated they obtain information on the pandemics in the

classroom whilst 3 % and 1 % females and males respectively use the dailies as their main source of information on COVID-19.

The Chi square statistics result further indicated a significant difference so far as the sources of information on COVID-19 amongst males and females is concerned.

3.2. Knowledge on causes and transmission of COVID-19

The results of respondents' knowledge on causes and mode of transmission of Covid-19 between male and female participants is presented in Table 1. Table 1 shows that there was significant difference in scores for males (M = 132.15, SD = 12.06, $p < 0.05$) and females, (M = 127.98, SD = 13.28; $t(798) = 4.651$, $p = .0001$ (two-tailed).

Table 1 further depicts that there was significant difference in scores for males (M = 41.11, SD = 5.0) and females, (M = 40.11, SD = 5; $t(798) = 2.818$, $p = .005$ (two-tailed) so far as knowledge on transmission of the pandemic is concerned.

Table 1 Mean difference in knowledge on causes and transmission of COVID-19

Group	N	Mean	SD	T	<i>p-value</i>
Knowledge on causes					
Male	422	132.15	12.1	4.651	0.001*
Female	378	127.98	13.3		
Knowledge on transmission					
Male	422	41.11	5.0	2.818	0.005*
Female	378	40.11	5.0		

*Significant at $p < 0.05$

3.3. Gender difference in the knowledge on symptoms and prevention of covid-19

Table 2 depicts the results of an independent-samples t-test conducted to compare male and female knowledge on symptoms and prevention of Covid-19. Table 2 shows that there was significant difference in scores for males (M = 21.11, SD = 3.7) and females, (M = 19.32, SD = 5.2; $t(798) = 5.608$, $p = .0001$ (two-tailed).

Again, as shown by Table 3, there was significant difference in scores for males (M = 31.8, SD = 5.9) and females, (M = 30.3, SD = 5.1; $t(798) = 3.888$, $p = .0001$ (two-tailed) so far as knowledge on prevention of the pandemic is concerned.

Table 2 Mean difference in knowledge on symptoms and prevention of Covid-19

Group	N	Mean	SD	T	<i>p-value</i>
knowledge on symptoms					
Male	422	21.11	3.7	5.608	0001*
Female	378	19.32	5.2		
knowledge on prevention					
Male	422	31.8	5.9	3.888	0001*
Female	378	30.3	5.1		

*Significant at $p < 0.05$

Gender difference in the knowledge of control and management of covid-19

Table 3 presents the results of an independent-samples t-test conducted to compare male and female knowledge on how to control and manage COVID-19. There was significant difference in scores for males (M = 16.40, SD = 3.7) and females, (M = 16.17, SD = 2.7; $t(798) = 5.608$, $p = .0001$ (two-tailed) in the control of the pandemic.

Similarly, Table 3 shows that there was significant difference in scores for males (M = 13.92, SD = 2.9) and females, (M = 14.70, SD = 2.5; $t(798) = -4.041$, $p = .0001$ (two-tailed)).

Table 3 Gender difference in knowledge on control and management of COVID-19

Group	N	Mean	SD	T	p-value
Knowledge on control					
Male	422	16.40	2.7	1.210	.0001*
Female	378	16.17	2.7		
Knowledge on management					
male	422	13.92	2.9	-4.041	.0001*
female	378	14.70	2.5		

*Significant at $p < 0.05$

4. Discussion

The methodological approach of this study generated results that provides unambiguous evidence for evaluating the gender discrepancies in knowledge on COVID-19. However, the study was not without limitations. Limiting the study to only 800 participants make it somehow unscientific to generalize the findings from the study to cover all the population in the studied districts and municipality. Again, the processes and analyses of data may have introduced some errors. However, it is expected to cause minimal effect since tenacious efforts were made to avoid the errors.

The study identified that the differences in the sources of information on COVID-19 among the respondents were statistically significant. Among the five sources of information provided, social media was the highest or the common source of information on COVID-19 among the participants. Males however used the social media as their source of information more than females (Figure 1). This finding is supported by that of [31]. They averred that in Indonesia, social media was the highest source of information on infectious diseases. The finding is however inconsistent with that from the study by [34] who concluded that about 76% of their subjects in a study preferred the radio as their source of information on COVID-19. Efforts at controlling the pandemic by the Ministry of Health should therefore target all handles of the social media as a reliable medium for educating the populace on COVID-19. Understanding the gender-specific patterns in accessing COVID-19 information is crucial for tailoring public health communication strategies. Policymakers, healthcare professionals, and communication experts can use these findings to design targeted campaigns that resonate with the specific preferences and trust levels of different gender groups.

As regards the causes of the pandemic, the significant difference in scores between males and females due to the huge difference in the magnitude of their compared means (Table 1) is indicative of the fact that the gendered differences in knowledge among the respondents were not merely due to chance. The differences which were in favour of males also shows that male respondents in the studied districts and municipality had more knowledge on the causes of the pandemic relative to their female counterparts. This finding does not resonate with findings from some studies that have found out that females seem to be more knowledgeable on the causes of pandemics and infectious diseases more than their male counterparts because they are constantly engaged in information seeking [13, 10, 8]. The rather higher knowledge of males relative to females on the causes of the pandemic may be attributable to the high percentage of males who used the social media as their source of information (Figure 1). This finding has very pertinent implications for public health educational campaigns. Understanding that males in the study area are more knowledgeable on the causes of the pandemic suggests that specific interventions should be designed to address the gender gap in awareness. Policymakers, health practitioners, and educators can utilize these results to tailor communication strategies that specifically address the informational needs of females, ensuring that they are equipped with the necessary knowledge to navigate the challenges posed by the pandemic. Furthermore, these implications underscore the importance of fostering gender inclusive approaches in health education and outreach programs (Sustainable development Goal 4) to promote a more equitable distribution of knowledge and empower all individuals to make informed decisions regarding their health and well-being.

A good appreciation of the mode of transmission of pandemics *sine qua non* in the reduction of the infection rate. Even though COVID-19 was rumored to present complex mode of transmission, the [34] have reported that the COVID-19 virus is mainly transmitted through contact routes and respiratory droplets. The results from the study (Table 1)

depicted that there is a significant difference between males and females so far as their knowledge on mode of transmission the pandemic is concerned albeit the rather small magnitude in the differences. The differences were in favour of males' indicating the rather high knowledge of males on the mode of transmission of the pandemic relative to females. This finding from the study is inconsistent with that of [2] who found in a study in the United States of America that men and people younger than age 55 had low knowledge on transmission of the HIV pandemic. This finding has a critical implication for public health. Designing of pandemic educational campaigns should focus on addressing specific informational gaps within the female demographic to ensure a more equitable distribution of knowledge. Understanding the factors contributing to this gender difference is crucial for tailoring effective communication strategies, taking into account diverse learning preferences and information-seeking behaviors.

Possession of good knowledge on the symptoms of diseases are very useful in the prevention of infectious diseases [36]. In this study, there was a significant difference among the two sexes so far as their knowledge on the symptoms of the pandemics was concerned despite the relatively small magnitude of differences (Table 2). According to the results, more males had adequate knowledge on the symptoms of the pandemic as compared to the females. The result from the present study on gendered knowledge on symptom does not synchronize with that of [16] who posit that more females consult on issues on ailments including symptoms more than men. Understanding these differences could be crucial in tailoring public health communication strategies to bridge the knowledge gap among females This finding from the study therefore calls for targeted educational campaigns and interventions that ensure that females are well-informed about the symptoms, leading to improved overall public health outcomes.

In addition, the knowledge on prevention of the pandemic indicated a significant difference favouring males (Table 2). As regards control and management of the pandemic, the results were not too different from the knowledge on the other aspects of the pandemic (Table 3). There was statistically significant difference in knowledge on control and management of the pandemic with males possessing relatively better knowledge than their female counterparts. These findings from the study are at variance with that of [13]. They observed in their study on eight countries that females have higher probability to engage in practices that prevent and control the contracting COVID-19 more than male counterparts. Addressing this disparity is very critical in ensuring that men and women are equally equipped to contribute effectively to pandemic response efforts. Additionally, policymakers and health authorities should consider integrating diverse perspectives and experiences in decision-making processes to enhance overall pandemic management strategies.

5. Conclusion

This research aimed to discern the variations in information sources and knowledge regarding COVID-19 with respect to gender differences. All four alternative hypotheses were robustly supported, as evidenced by the statistically significant values obtained. The study revealed that the predominant information sources for the respondents were social media. Notably, a higher proportion of males turned to social media and classrooms for COVID-19 information compared to their female counterparts. Conversely, females exhibited a greater reliance on radio, television, and print media for their knowledge about COVID-19. Regarding general knowledge about COVID-19, both males and females demonstrated a commendable understanding well above the average threshold. However, across all categories—general knowledge, causes, mode of transmission, symptoms, prevention, control, and management of COVID-19—there existed a statistically significant difference favoring males. These findings underscore the necessity for concerted efforts to address the knowledge disparities between males and females concerning the COVID-19 pandemic in the study area.

Recommendations

It is recommended that initiatives be implemented to encourage more females to utilize smartphones, as these devices offer a wealth of transformative information, including insights into disease prevention and management. Furthermore, the promotion of social media use among females should be emphasized without neglecting traditional information sources. Additionally, targeted educational campaigns should be designed to raise awareness among females about the causes, effects, and management of COVID-19, as well as infectious diseases in general, at both national and community levels.

To gain a comprehensive understanding, it is suggested that similar studies be conducted in rural settings across various Ministries, Departments, and Agencies (MDAs) in Ghana. This approach would provide a holistic perspective on gender differentials in knowledge related to the COVID-19 pandemic.

Compliance with ethical standards

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Disclosure of conflict of interest

Authors declare that there is no conflict of interest for the publication of this scientific article.

Statement of ethical approval

The protocol of the research was reviewed and approved by the Ethics Committee of the Presbyterian University College, Ghana.

Statement of informed consent

As regards the voluntary participation in this study, informed consent was obtained from all the subjects prior to the administration of the questionnaire.

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