

GENDER ANALYSIS OF FARMING HOUSEHOLDS' KNOWLEDGE, ATTITUDE AND PRACTICES ABOUT COVID-19 PREVENTIVE MEASURES: COMPARATIVE EVIDENCE FROM NIGERIA AND BOTSWANA

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Abstract

In the face of deadly pandemic, many sub-Saharan African farming households appear to be nonchalant about COVID-19 preventive measures. Gender analysis vis-à-vis knowledge, attitudes and practices (KAP) of COVID-19 preventive measures was carried out among the Nigerian and Botswana farming households using a pre-tested interview schedule to source information from 360 respondents. Mean age of the Nigerian household heads was 29.42 years and that of Botswana was 33.97 years. Nigerian mean household size was 7.32 and their Botswana counterparts was 4.06. Respondents from the two countries had unfavourable attitudes with Grand Weighted Mean Score (GWMS) < 2 towards COVID-19 preventive measures. Also, there is generally high knowledge of COVID-19 preventive measures (GWMS > 1.5) with proportionate level of practices across countries and gender. There exists no significant difference between gender and KAP in Nigeria and Botswana. Attitudinal change and continuous enlightenment are imperatives among farming households, focusing on both genders, for improved compliance with the COVID-19 preventive measures.

Key words: Botswana, COVID-19, farming community, gender, knowledge, attitudes and practices (KAP), Nigeria.

INTRODUCTION

According to World Bank collection of development indicators, rural populations in Nigeria and Botswana were estimated and reported to be 48.04 percent and 29.12 percent, respectively (World Bank, 2020) and these are the countries with population of 206, 139, 589 million and 2, 349, 447 million, respectively (Madu, 2010; Moepeng, 2013; World meter, 2020).

Recently, the rural communities are faced with concerns over their livelihoods and survival due to recent shutdown caused by Coronavirus pandemic (Kim, et al., 1969; Adeloye, et al., 2023). COVID-19 pandemic is a global crisis, which impacted the farming communities, as farmers are unable to tend to their crops and livestock and in most cases get them to

consumers in different states/districts of Nigeria and Botswana, respectively (UN Botswana, 2020; FAO, 2021; Bante et al., 2021; Masimba, 2021).

These countries risk a looming food crisis unless measures are taken to protect the most vulnerable rural dwellers and mitigate the pandemic's effects across the food value chain. Before the COVID-19 pandemic, majority of the health setups in most countries in sub-Saharan Africa were under strain (Babatunde et al., 2020; Motlhatlhedhi et al., 2020).

With the advent of the pandemic, even with the quarantine and other measures adopted to stop its spread in many countries, the number of infected cases continues to rise considerably. Thus, putting enormous pressure and attacks on the already strained public health systems in many countries (WHO, 2020).

The effects of COVID-19 pandemic on farming communities' households are expected to differ between men and women. Primarily, what people know, believe and do in relation to the pandemic and its preventive measures are expected to differ across gender (Erfani et al., 2020). There is limited literature on gender differences in KAP towards COVID-19 preventive measures among farming communities' households in Nigeria and Botswana. The previous studies, like Ngwewondo et al. (2020), Gebretsadik et al. (2021), Nwagbara et al. (2021), Yelew et al. (2021), Sebeelo (2024), among others had only given attention to some regions within respective countries, as such their findings cannot be generalized to entire Africa given the heterogeneous nature of African population. Furthermore, in the face of deadly pandemic, many sub-Saharan African farming households appear to be nonchalant about the preventive measures, hence, this study is therefore, designed to examine gender differences in KAP towards COVID-19 preventive measures among farming communities' households in Nigeria and Botswana. Specifically, the study described the socioeconomic characteristics of the farming communities' households; ascertained their knowledge of COVID-19 preventive measures; and examined their gender differences in KAP towards COVID-19 preventive measures.

MATERIALS AND METHODS

Study area and sample selection

The study was conducted in two countries in sub-Saharan Africa viz: Nigeria and Botswana in 2022. In Nigeria, one state each was purposively selected from Northern and Southern parts based on prevalent incidences of Covid-19; vis-à-vis Kebbi and Osun state from the North and South respectively. Farming communities and household heads were proportionately selected from the two states: Makera (9), Kulkana yalwa (9), Tsamiya (9), Maurida (9), Koko (14), Saminaka (10), Ngaski (10) and Senchi (20) from Kebbi and Atoba (20), Ologungun (10), Olupele (9), Oosa (21), Candome (18) and Agbongbon (12) from Osun, making a total of 180 respondents from Nigeria. In Botswana, two districts were purposively due to their closeness to Gaborone city (the hotspot

of COVID-19 spread), these were Kgatleng and Kweneng districts. A farming community was selected from each of the districts through purposive sampling technique, that is, Bokaa from Kgatleng and Letlhakeng from Kweneng. In addition, 90 household heads were randomly selected from each of the communities; making a total of 180 respondents from Botswana. Overall, 360 respondents were interviewed for the study and their distribution by gender is shown in Figure 1.

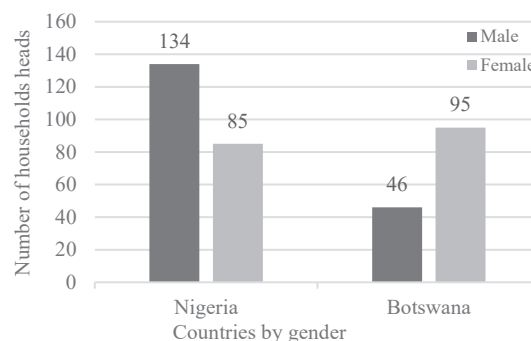


Figure 1. Distribution of household heads by country and gender

Data collection and analysis

The data was collected using a pre-tested and validated structured interview schedule. Descriptive statistics such as frequency counts, tables, charts, percentages and weighted means score were used to analyse the data while Chi-square and multiple regression were used to draw inferences from the data.

Measurement of variables

The respondents were allowed to undergo knowledge and practices test on COVID-19 preventive measures. Eight knowledge and eight practices of the pandemic's preventive measures were measured on a 2- point scale, with 1.5 as benchmark which demarcates high/low knowledge ($1+2/2=1.5$). On the other hand, fourteen attitudinal statements were measured on a 3- points Likert scale as follows; 3- Agree, 2- undecided; 1-Disagree and vice versa for negative statements. The weighted means scores (WMS) implied the degree of respondents' concordance with the statement; that is, the higher the values, the more the respondents are favourably disposed to the statement. Using $1+2+3/3=2$ as benchmark; values below 2 connoted unfavourable attitudes, while those

above 2 would imply favourable attitude towards such statement. In generating KAP index score, total knowledge, attitude and practice scores were independently obtained by summation of response options per variable together. The scores obtained were divided by the respective total score obtainable from each of the KAP variables, to generate the knowledge, attitude and practice index, respectively. The three scores were then summed together per respondent to generate the KAP index score used as demonstrated by Adeloye et al. (2022). Each household item was scored 1 point, and total scores obtained by adding the scores together. So, with 6 items listed maximum score obtainable was 6, and minimum 0.

RESULTS

Socioeconomic characteristics of household heads

Results in Table 1 show the socioeconomic characteristics of male and female headed households in Nigeria and Botswana. The mean age of household heads in Nigeria regardless of their gender was 29.42 ± 13.48 years; while that of Botswana was 33.97 ± 13.98 years. Additional findings show the mean household size for both male and female headed households in Nigeria as 7.32 members and standard deviation of 4.06 members while the mean household size for Botswana was 4.36 members and standard deviation of 2.43 members.

Table 1. Gender distribution of household heads by age and household size

Selected variables	Nigeria (n = 180)				Botswana (n = 180)			
	Male		Female		Male		Female	
	Freq	%	Freq	%	Freq	%	Freq	%
Household Head Age								
<=20	56	31.1	9	5.0	14	7.8	8	4.4
21-40	54	30.0	28	15.6	51	28.3	62	34.4
41-60	20	11.1	7	3.9	15	8.3	15	8.3
>61	4	2.2	2	1.1	5	2.8	10	5.6
	Mean = 29.42; S.D. = 13.48				Mean = 33.97; S.D. = 13.98			
Household Size								
<=5	46	25.6	25	13.9	58	33.2	72	40.0
6-10	62	34.4	19	10.6	23	12.8	21	11.7
>11	26	14.4	2	1.1	4	2.2	2	1.1
	Mean = 7.32; S.D. = 4.06				Mean = 4.36; S.D. = 2.43			

The findings further show that majority (27%) of Nigerian male headed households are more educated up to post-secondary while in

Botswana majority (31.1%) of female headed households attained the same level (Figures 2 and 3).

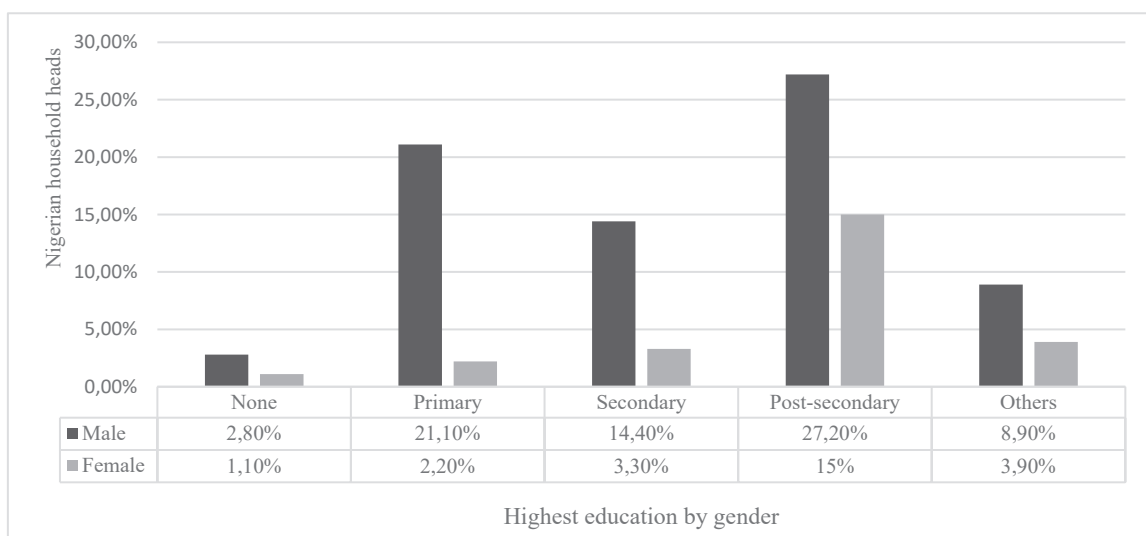


Figure 2. Gender distribution of Nigerian household heads by highest education

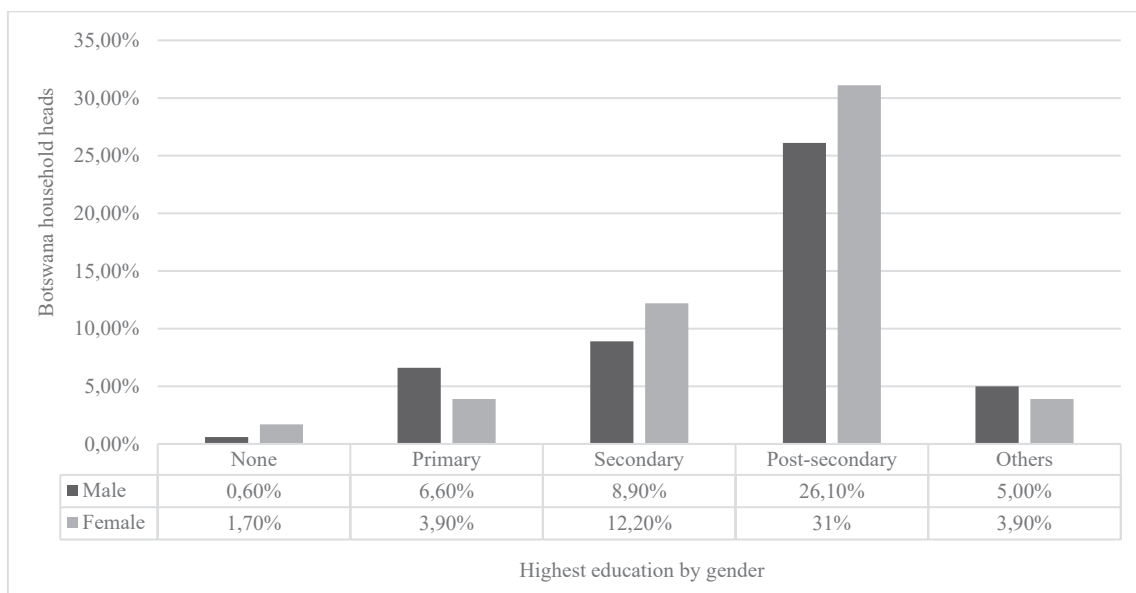


Figure 3. Gender distribution of Botswana household heads by highest education

Household heads' sources of information about COVID-19 preventive measures

Findings in Table 2 show that while more (43.9%, 40.6%, 38.9%, 34.4%, 23.3%, 27.9% and 23.3%) male headed households received information related to COVID-19 through family members, radio, television, religious leaders, internet and use of android mobile phone, clinical/healthcare workers, neighbours/friends, during community meetings and community health workers visiting their homes, respectively, as against a very few

female folks with 17.8%, 13.3%, 12.8%, 10.0%, 6.7%, 8.3% and 9.4% received the same information, respectively from the same sources. Unlike in Nigeria, more (32.2%, 44.4%, 8.9%, 25.0% and 15.0%) of the Botswana female headed households marginally outnumbered their male counterparts receiving information related to COVID-19 from radio, television, religious leaders, internet and use of android mobile phone, clinician/healthcare workers, respectively with 31.7%, 37.2%, 7.2%, 22.8% and 12.8% respectively.

Table 2. Gender distribution of household heads by sources of information on COVID-19 preventive measures

Sources of information about COVID 19 preventive measures	Nigeria (n = 180)				Botswana (n = 180)			
	Male		Female		Male		Female	
	Freq	%	Freq	%	Freq	%	Freq	%
Family member	79	43.9	32	17.8	2	1.1	2	1.1
Neighbor/friend	50	27.9	12	6.7	5	2.8	1	0.6
Clinical/healthcare worker	42	23.3	18	10.0	23	12.8	27	15.0
Radio	73	40.6	32	17.8	57	31.7	58	32.2
Television	70	38.9	30	16.7	67	37.2	80	44.4
Community meeting	42	23.3	15	8.3	0	0.0	0	0.0
Community health worker visiting home	39	21.7	17	9.4	0	0.0	0	0.0
Religious leader	62	34.4	24	13.3	13	7.2	16	8.9
Internet/ Android phone	43	23.9	23	12.8	41	22.8	45	25.0

Attitude about COVID-19 preventive measures

Findings in Table 3 show that all the household heads in both Nigeria and Botswana regardless of their gender were favourably disposed to the believe that "COVID-19 is a very serious disease for adults" and that "it is a severe health problem which may cause death". However, it

was only the Nigerian respondents who were favourably disposed to the belief that "mingling freely with people who have recovered from COVID-19 does not expose one to the risk of contracting the disease"; and with the view that "COVID-19 is over exaggerated", while their Botswana counterparts were unfavorably disposed to the view. In addition, while the

Botswana respondents were favorably disposed to the statements that “COVID-19 can only be transmitted by people who returned from overseas” and that “COVID-19 patients should be allowed to stay home with their families”, their Nigerian counterparts held a contrary view. However, on a general note, respondents from the two countries were unfavourably disposed to the statements that: “COVID-19 issues are meant to prevent people from religious activities”, “COVID-19 is a western agenda aimed at controlling the whole world”, “COVID-19 is not transmittable through public gathering”, “COVID-19 is an avenue for some

public officials to enrich themselves”, “COVID-19 is just a common cold/flu”, and that “COVID-19 is not a disease for rural dwellers”. However, there was a significant difference between male and female respondents’ views that “COVID-19 is not a serious disease for the children” across the two countries. For instance, while a significant view was recorded between Nigerian male and female respondents at $P < 0.5$ level, their Botswana counterparts recorded at $P < 0.1$ level (Table 4). Overall, however, respondents from the two countries have unfavourable attitude with $GWMS < 2$ towards COVID-19

Table 3. Gender distribution of household heads by attitudes towards COVID-19

Attitudinal Statements	Nigeria (WMS)		Botswana (WMS)	
	Male	Female	Male	Female
COVID-19 issues are meant to prevent people from religious activities	1.8433	1.8261	1.1905	1.2234
COVID-19 is a western agenda aimed at controlling the whole world	1.8731	1.8696	1.3929	1.5000
COVID-19 is a disease for the rich	1.888	2.957	1.3214	1.2766
COVID-19 is over exaggerated	2.0522	2.1087	1.8434	1.7872
COVID-19 is not transmittable through public gathering	1.7836*	1.5217*	1.1325	1.2660
COVID-19 is an avenue for some public officials to enrich themselves	1.9552	1.8478	1.6905	1.6702
COVID-19 is just a common cold/flu	1.6493	1.7391	1.7738	1.7766
COVID-19 is not a disease for rural dwellers	1.7164**	1.4130**	1.4643	1.5851
I believe COVID-19 is a very serious disease for adults	2.2015	2.1087	2.7976	2.8511
I believe that COVID-19 is a severe health problem which may cause death	2.4478	2.2174	2.8333	2.8936
I believe that COVID-19 is not a serious disease for the children	2.1791**	1.8698**	1.7229*	1.5426*
I believe that mingling freely with people who have recovered from COVID-19 does not expose one to the risk of contracting the disease.	2.1940	2.1304	1.4881	1.6489
COVID-19 can only be transmitted by people who returned from overseas.	1.8060	1.8913	2.3214	2.2766
I believe that COVID-19 patients should be allowed to stay home with their families	1.4851	1.5435	2.1548	2.2766
Grand Weighted Mean Scores	1.9450	2.0413	1.8003	1.8486

WMS: Weighted Mean Scores; *significant difference occurs between gender at $P < 0.1$ (10%);

**significant difference occurs between gender at $P < 0.5$ (5%)

Knowledge and practices of COVID-19 preventive measures

Results in Table 4 show the knowledge and practices of COVID-19 preventive measure among the Nigerian and Botswana household heads. While, generally, there is high knowledge level of COVID-19 preventive measures with commensurate level of practices across countries and gender, there are no much differences between the knowledge level and practices except in few cases. For instance, there is an indication of high knowledge of “*clean*

your hands often with soap” among the Nigerian respondents with $WMS = 2.000$ for both male and female but low practices of same with $WMS = 1.4104$ and $WMS = 1.4565$ for male and female respondents, respectively. Also, in Nigeria, low knowledge and practices were recorded in “*don’t touch your eyes, nose or mouth*” and “*follow medical directions of your local authority*”, as against their Botswana counterparts who recorded high scores. This might be due to a low spread of information regarding this knowledge among the rural dwellers.

Furthermore, it is also generally observed that except on the “cleans your hands often with soap” where the Nigerian respondents scored higher as a knowledge of COVID-19 preventive measure, their Botswana counterparts scored higher in knowledge and practices of every other

COVID-19 preventive measures. In overall, however, there is generally high knowledge of COVID-19 preventive measures (GWMS >1.5) with proportionate level of practices across countries and gender.

Table 4. Gender distribution of household heads by knowledge and practices of COVID-19 preventive measures

Knowledge	Nigeria (WMS)		Botswana (WMS)	
	Male	Female	Male	Female
Cleans your hands often with soap	2.0000	2.0000	1.9362	1.9362
Maintain a safe distance	1.5373	1.6087	1.8941	1.8732
Don't touch your eyes, nose or mouth	1.4701	1.3478	1.7059	1.7204
Stay home if you feel unwell	1.5970	1.5435	1.8434	1.8298
Cover your face with a mask	1.5821	1.5435	1.8000	1.7979
Fever, cough and difficulty breathing	1.5522	1.5870	1.8471	1.8298
Follow medical directions of your local authority	1.4328	1.4565	1.8706	1.8925
Avoid unneeded visits to medical facilities	1.5522	1.5870	1.8824	1.8817
Grand Weighted Mean Scores	1.5959	1.5839	1.8425	1.8400
Practices				
Cleans your hands often with soap	1.4104	1.4783	1.8929	1.9362
Maintain a safe distance	1.5373	1.6087	1.8929	1.8936
Don't touch your eyes, nose or mouth	1.4701	1.3478	1.7059	1.7204
Stay home if you feel unwell	1.6119	1.5435	1.8434	1.8298
Cover your face with a mask	1.5000	1.5435	1.8000	1.7979
Fever, cough and difficulty breathing	1.5522	1.5870	1.8471	1.8298
Follow medical directions of your local authority	1.4328	1.4565	1.8706	1.8925
Avoid unneeded visits to medical facilities	1.5522	1.5870	1.8824	1.8817
Grand Weighted Mean Scores	1.5084	1.5190	1.8419	1.8477

WMS: Weighted Mean Scores

Regression analysis results showing relationship between socioeconomic variables and COVID-19 KAP index

The result in Table 5 reveals a significant but inverse relationship between household size (B=-0.012) and KAP index at $p < 0.05$; that is, household size is an important predictor of KAP index in Nigeria, while other socioeconomic attributes did not significantly impact KAP index in Nigeria. The result indicates that households with lower number of people were more favorably disposed to, had better knowledge and engaged more in COVID-19 prevention practices.

In Botswana, however, the variable age had significant but inverse relationship with KAP index, while other socioeconomic variables did not significantly predict respondents KAP about COVID-19.

This indicates that younger individuals were more favorably disposed to KAP on COVID-19 prevention practices.

The overall model summary that 6.4 percent disparity in the dependent variable was responsible for the predictor variables included in the regression model in Nigeria while in Botswana, the value was 4.3 percent.

Table 5. Results of regression analysis of relationship between socioeconomic attributes and KAP index

	Nigeria		Botswana	
	B	P	B	p
Age	0.00	0.627	-0.005*	0.011
Household size	-0.012*	0.033	0.002	0.894
Years of formal education	-0.030	0.099	-0.109	0.516
Model Summary		F= 2.072 p=0.072 R ² =0.064		F=13.94 p=0.229 R ² =0.043

Association between gender and KAP

The result in Table 6 reveals no significant association between gender of household heads and KAP in both countries. The overall total too did not reflect significant association between these variables too. This indicates both women and men did not differ in term of knowledge, attitude and COVID19 prevention practices. The implication of this finding is that neither gender should be of less concern in efforts aimed at helping farming households develop right and favorable attitude about COVID-19 pandemic, enhance their knowledge and enable them favorably disposed to practices of prevention measures toward curtailing the spread of the virus. This is because as the spread of the virus is not gender specific, nonchalant disposition of either gender towards right practices to preventing contracting the virus could endanger and expose the other.

Table 6. Association between gender and KAP in Nigeria and Botswana

	Chi-square	p-value
Nigeria	70.981	0.701
Botswana	50.714	0.406
Total	96.022	0.287

DISCUSSIONS

Socioeconomic characteristics of household heads

Socio-economic attributes of individual will largely shape their knowledge, attitude and practices. KAPs with respect to older people, might not exactly be same with much younger individuals, because older people tend to be more rigid in opinions while younger people are often less traditionalist. Similarly, educational level is expected to influence KAPs, in that, more knowledgeable individuals are more likely be better predisposed to ensuring safe practices that prevent contracting the virus. In relation to this study, our findings show that respondents from both countries were primarily youth of very similar age group, with no apparent difference in gender. So, it is expected that the respondents will be more informed about COVID-19, and exhibit less aversion towards practices that could predispose one to contracting the virus. While this was the case in Botswana, as a result of the regression analysis,

where the variable age had inverse significant relation with KAP, in Nigeria, however, age did not significantly impact KAP. For education however, while females were found to be more educated in Botswana, males were more educated in Nigeria. This gender disparity in education, which has been historically attributed to prevailing cultural and social values attached to education of a male child, is not unexpected (Denga, 1993; Obasi, 1997; Alawode & Oladokun, 2024). In fact, recent trend in enrolment at various levels of education shows improvement in favor of women (Akubuilu & Omeje, 2012; Ilesanmi & Afolabi, 2020). In both countries, the regression analysis results indicated that education was not a significant predictor of respondent's KAP about COVID-19 preventive measures at $p < 0.05$. Our findings contradict the study of Hager et al. (2020) where respondents with a high school education were found to be more likely to have satisfactory knowledge about COVID-19 than those with no formal education.

With respect to household size, Nigeria recorded higher family size than Botswana. Statistics Botswana (2017) indicates that the average household size in Botswana is 3.3 members, indicating that the 4.36 reported from this study is not much deviation from the national average. In the Nigeria context, however, the 7.32 average reported is not also on the high side. This is because, according to Eboh et al. (2017), family size preferences in Nigeria stand as a "silent norm" guiding married couples on the number of children they are expected to bear; thus, influencing couples' decision to having more children than they can cater for. Consequentially, this leads to decrease in living standard, childhood nutritional deficiency, lack of education, increasing crime rate, overcrowding, burglary, prostitution among others. The findings have implications for spread and containment of the virus, arising from difficulty to ensuring conformity with safe practices that could predispose people from large family size to contracting the virus. The inverse significant relationship between household size and KAP of the respondents lent credence to the impact the higher household membership could adversely impact KAP of the people in relation to the COVID-19 preventive measures.

As regards possession of household items, the results show that Botswana females are better off in possession of household items that support better standard of living as compared to their Nigerian counterparts. This might not be unconnected with the suppressive Nigerian cultural and traditional beliefs that are not favourable to the Nigerian female folks (Torimiro, 2019). Although, household item's possession did not significantly impact KAP of the respondents, however, on a general note, the socio-economic milieu of the respondents in the two countries could be optimally explored in fighting COVID-19 pandemic. This is because household items, such as radio, television (TV), mobile phone, etc., are directly related to information sources of the people. Possession of these items might provide better opportunity to have access to timely information as information is power. Timely and correct information could be life-saving, and therefore very crucial to the spread and containment of COVID-19. The findings show that, in Nigeria, family members ranked highest among information source for COVID-19 among both genders, followed by Radio and TV. Conversely, Radio and TV ranked in Botswana, with family members among the lowest ranking, among both genders. Information via internet sources and health personnel were on the average in both countries in the case of both genders. While information from Radio and TV may be reliable to some extent, the veracity of information solely from family and friends might be questionable. This is similar to results of Hager et al. (2020) and Olayemi (2020), whose studies focused on subjects from Nigeria and Egypt to assess KAP and prevention practices towards COVID-19, TV was reported as the second most used information source behind internet sources, social media specifically, which ranked first.

Gender differential of KAPs towards COVID-19 preventive measures

With respect to KAPs, overall, respondents from the two countries have unfavourable attitudes towards COVID-19 preventive measures (GWMS below 2). This is similar to the findings by Erfani et al. (2020), Iorfa et al. (2020) and Iloanusu et al. (2020) who reported that attitude differ along gender divide and household size,

among other socioeconomic attributes. While, generally, there is high knowledge level of COVID-19 preventive measures, similar to the previous findings (Hager et al., 2020; Ditekemena et al., 2020; Kef, 2021; Alrasheedy et al., 2021; Braimah et al., 2023). There is also commensurate level of practices to knowledge possessed across countries and gender, with largely no much difference except in few cases. Certain practices associated with COVID-19 preventive measures might not be separated from the socioeconomic condition of the people. In relation to gender differential of KAPs towards Covid-19 preventive measures, there is significant difference in KAPs across the two countries; this is in line with the findings of Galasso et al. (2020), Enenche et al. (2020), Reuben et al. (2021), Eniade et al. (2021), Anaam & Alsahali (2023), that posited a significant gender difference in KAPs in eight countries including Nigeria and Botswana. Comparatively, the gender differential is more pronounced in Nigeria than in Botswana as confirmed by the studies of Ojubuikwe & Azeez (2021), Akaninyene et al. (2022), Obayelu (2022), Akpan et al. (2023).

CONCLUSIONS

Respondents from the two countries have unfavourable attitudes towards COVID-19 pandemic; and high knowledge of COVID-19 preventive measures with equal level of practices across countries and gender. However, there is no significant differences between the knowledge level and practices across gender except in a very few cases. Attitudinal change and continuous enlightenment are, therefore, imperatives among the farming households for an improved compliance with the COVID-19 preventive measures. There is no significant difference between gender and KAP in Nigeria and Botswana.

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