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Self-Medication among Health Workers during the COVID-19 Pandemic in Southern Nigeria: Knowledge, Patterns, Practice and Associated Factors

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ABSTRACT

Background: The scare from the morbidity and mortality caused by the novel COVID-19 disease has continued with no specific cure in sight and many persons, including health care providers have resorted to self-medication. The study was intended to ascertain the prevalence of self-medication against COVID-19 among health workers in Rivers State.
Methodology: A cross-sectional survey of health workers in Rivers State was carried out using self-administered questionnaires on self-medication against the COVID-19 disease from January 2021 to March 2021. Data were analyzed using the statistical package for social sciences (SPSS) version 25.0. Results are presented in charts and tables and a p-value of <0.05 was significant.
Results: A total of 220 responses were received from health workers, 50% of whom worked in private hospitals. Only 35 (15.9%) of them reported to have ever indulged in self-medication for COVID-19. The most common drugs used for self-medication were Vitamin C, Zinc. Azithromycin, antimalarials (other than Hydroxychloroquine) and Hydroxychloroquine. Most medications were self-prescribed and procured from the pharmacies. Most persons (80%) who self-medicated did so for fear of being infected following contact with suspected or confirmed COVID-19 cases or following sudden emergency illnesses.
Conclusion: Self-medication against COVID-19 is present among health workers in Rivers State and commonest among those who have tertiary level of education, those who are doctors and those who work in a public health facility.

Key words: Self-medication, Health workers, Covid-19, Pandemic, Nigeria

INTRODUCTION

Covid-19, a zoonotic disease caused by a novel coronavirus 2 (SARS-CoV-2) is a new respiratory infection first detected in December 2019 in Wuhan, China[1] and has since then spread rapidly all over the world. The World Health Organization (WHO) declared it a public health emergency in January, 2020 and in March 11th 2020, it was declared a pandemic.[2,3]

Globally as at December 27th 2020, there were 79,232,555 confirmed cases, 1,754,493 deaths with a case fatality rate of 2.2% whereas in Africa, 2,644,112 cases were confirmed positive 62,366 deaths with a case fatality rate of 2.4%.[4] In Nigeria however, the first case of Covid-19 was

detected on 27th February, 2020 in the city of Lagos and has since then spread to all the states in the country.[5] As at 27th December, 2020 the total number of confirmed cases was 84,414 and 1,254 deaths with a case fatality rate of 1.5%.[4,5]

In a bid to curb the spread of the virus, considering the fact that there is no definitive cure for the disease, lock down measures were introduced in various countries of the world including Nigeria as advised by the WHO in addition to adherence to various preventive measures such as social/physical distancing, regular washing of hands or use of alcohol-based rubs and the wearing of masks etc. Very high fatality rates were reported in Europe and America despite advanced health care systems[6] which caused heightened anxiety and fear in the poorer countries of the world especially Sub-Saharan Africa where there is poor infrastructural health development and technical know-how.[7] In addition, the WHO expressed worse fears of morbidity and mortality resulting from Covid-19 infection in Sub-Saharan Africa as compared to the developed nations.[7]

This fear and anxiety therefore led to people including Nigerians resorting to the consumption of various substances without medical advice either to prevent the disease or for its treatment.[8] The use of these substances was worsened by fake news about the disease including information on various preventive and treatment options still undergoing trials on social media. These substances ranged from traditional medicines to different drugs bought over-the-counter (OTC).[8]

Self-medication (SM) can be defined as the intake of drugs, herbs or home remedies for physical or psychological ailments based on one's own initiative or on the advice of another person without consulting a medical doctor.[9]

SM is of global concern observed in both developed and developing countries of the world with prevalence of 32.5 - 81.5% world-wide.[10,11,12] The incidence of SM may be higher in the low and middle income countries.[13] In Nigeria, the prevalence of SM before the pandemic was high varying between 52.1 – 92.3%.[14-16] During the pandemic however, studies showed a prevalence of SM of at least one product ranging from 34.2 – 57%.[17,18]

SM is usually suggested by friends, family members, neighbours, pharmacists as well as repetition of previous prescriptions and from the media.

SM may be of advantage if practiced correctly as it reduces the economic burden on patients especially in developing countries where cost of hospital treatment may be high, reduces pressure on the health care system as well as health management organizations.[11] It however leads to poly-pharmacy, wastage of resources, increase in the price of the drugs due to excessive demand, antibiotic resistance, incorrect diagnosis and serious health hazards such as adverse drug effects, drug interactions as well as prolonged morbidity and mortality.[10, 19-22] In addition, SM is associated with incorrect dosage, wrong route of administration, prolonged use, improper storage as well as risk of dependency and abuse. Thus, SM has been described as a serious public health problem globally. It is pertinent to note that there were cases of mortality reported in the USA and Nigeria resulting from self-medication (the use of chloroquine) during the pandemic.[23,24] SM also leads to stockpiling resulting in shortage of drugs for patients that genuinely need them.

Wegbom et al[25] in Nigeria documented vitamin C and other multivitamins as the commonest drugs used for SM during the Covid-19 pandemic followed by hydroxychloroquine/ chloroquine, amoxicillin, ciprofloxacin and herbal products. Vitamin C was also observed as the commonest drug followed by traditional medicines, hydroxychloroquine/chloroquine and azithromycin by Sadio et al[17] in Togo. In contrast, Nasir et al[26] in Dhaka city, Senegal, reported Ivermectin as the commonest SM drug followed by

azithromycin, Montelukast, calcium supplement, doxycycline and hydroxy-chloroquine whereas Quispe-Canari et al [27] in Peru reported acetaminophen and ibuprofen as the commonest SM drugs followed by antiretrovirals, hydroxychloro-quine and penicillins.

The present study was therefore carried out to determine the knowledge, practice, patterns of self-medications as well as its associated factors among health workers in southern Nigeria as no study of this nature has been carried out to the best of our knowledge. Findings from this study would help in the making of policies on the enforcement of drugs sold over the counter, proper pharmaceutical advertisements and thus help strengthen the health care system.

METHODOLOGY

Study design: The study was a cross-sectional survey conducted from 2nd of January 2021 to 2nd of March, 2021 using a hybrid self-administered questionnaire (hard copy and online versions). The online version of the questionnaire was formed using a google questionnaire (docs.google.com/forms). The hybrid format was opted for to ensure a wide spread of the survey tool for better representativeness.

Study population: Participants were only healthcare professionals (doctors, nurses, and other allied healthcare workers) living in Rivers State.

Sample size calculation: The minimum sample size of 215 was calculated using the Cochran formula for cross-sectional studies at 95% confidence interval, 7% margin of error, 10% attrition and based on a self-medication prevalence of 52.1% from a period study.[15] A total of 220 health workers participated in the study which was considered adequate for the population of Health workers in Port Harcourt, Rivers state.

Inclusion criteria: Participants must be health workers in Port Harcourt and residing in the state during the COVID-19.

Questionnaire Design: The survey questionnaire was divided into five sections; Socio-demographic characteristics, knowledge and awareness of self-medication, pattern of medications used for self-medication, reasons for self-medications and treatment preferences for health workers who did not self-medicate. The socio-demographic variables included age, gender, marital status, religion, place of residence, level of education, occupation, average income, status designation, local government area of practice and place of practice. The knowledge of self-medication had 3 items, the pattern of medications used for self-medication had 4-subcategories with 33 items, the reasons for self-medication had 12 items and preference of treatment for health workers who did not self-medicate had 11 items.

Data collection: The aim of the study was explained to all participants. Those who gave consent were recruited into the study both online and offline. Both online and offline versions were retrieved immediately after completion. The online versions were distributed via emails and social media platforms using a link. The forms were filled over 2 months from 2nd of January 2021 to 2nd of March, 2021. Consent was obtained from all participants and confidentiality maintained.

Data analysis: The data collected were entered analysed using the Statistical Package for Social Sciences (SPSS) IBM version 25.0 (Armonk, NY). For the purpose of analysis, the correct answers were scored as two and wrong answers zero. The total score was converted to percentages and categorized as good knowledge (≥70%) and not good knowledge (< 70%). Baseline characteristics of study participants were analysed using descriptive statistics. Categorical variables were

presented as percentages and frequencies and continuous variables expressed as mean and standard deviation. Associations between the health workers' knowledge and practice of self-medication and their sociodemographic variables were tested using the Chi-square test with the demographic characteristics as the explanatory variables.

RESULTS

Sociodemographic characteristics of respondents:

A total of 220 health workers across Rivers State returned appropriately filled questionnaires. Females predominated (135 -61.4%) with a M: F = 1:1.6 and the mean age of the health workers was 35.9 years. Of the 220 respondents, 110 (50.0%) were doctors, 115 (52.3%) were located outside of the Port Harcourt LGA and 185 (84.1%) resided in the urban areas of the State. Almost all respondents, 215 (97.7%) were Christians, 129 (58.6%) were married and 194 (88.2%) had tertiary level of education. Half (50.0%) of respondents were privately employed, 119 (54.1%) worked in private establishments and 112 (50.9%) earned between ₦100,000 to ₦500,000 as seen in Table 1.

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency	Percent (%)
Gender		
Female	135	61.4
Male	85	38.6
Marital status		
Married	129	58.6
Not married	91	41.4
Educational status		
Tertiary	194	88.2
Non-tertiary	26	11.8
Place of residence		
Rural	35	15.9
Urban	185	84.1
Religion		
Christian	215	97.7
Islam	2	0.9
None	3	1.4
LGA of practice		
PHALGA	105	47.7
Non-PHALGA	115	52.3
Status Designation		
Auxiliary Nurse/ Nurse Assistant	29	13.2
CHEW	2	0.9
Doctor	110	50.0
Laboratory scientist/ technician	3	1.4
Nurse/ Midwife	33	15.0
Pharmacist	18	8.2
Warden	4	1.8
Non-medical health care staff	21	9.5
Place of practice		
General Hospital	7	3.2
Military Hospital	6	2.7
Primary Health Centre	15	6.8
Private Establishment (Hospital/ Clinic/ Maternity)	119	54.1
RSUTH	39	17.7
UPTH	34	15.5
Occupation status		
Government employed	96	43.6
Private employed	110	50.0
Self employed	6	2.7
Unemployed	8	3.6
Average Income		
Less than ₦ 100,000	80	36.4
₦ 100,000 – ₦ 500,000	112	50.9
Above ₦500,000	28	12.7

Health workers' knowledge of self-medication:

All respondents were aware of COVID-19. Less than two-thirds (57.3%) had good knowledge of what was meant by self-medication and only 35 (15.9%) of health workers reported to have ever indulged in self-medication for COVID-19, as seen in Figures 1 and 2 respectively.

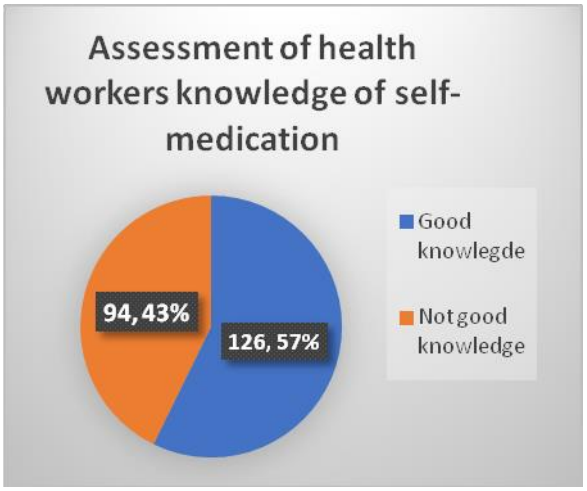

Figure1: Health workers knowledge of self-medication

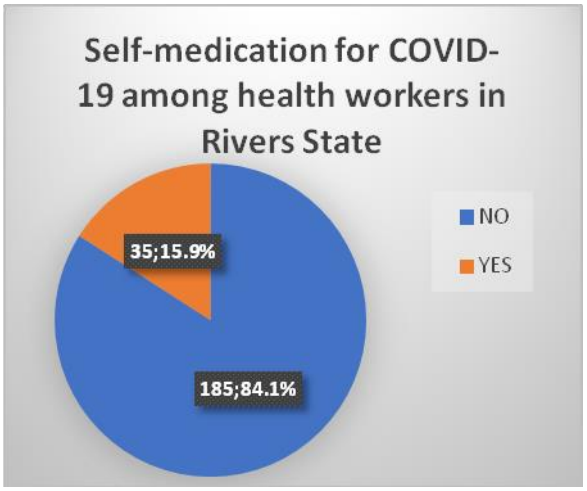

Figure 2: Proportion of health workers who self-medicated for COVID-19

II: PATTERN OF DRUGS USED FOR SELF MEDICATION

Table 2A demonstrates that the top five medications used by health workers who self-medicated were Tabs Vitamin C, Tabs Zinc, Tabs Azithromycin, Antimalarials (other than HCQ) and Hydroxychloroquine. The side effects reported by health workers were few and consisted of frequent passage of loose stools in 6 (17.1%) persons and vomiting in 1 (2.9%) person respectively, as seen in Table 2B. Over four-fifths (88.6%) of respondents who indulged in self-medication reported that prescriptions for COVID-19 were done by themselves without a COVID-19 confirmatory test as shown in Table 2C. The pharmacy was reported as the main source of the medications with which respondents self-medicated, as seen in Table 2D.

Pattern of medications used for self-medication by health workers in Rivers state

Table 2A: Types of medications used by respondents		
Medication used	**Frequency (n=35)****	**Percentage (%)**
Vitamin C	34	97.1
Zinc	28	80.0
Hydrochloroquine/chloroquine	12	34.3
Multivitamins	11	31.4
Antimalarials (not hydroxychloroquine)	16	45.7
Azithromycin	24	68.6
Erythromycin	2	5.7
Ciprofloxacin	1	2.9
Metronidazole/Flagyl	1	2.9
Amoxicillin	2	5.7
Amoxicillin/Clavulanic acid	3	8.6
Combination of antibiotics	5	14.3
Herbal products	0	0.0
Steroid (Dexamethasone)	0	0.0
Alcoholic beverages	1	2.9
Table 2B: Side effects of medications used	Frequency (n=35)	Percentage (%)
Body rashes	0	0.0
Generalized pruritus or itching	0	0.0
Worsening of condition or symptoms	0	0.0
Yellow discolouration of eyes	0	0.0
Facial or body swelling	0	0.0
Vomiting	1	2.9
Frequent passage of watery stools	6	17.1

Table 2C: Who prescribed the medication?	Frequency (n=35)**	Percentage (%)
Medical personnel from health facility without COVID-19 screening	10	28.6
Worker at chemist/pharmacy without COVID-19 screening	1	2.9
A friend	3	8.6
Prescription seen on social media	5	14.3
Myself	31	88.6
Table 2D: Where did you purchase the medicine used for self-medication?	**Frequency (n=35)****	**Percentage (%)**
Patent medicine vendor	3	8.6
Hospital	12	34.3
Pharmacy	29	82.9
Hawkers	0	0.0
Faith-based outlet (Mosque/Church)	1	2.9
Herbalist's outlet	0	0.0

*** Multiple responses apply*

III. REASONS FOR SELF-MEDICATION.

Four-fifths (80%) of health workers that self-medicated reported that fear of being infected following contact with a suspected or confirmed case of COVID-19 was the main reason for self-medicating. Emergency illnesses (45.7%), fear of being stigmatized or discriminated against (34.3%) and fear of being tested for COVID-19 were the other reasons enumerated by health workers who self-medicated as demonstrated in Table 3.

Table 3: what were your reasons for taking medications without prescriptions?		
	Frequency (n=35)**	**Percentage (%)**
Fear of being tested for COVID-19	11	31.4
Fear of being stigmatized or discriminated	12	34.3
Fear of self-isolation/quarantine	10	28.6
Fear of being infected following contact with a suspected or confirmed COVID-19 case	28	80.0
Delay in receiving treatment at designated health facilities	9	25.7
Influence of friends to use self-medication as a first measure to prevent or treat COVID-19	11	31.4
Social media/TV/radio program influenced your decision to self-medicate	3	8.6
Distance from health facility	4	11.4
Emergency illness	16	45.7
Closeness to a chemist/pharmacy	6	17.1
No medicine in health facility	1	2.9
Cost at the health facility	5	14.3

***Multiple responses apply*

IV. FINDINGS FROM HEALTH WORKERS WHO DID NOT SELF-MEDICATE.

For those who do not self-medicate, 143 (77.3%) responded that if they developed symptoms of COVID-19, their most likely option would be to call NCDC and get tested for COVID-19, although 25 (13.5%) responded that self-isolation and self-treatment would be their preferred option, as seen in table 4.

Table 4: If you have symptoms suggestive of COVID-19 what would you most likely do?		
	Frequency (n=185)	**Percentage (%)**
Call NCDC and get tested for COVID-19	143	77.3
Self-isolate and treat myself at home	25	13.5
Self-isolate and watchfully wait for worsening clinical signs	10	5.4
Self-isolate and watchfully wait for worsening clinical signs	3	1.6
Self-quarantine and get a colleague to help administer treatment	4	2.2

Table 5: What kind of medications/ therapy would you prefer?		
	Frequency (n=185)**	**Percentage (%)**
Orthodox medications/therapy	154	83.2
Herbal medications/therapy	18	9.7
Spiritual healing prayers only	6	3.2
Combination of both orthodox medicines and herbal therapy	25	13.5
Combination of both orthodox medicines and spiritual healing prayers	95	51.4
Combination of orthodox, herbal and spiritual healing prayers	20	10.8

*** Multiple responses apply*

Majority 154 (83.2%) of respondents who did not self-medicate, also stated that peradventure symptoms of COVID-19 develop they would rather prefer orthodox

medications/ therapy and about half (51.4%) responded that a combination of both orthodox and spiritual healing prayers will be their most preferred therapeutic options as demonstrated in Table 5.

Relationship between HCWs' knowledge of self-medication and sociodemographic characteristics

Table 6: Bivariate analysis of knowledge of self-medication and sociodemographic characteristics

	Knowledge of self-medication			
	Good (%)	**Not Good (%)**	**Chi-square**	***p-value***
Sex				
Males	53 (62.4)	32 (37.6)	1.46	*0.26*
Females	73 (54.1)	62 (45.9)		
Educational status				*<0.001**
Tertiary	120 (61.9)	74 (38.1)	14.09	
Non-Tertiary	6 (23.1)	20 (76.9)		
Average Income				
More than N500,000	15 (53.6)	13 (46.4)	13.32	*0.001**
N100,000 to N500,000	77 (68.8)	35 (31.3)		
Less than N100,000	34 (42.5)	46 (57.5)		
Status designation				
Auxiliary Nurse/Nurse Assistant	10 (34.5)	19 (65.5)		
CHEW	1 (50.0)	1 (50.0)		
Doctor	74 (67.3)	36 (32.7)	Fisher's Exact= 21.74	
Laboratory scientist/technician	0 (0.0)	3 (100.0)		
Non-medical health care staff	9 (42.9)	12 (57.1)		*0.001**
Nurse/Midwife	17 (51.5)	16 (48.5)		
Pharmacist	14 (77.8)	4 (22.2)		
Warden	1 (25.0)	3 (75.0)		
Place of Practice				
General Hospital	5 (71.4)	2 (28.6)		
Military Hospital	2 (33.3)	4 (66.7)	Fisher's Exact= 5.92	*0.31*
Primary Health Centre	12 (80.0)	3 (20.0)		
Private establishment (Hospital/Clinic/Maternity)	65 (54.6)	54 (45.4)		
RSUTH	24 (61.5)	15 (38.5)		
UPTH	18 (52.9)	16 (47.1)		
Occupation				
Government Employed	57 (59.4)	39 (40.6)	Fisher's Exact= 1.69	*0.67*
Private Employed	63 (57.3)	47 (42.7)		
Self Employed	3 (50.0)	3 (50.0)		
Unemployed	3 (37.5)	5 (62.5)		

Table 6 shows that there is significant relationship between having a good knowledge of self-medication and respondents' educational level, income level and status designation.

Relationship between HCWs' ever self-medication and sociodemographic characteristics

Table 7 demonstrates there is a significant relationship between self-medication and the average income, level of education and occupation of study participants. Furthermore, the table also shows that all the respondents who had ever self-medicated were either doctors or nurses/midwives.

Table 7: Bivariate analysis of HCWs' ever self-medicating and sociodemographic characteristics

	Ever self-medicate			
	Yes (%)	**No (%)**	**Chi-square**	***p-value***
Sex				
Males	15 (17.6)	70 (82.4)	0.313	*0.71*
Females	20 (14.8)	115 (85.2)		
Educational status				
Tertiary	35 (18.0)	159 (82.0)	Fisher's Exact =	*0.02**
Non-Tertiary	0 (0.0)	26 (100.0)		
Average Income				
More than N500,000	10 (35.7)	18 (64.3)		
N100,000 to N500,000	21 (18.8)	91 (81.3)	16.00	*<0.001**
Less than N100,000	4 (5.0)	76 (95.0)		

Table 7 Continued...				
Status designation				
Auxiliary Nurse/Nurse Assistant	0 (0.0)	29 (100.0)	Fisher's Exact= 24.76	*<0.001**
CHEW	0 (0.0)	2 (100.0)		
Doctor	30 (27.3)	80 (72.7)		
Laboratory scientist/technician	0 (0.0)	3 (100.0)		
Non-medical health care staff	0 (0.0)	21 (100.0)		
Nurse/Midwife	5 (15.2)	28 (84.8)		
Pharmacist	0 (0.0)	18 (100.0)		
Warden	0 (0.0)	4 (100.0)		
Place of Practice				
General Hospital	2 (28.6)	5 (71.4)	Fisher's Exact= 13.91	*0.01**
Military Hospital	1 (16.7)	5 (83.3)		
Primary Health Centre	2 (13.3)	13 (86.7)		
Private establishment (Hospital/Clinic/Maternity)	10 (8.4)	109 (91.6)		
RSUTH	10 (25.6)	29 (74.4)		
UPTH	10 (29.4)	24 (70.6)		
Occupation				
Government Employed	26 (27.1)	70 (72.9)	Fisher's Exact= 14.65	*0.001**
Private Employed	9 (8.2)	101 (91.8)		
Self Employed	0 (0.0)	6 (100.0)		
Unemployed	0 (0.0)	8 (100.0)		

DISCUSSION

All the respondents in our study were aware of COVID-19. This is not surprising as the respondents in our study were all health workers and thus most likely had prior information about Covid-19 in the course of their daily work; and also 88.2% of them had tertiary education. This is similar to the findings of Wegbom et al[25] who reported 96.7% of respondents had sufficient knowledge about Covid-19. Though their study had a larger sample size of 461 respondents, it was also a questionnaire-web-based study in which 87.8% of respondents had tertiary education and thus likely had a broad knowledge base. Our study showed less than 2/3 of respondents had good knowledge of what was meant by self-medication. This was less than that reported by Wegbom et al[25] which showed 96.7% of respondents had sufficient knowledge of SM. The reason for this observation could not be readily explained as both studies had respondents with similar levels of education-both studies had about 89% of participants with tertiary education.

Our study showed only 15.9% of respondents admitted to having indulged in SM for Covid-19. Sadio et al[17] in Togo reported a prevalence of SM for Covid-19 ranging from 16.4% to 51.9%, with an overall prevalence of 34.2%. Their study was a cross sectional study with 955 participants from 5 professional sectors: the road transport workers having the lowest prevalence and the health workers (which constituted 38.7%) having the highest prevalence. They attributed this high prevalence to the long delay in finding adequate treatment/management for Covid-19 based on adequate randomized trials, the influence of social media, political and religious leaders and the stigmatization of infected individuals; all of which encouraged people to treat themselves at home.[17, 31] Nasir et al[26] reported a very high prevalence of 88.33% of SM during the Covid-19 pandemic. Their study was a cross-sectional on-line questionnaire-based study involving 626 individuals in Dhaka, India, who were not health workers, were mostly within the ages of 45-54 years and were mostly non-civil servants. Also most of the individuals in this study also thought they had Covid-19 or knew (21.08%) because they had screened. Thus they were influenced by a feeling of insecurity caused by the fear of severe illness/death, the availability of medical resources and information about the prevention, treatment and control of Covid-19, both correct and incorrect, in the media (print, television and all social media platforms). Similar to the Dhaka study, the study by Quispe –Canari et al[27] also reported majority of respondents self-medicated during the pandemic. This study like the Dhaka study, was based on responses by individuals from the general

public and not health workers. Also it was a multicenter study involving a much larger sample size (3792 respondents) than that of our study population. Unlike our study, the study by Esan et al[28] also reported a high prevalence of SM of 81.8%. This observed difference is not surprising because the study population were 384 undergraduate students of a private university in Ekiti State who were mostly between the ages of 19-23 years. Studies have shown that young people self-medicate more probably due to their low perception of risk associated with the use of drugs, their easy access to the Internet and media coverage of health related issues and ready access to drugs.[28, 29, 30]

Our study showed the top 5 medications used by health workers were tabs Vitamin C, Zinc, Azithromycin, antimalarials (other than Hydroxy-chloroquine) and Hydroxychloroquine (HCQ). Similarly, Wegbom et al[25,32] reported Vitamin C and antimalarials other than HCQ as being amongst the top 5 drugs used for SM. However, they reported their respondents also used antibiotics like amoxicillin and ciprofloxacin and herbal products commonly. HCQ was used in only 1.3% unlike that reported in this present study where 34.3% of respondents used HCQ. This is not surprising as the respondents in our study were all health care workers unlike the study population in the study by Wegbom et al.[25] Similar to our study Sadio et al[17,32] also reported Vitamin C, HCQ and Azithromycin amongst the drugs most commonly used. However, 10.2% of their respondents also used traditional medication. Their study population apart from health care workers also included air and road transport workers, the police and artisans. In contrast to that reported by our study, Nasir et al[26] in Dhaka reported very common use of Ivermectin for SM (77.2%), as well as Azithromycin, Montelukast, calcium supplements, doxycycline and HCQ. Quispe-Canari et al[27] in Peru reported the use of Azithromycin, Acetaminophen, HCQ, Antiretrovirals, Penicillin and Ibuprofen as drugs for SM during the lockdown period. Minan-Tapia also in Peru reported the use of Acetaminophen, Ibuprofen, Dexamethasone, Aspirin and Azithromycin for SM during the pandemic.[32]The choice of drugs to use during this pandemic was largely influenced by availability in the different locations which was largely affected by importation challenges, travel restrictions and cost implications and the hype via different communication channels especially social media. Vitamin C as well as been cheap and readily available, has been reported to be effective in the management/prevention of Covid-19.[17, 25, 33]HCQ though less available and costly, was also widely used for SM because it had been reported to reduce to reduce viral load and shorten recovery time in Covid-19 patients.[34, 35] However improper use may result in arrhythmias or even death.[34,35]

Our respondents reported very few side effects with diarrhea being the most common. In contrast, Wegbom et al[25] reported body rash as being most common adverse effect followed by worsened condition, yellowish eyes and severe diarrhea. This difference in side effects observed may possibly be due to the fact that the respondents in the study by Wegbom also used herbal concoctions which may be hepatotoxic when used in excess.

Our study showed majority (88.9%) prescribed the drugs for themselves without any confirmatory test being done. This was followed by prescriptions from other health personnel and then from prescriptions seen on social media. This underscores the importance of the health sector engaging Health care workers and the general public with the right evidence-based information through all communication platforms especially social media in this present age. Similarly, Wegbom et al [25] reported more than half of their respondents had prescribed the drugs by themselves, over one-third from prescriptions by other medical personnel and others from recommendations

by friends. Majority of the respondents in our study purchased the drugs mainly from the pharmacy (82.9%), others from the hospital and the patent medicine vendor. Similarly, Wegbom et al[25] also in Nigeria, reported majority (73.9%) of respondents purchased their drugs from the pharmacy and the patent medicine vendor (23.6%).

Our study showed majority self-medicated because of the fear of getting infected following contact with a suspected or confirmed case of Covid-19. Others reasons given include emergency illnesses, fear of being stigmatized and the fear of being tested for Covid-19. Wegbom et al[25] also reported the fear of getting infected as the most common reason for SM. They also reported the delay in receiving treatment at health facilities, the influence of friends and social media, non-availability of medications for treatment at the Covid-19 treatment centers, distance to the health facility and cost as reasons for SM. Minan-Tapia also reported in a study among young undergraduate students in Peru, believing the symptoms were not severe enough to go to a doctor as reason and cost as reasons for SM.[32]Arain et al[36] in Pakistan, reported that in addition to the fear of getting infected the lockdown was a major reason for SM.

Our study showed that for those who did not self-medicate, majority (77.3%) said if they developed symptoms suggestive of Covid-19 they would call NCDC and get tested. Others (13.5%) said they would prefer to self-isolate and treat themselves at home. Majority also said they would prefer to use orthodox medications for treatment. About half however reported they would prefer a combination of orthodox drugs and spiritual healing prayers. This buttresses the fact that there is a need to engage spiritual and cultural leaders in creating awareness about Covid-19 and its' proper management as people are greatly influenced by their spiritual and cultural beliefs.

Our study showed having a good knowledge of SM was significantly associated with respondents' educational level, income level and status designation. This finding was not surprising and has been reported by other studies. [17,25,27] Our study also showed significant association between SM and the respondents' average income, status designation and occupation status. These findings could be due to the fact that educated people and those of higher socio-economic status have greater access to the internet and may have greater understanding of treatment information published on social media. Our study showed respondents who self-medicated were either doctors or nurses/mid-wives. This is similar to that reported by Sadio et al[17] which showed SM was significantly associated with working in the health sector.

CONCLUSION

Though majority of health-workers knew about Covid-19, less than 2/3 have good knowledge about SM. The prevalence of SM amongst health-workers in Rivers state was found to be 15.9%. SM is commoner with those with higher income, those who are doctors or nurses and those who work with the government. The most common drugs used for SM included Vitamin C, Zinc, Azithromycin, antimalarials and HCQ. Reasons for SM included the fear of getting infected and the fear of being stigmatized. The need to engage the government bodies, health organizations, religious and cultural organizations to inform and educate health workers and the general public about Covid-19, it's management and evidence based prevention methods, via all platforms of information dissemination including social media cannot be over-emphasized.

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