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ORIGINAL ARTICLE

Knowledge of COVID-19 and Compliance with the Use of Facemask among Undergraduate Students in a University in South-South Nigeria

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Abstract

Background: The wearing of facemask in public places has been adopted as source control measure in the prevention and control of Covid-19 worldwide. In Nigeria, its use in public places has been made compulsory and defaulters are liable to sanctions. However, compliance still remains poor especially among youths, hence the need to assess knowledge of Covid-19 and compliance with the use of face mask among University students.

Methods: This is a cross-sectional study among 400 undergraduates of Rivers State University, Port Harcourt who were selected through multistage sampling technique and gave written informed consent. Information gathered were on their socio-demography, knowledge on Covid-19, wearing of facemask and reasons for not as well as adherence to protocols for wearing and removing facemask. Data was analyzed using IBM SPSS Statistics 22 and results were presented in frequency tables.

Results: Majority of the respondents were aged 15-24 years (n = 258, 64.5%) and single (n = 340; 85%). Respondents who have very good knowledge on Covid-19 were 396 (99%), those who owned facemask were 362 (90.5%) mainly surgical mask (n = 195, 53.9%). Only 36 (10.6%) of them use it at all times in public. Respondents who either worn or removed their facemask appropriately were 60 (17.6%) and 80 (23.8%) respectively. Most common reasons for non-use of facemask were difficulties in breathing (n = 94; 25.8%) and communicating (n = 84; 23.1%) and discomfort (n = 81; 22.3%). Only 16 (4.4%) of them felt they looked ugly when wearing it.

Conclusion: Although knowledge on Covid-19 is high among undergraduates in Rivers State, the effective use of facemask among youths is still very low.

Recommendation: Risk communication messages by Infection Prevention and Control team should also include education on how to wear and remove facemask appropriately.

Keywords

Facemask, Covid-19, Knowledge, Youths, Rivers state

Background

Facemask until recently was exclusively used by healthcare workers as part of infection prevention and control strategies during procedures requiring asepsis. However, following the declaration of Covid-19 infection as pandemic on March 11 2020 [1], WHO issued guidelines on the use of facemask within communities in addition to regular hand hygiene, social and physical distancing as strategies to prevent and contain community transmission of Covid-19 [2]. Several types of facemask have become used. These masks have varying degrees of effectiveness and protection from pathogens ranging from the N95 and surgical facemask with 95-99% protection to homemade cloth facemask with questionable effectiveness and filtration efficiency ranging from 2-38% [3,4]. In order to prevent further

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community transmission of Covid-19, Nigeria Centre for Disease Control (NCDC) advocated for the use of facemask within communities especially in situations where physical distancing is compromised [2,3,5]. Studies have reported that cloth masks are effective as source control and its use in the communities with high transmission confer some degree of protection to users especially if the cloth mask is made of cotton material and is in three plies [1,6,7]. WHO has also given specifications on preparation of homemade masks recommended for use within the communities [4].

According to Nigeria Centre for Disease Control (NCDC) situation report for August 24, 2020 so far, a total number of 52,548 confirmed cases has been reported in Nigeria. Out of these 2,063 were reported in Rivers State South-South Nigeria [8]. In response to community transmission and the rising incidence of Covid-19 in Nigeria, the Federal Government of Nigeria instituted several containment and preventive measures like restriction of movement across most States in the country and prohibition of mass gatherings in order to enforce social and physical distancing protocol required to forestall further spread of the disease [9]. Accordingly, schools in Nigeria were closed due to the Covid-19 pandemic. Reports also suggest that community transmission of Covid-19 is more prevalent among young people who are largely asymptomatic and poorly compliant with Covid-19 prevention and control protocols like the use of facemask [10,11]. Proper use of facemask along with other measures can prevent community transmission of Covid-19 infection [6,12]. Proper use of facemask involves the consistent use outdoor and adherence to techniques of wearing and removing it [12]. In a case-control study in Beijing China it is reported that proper use of facemask is associated with a 70% reduction in risk of infection by SARS [1]. Studies on compliance of facemask have reported a prevalence of between 70% and 80% among healthcare workers and visitors to healthcare facilities [12,13].

In Nigeria, the Federal Ministry of Education released a Covid-19 infection prevention and control guideline for resumption of academic activities in schools. Among the strategies recommended in this guideline is the use of facemask at all times while in school [11]. In Rivers State Nigeria, even though the use of facemask in public places has been made compulsory, the compliance to use of facemask within the community is still very poor [14,15]. The wearing of facemask have been reportedly poor among young people and males [12]. Data from Rivers State Nigeria on compliance to use of facemask among university undergraduates, who are basically of the young population, is scanty. This study is therefore targeted at assessing the knowledge of Covid-19 and compliance on the use of facemask among students in a University in South-South Nigeria. It is hoped that the findings of this research will provide further information required for Covid-19 risk communication and also enhance the level of Covid-19 infection prevention preparedness in Universities opened for academic activities.

Methodology

Study setting

This study was conducted in Rivers State University Nkpolu Oroworukwo, Port Harcourt. It is one of the three Universities in Rivers State, South-South Nigeria. It has a population of 24,000 undergraduate student enrolled for various degree programs in nine Faculties and fifty Departments of the University.

Study design and sampling

This is a cross-sectional descriptive study conducted among undergraduate students registered for degree programs in Rivers State University, Port Harcourt. Using the Leslie Fischer's formula [16], $n = Z^2pq/d^2$ where n = minimum sample size; Z = level of statistical significance = 95% (1.96); P = the estimated proportion of those using facemask = 70% [13] = 0.7; q = 1-p = 0.3; d = allowable error (5%) = 0.05; the calculated minimum sample size was 323. However, this was increased to 400 to accommodate for non-response of 20%.

The sampling frame for selection of participants was the list of registered students obtained from the Information and Technology Centre of the University. Participants were recruited through a multistage stratified random sampling process. Stratification was based on their Faculties and then Departments where proportionate samples were collected by simple random sampling.

Data collection

Data was collected from selected participants in January and February, 2021 using a pretested structured survey questionnaire. This was self-administered by the researchers in compliance with Covid-19 safety protocols. Students who gave written informed consent provided information on their socio-demography, knowledge of Covid-19, use of facemask, adherence to protocol for wearing and removing facemask and also their reasons for non-use of facemask.

Data analysis

The generated data was analyzed using IBM SPSS Statistics 22 and results were presented in frequency tables. The outcome variables were knowledge of Covid-19, use of facemask, adherence to protocol of wearing and removal of facemask and reasons for not using facemask. Knowledge of Covid-19 was assessed using composite scores 0-10, generated from participants' responses to a set of ten questions evaluating knowledge of Covid-19. These scores were graded as very good (score 7-10), good (score 5-6) and poor (score 0-4); the use of facemask was determined

Table 1: Socio-demographic characteristics of respondents.

Variables	Frequency	Percent
Level		
100	12	3.0
200	165	41.2
300	96	24.0
400	64	16.0
500	47	11.8
Extra year	16	4.0
Faculty		
Engineering	104	26.0
Science	75	18.8
Education	55	13.8
Management Science	52	13.0
Law	41	10.3
Agriculture	25	6.3
Environmental Sciences	22	5.5
Social Science	20	5.0
Medical Science	6	1.5
Age		
15-24	258	64.5
25-34	108	27.0
35-44	12	3.0
Missing	22	5.5
Mean (SD)	23.4	3.7
Sex		
Male	247	61.8
Female	153	38.2
Marital status		
Single	340	85.0
Married	45	11.3
Seperated/Divorced	12	3.0
Widow	3	0.7
Religious denomination		
Catholic	85	21.2
Orthodox (Protestant)	67	16.8
Pentecostal	222	55.5
Muslim	8	2.0
Traditional	6	1.5
Others	12	3.0

as percentage of respondents who covered their nose and mouth with facemask or face coverings; wearing and removal of facemask appropriately were assessed on a scale of 0-100 based on adherence to protocol on wearing and removal of facemask [12]. Respondents who adhered strictly to the protocol on wearing or removing of facemask, scored 100 points and were classified as appropriately wearing or removing facemask while those who did not, scored less than 100 points and were classified as not wearing or removing facemask appropriately.

Ethical approval

The Rivers State University Research Ethics Review Committee gave approval for this study. All the participants gave written informed consent after a detailed explanation of the objectives of the study, an assurance of the confidentiality of information provided and voluntary withdrawal of participation at any point in the interview process without sanctions.

Results

Table 1 shows that majority of the participants were level 200 students (n = 165; 41.2%) in the Faculty of Engineering (n = 105; 26.0%). More than half were males (n = 247; 61.8%) while those who are singles were 340 (85%). Mean age of respondents was 23.4 ± 3.7 years and nearly two-third were aged 15-24 years (n = 258, 64.5%).

Almost all (n = 396; 99.0%) the respondents have very good knowledge on Covid-19. Most of them (n = 362; 90.5%) owned a facemask and in more than half (n = 195, 53.9%), the facemask is a surgical mask. Among respondents who have a facemask, 340 (93.9%) use their facemask however, only approximately one-tenth (n = 36; 10.6%) of them use it at all times in the public (Table 2).

Nearly all (n = 311; 91.5%) of the respondents who use facemask ensure that it covers their nose, mouth and chin. Approximately one third (n = 110; 32.4%) wash or sanitize their hands before wearing facemask and 106 (31.2%) avoid touching the outward side of the facemask once it is worn (Table 3).

Table 4 shows that only 81 (23.8%) of the respondents who use facemasks adhered to the protocol on removal of facemask. Ninety-seven (28.5%) respondents wash or sanitize their hands before taking off the face mask while 165 (48.5%) do so after disposing their used facemask.

Figure 1 shows that only 60 (17.6%) of those who use facemask complied with the protocol of wearing and removing facemask.

Table 5 shows that the most common reasons given by the respondents for either not using a facemask or using it at every time in public were difficulties in breathing (n = 94; 25.8%) and communicating (n = 84; 23.1%) and discomfort (n = 81; 22.3%). Only 16 (4.4%) of them felt they looked ugly when wearing it.

Discussion

Different types of facemask are currently in use. Although these differ in their degree of effectiveness, they have generally been accepted and recommended for use as one of the key strategies for the prevention and control of Covid-19 infection. This study looked at knowledge of Covid-19 and compliance on use of facemask among the young population in Rivers State, Nigeria. The knowledge on Covid-19 among respondents

Table 2: Knowledge on Covid-19 and use of facemask by respondents.

Variable	Frequency *(n = 400)*	Percent
Knowledge of covid-19		
Very good	396	99.0
fair	3	0.8
poor	1	0.2
Do you have a face mask		
Yes	362	90.5
No	38	9.5
Which type of mask do you have? (n = 362)		
Homemade cloth mask	142	39.2
Surgical mask	195	53.9
N95 mask	25	6.9
Do you cover your nose and mouth with a facemask when you are in public place? (n = 362)		
Yes	340	93.9
No	22	6.1
How often do you use the facemask in public? (n = 340)		
All the times (10 times in 10)	36	10.6
Most of the times (7-9 times in 10)	92	27.1
Some the times (4-6 times in 10)	145	42.6
Occasionally (1-3 times in 10)	67	19.7

Table 3: Adherence to protocol on wearing of facemask.

Variable	Frequency (n = 340)	Percent
I wash or sanitize my hands before wearing face mask		
Yes	110	32.4
No	230	67.6
I ensure that the face mask I use is the appropriate size for me		
Yes	325	95.6
No	15	4.4
I secure the mask properly on my face with the elastic band		
Yes	319	93.8
No	21	6.2
I ensure that the face mask covers my mouth, nose and chin		
Yes	311	91.5
No	29	8.5
I avoid touching the outward side of the facemask when it is on my face		
Yes	106	31.2
No	234	68.8
I ensure that the part with the metal strip is on the upper side		
Yes	198	58.2
No	142	41.8
I press the metallic strip firmly on to the bridge of nose and face		
Yes	191	56.2
No	149	43.8

in this study, who were mainly youths aged 23.4 ± 3.7 years, was high as almost all of them had very good knowledge of SARS-CoV-2 virus infection. This finding is consistent with those reported in other related studies among young people in China, Saudi Arabia and Malaysia [17-21] as well as among healthcare workers in Nigeria [22,23]. A much lower level of knowledge on Covid-19 was found in studies carried out among other populations in Nigeria [24-26]. Most governments in order to increase knowledge of Covid-19 in the wake of

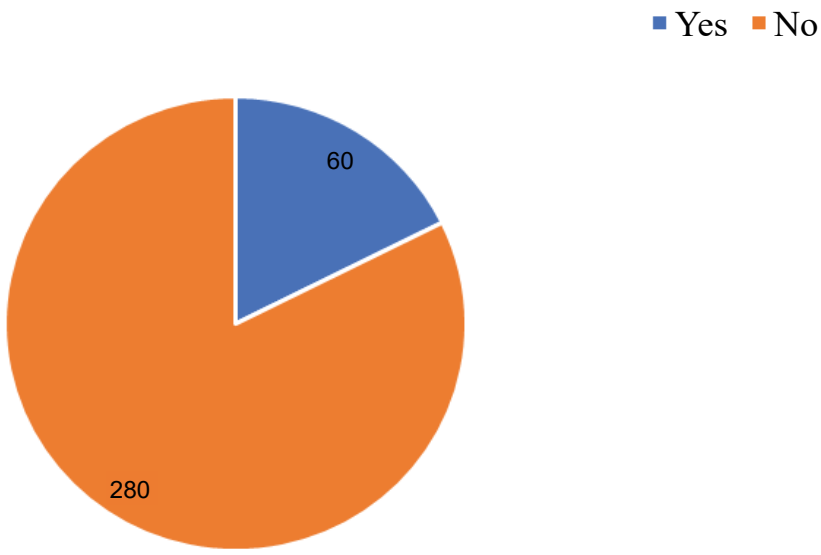

Figure 1: Compliance with the protocol of wearing and removing facemask.

Table 4: Adherence to protocol on removing of facemask.

Variable	Frequency (n = 340)	Percent
Remove facemask appropriately		
Yes	81	23.8
No	259	76.2
I wash or sanitize my hands before taking off the face mask		
Yes	97	28.5
No	243	71.5
In removing the face mask, I touch only the elastic bands		
Yes	318	93.5
No	22	6.5
I dispose of used medical mask in a lidded rubbish bin or wash homemade mask daily after use		
Yes	278	81.8
No	62	18.2
After disposing the face mask, I wash or sanitize my hands		
Yes	165	48.5
No	175	51.5

Table 5: Reasons for not using facemask by respondents who don't have and those who have but don't use it every time in public.

Reasons for not using facemask	Frequency (n = 364)	Percent
I have difficulty breathing in it	94	25.8
I have difficulty communicating when wearing the face mask	84	23.1
I feel uncomfortable wearing it	81	22.3
I just forget to use it regularly	66	18.1
It causes irritations to my nose and ear	45	12.4
I don't have any reason for not wearing it	35	9.6
I don't have one	31	8.5
It is expensive	26	7.1
I look ugly wearing it	16	4.4
I have asthma or respiratory disease which makes it difficult to use facemask	14	3.8

Covid-19 pandemic, embarked on intensive mass media sensitization campaigns through the risk communication pillar of Emergency Response Committee for Covid-19. Although this study did not assess sources of information

on Covid-19, several studies have reported mass media, social media and online sources as the major sources of information [19,21,23,24,27]. These sources are readily accessible by young people. Knowledge on Covid-19 has been reported to be associated with the level of education of respondents. Edet, et al. found that those with tertiary education are 6.6 times less likely to have low knowledge of Covid-19 (OR = 0.15, 95% CI = 0.04-0.55) [28]. Nearly all the respondents in this study have had two or more years of University education, thus are more likely to benefit from these mass media campaigns and the readily available online information.

In this study nine in ten respondents owned a facemask which is either a surgical mask or a homemade cloth mask. This is commendable given that surgical mask were at the time expensive and scarce [29]. This finding is comparable to the report by Edet, et al. 2020, where 94.6% of respondents owned a facemask mainly homemade cloth mask. In this study 94% of the respondents' wear facemask in public places. This high compliance probably may be due to the intense mass media campaigns which emphasized use of facemask outdoor as preventive strategy in the control of Covid-19 or the Government's executive order declaring the use of facemask mandatory in communities [15].

Edet, et al. 2020 in their study similarly found that 90.2% of Nigerians actually use facemask in the public [29]. Other studies have similarly reported high level of compliance with the use of facemask among young people in Nigeria and elsewhere while in others compliance is low [1,19,20,23,25]. For instance 51.6% of health worker in Bayelsa State Nigeria and 66% of Japanese Pharmacy students wear face masks when leaving home [18,22].

The appropriate wearing, handling and removal of facemask by healthy individuals in communities and healthcare workers may reduce the risk of transmission of SARS-CoV-2 virus [3,6,7,12,30]. It has been suggested that appropriate wearing, handling and removal of simple facemask could reduce transmission of respiratory disease due to coronaviruses by 70% [31]. The appropriate use of facemask in this study is poor. Only 11% of respondents in this study wear facemask at all the times when they are outdoor and in the public. In other related studies nearly half of the respondents used facemask regularly when outdoor [19,26,27]. Furthermore 18% and 24% of the respondents in this study respectively wear and remove their facemask appropriately in accordance with the protocols on wearing and removal of facemask. This poor compliance with the protocol on wearing, handling and removal of facemask is largely due to the low hand hygiene practices of respondents in this study. Approximately two third of the respondents do not wash or sanitize their hands before putting on facemask or before removing the mask and half after taking off and disposing the facemask. Furthermore 31% avoid touching the front of the mask when worn. The practice of using facemask was also reported in another study were 8.5% did hand hygiene before putting on mask, 3.7% before taking off, 8.5% after disposing the facemask and one third avoided touching the front of the mask when worn [12]. Respondents in this study performed poorer in terms of adherence to protocols on the use of facemask.

The commonest reasons for not wearing facemask or not using it regularly in public were difficulty in breathing (25.8%), communicating (23.1%) and discomfort when wearing it (22.3%). Also of note is that aesthetics is of less concern to the respondents as only 4.4% felt wearing mask makes them ugly. Edet, et al. 2020, similarly reported difficulty of breathing, discomfort and ugly looks as issues of concern in the use of facemask [31].

At the time of this study, reports on compliance on use of facemask in our setting were few. This study did not assess the perception of students on proper wearing and removing of facemask and could not be related to the observed high non-compliance. Furthermore, information obtained were based on memory recall subject to recall bias. These may pose limitation to this study.

Conclusion

The knowledge of Covid-19 as well as possession and use of facemask was very good among young people in Rivers State Nigeria. However, compliance to hygiene protocols on wearing, handling, removal and disposal of facemask is still poor.

Recommendation

Health promotions and public enlightenment campaigns on use of facemask should also emphasize methods for proper wearing, handling, removal and disposal of facemask among young people.

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Conflicts of Interest

There are no conflicts of interest.

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