ORIGINAL ARTICLE

Use of Face Mask as a COVID-19 Preventive Measure Among Household Heads in Enugu Nigeria

Elizabeth U **NWONWU**[1,2]
Edmund N **OSSAI**[1,2]
Chukwuma D **UMEOKONKWO**[2]
Ituma B **ITUMA**[1,2]
Ifeyinwa C **AKAMIKE**[2]
Joel U **OKENWA**[3]

[1]*Department of Community Medicine*
Ebonyi State University Abakaliki
Ebonyi State, NIGERIA

[2]*Department of Community Medicine*
Alex Ekwueme Federal University Teaching Hospital Abakaliki
Ebonyi State, NIGERIA

[3]*State Ministry of Health Enugu*
Enugu State, NIGERIA

Author for Correspondence
Chukwuma David **UMEOKONKWO**
Department of Community Medicine
Alex Ekwueme Federal University Teaching Hospital Abakaliki
Ebonyi State, NIGERIA

Phone: +234 806 044 1978
Email: chukwumau@gmail.com

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ABSTRACT

Background: Corona virus disease 2019 (COVID-19) is a highly infectious disease that can be transmitted from person to person through the respiratory droplets from an infected person and contacts. It is scientifically proven that covering mouth and nose with face mask prevents the spread of respiratory droplets produced by coughing and sneezing from an infected individual.

Objective: To evaluate the ownership and use of face mask as preventive practices against COVID-19 as well as factors affecting its use among adults in Enugu.

Methodology: We conducted a community-based cross-sectional study among 320 heads of households selected by multi-stage sampling technique in Enugu metropolis, Enugu state, Nigeria. We collected information on ownership and use of face mask from 4th to 15th May 2020. Data entry and analysis were done using IBM Statistical Package for Social Sciences statistical software version 25. The proportion of household heads who own and used face mask was estimated and the factors associated with its use was explored using Chi square test at 5% level of significance.

Results: One hundred and six (33.1%) heads of households have and use face mask; 272 (85.0%) were planning to own a face mask and 309 (96.6%) were aware of government directive to use face mask. Overall, 314 (98.1%) of the heads of households were willing to wear face mask if it is available. Ownership and use of face mask was more among females (38.8%) compared to males (28.0%, p =0.04).

Conclusion: Majority of respondents did not own or use a face mask but were willing to use one if made available. We therefore recommend that more efforts should be geared towards educating and sensitizing the public, particularly household heads, since they can play a role in ensuring that other family members adhere to the COVID-19 preventive measures.

Key words: *Non pharmaceutical measures, Surgical mask, Pandemic response, Enugu Metropolis*

INTRODUCTION

Towards the end of 2019, Corona virus disease (COVID 19) a highly infectious disease became a public health concern worldwide. This resulted to a pandemic caused by severe acute respiratory syndrome coronavirus-2 *(SARS-CoV-2)* affecting approximately 93 million people globally and accounting for more than 2 million deaths.[1] As at 27th January 2021, the Americas, Europe, and South-East Asia regions showed declines in new cases while Africa, Eastern Mediterranean and Western Pacific regions reported increases in new cases.[1] All regions reported increases in new deaths. Similarly, as at 31st January 2021, over 131,000 people have been affected in Nigeria resulting in more than 1500 deaths and case fatality rate of 1.3%.[1,2]

Common clinical symptoms include fever, dry cough, fatigue, myalgia and difficulty in breathing while the severe stage is characterized by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, bleeding and coagulation dysfunction.[3,4.5]

According to the World Health Organization (WHO), this novel disease is transmitted from person to person through the respiratory droplets from an infected person through sneezing, coughing, direct contact or indirect contact through contaminated surfaces and dirty hands with an average incubation period of 2-14 days when exposed.[6] Respiratory etiquette which refers to covering of mouth and nose with a tissue, handkerchief, or even bent elbow or hand when sneezing or coughing, is used as one of the ways to limit the spread of respiratory infections.[7] Similarly, covering the mouth and nose with a face mask prevents the spread of respiratory droplets produced by coughing and sneezing by an infected individual.[7]

It is well known that respiratory infection can be controlled at source by the use of face mask. Patients coughing or sneezing are usually advised to put on face mask. This is applicable to all patients with pulmonary tuberculosis (airborne infection) and influenza (mainly transmitted by droplets). Recent studies have shown that large number of asymptomatic patients are unaware of their own infection and can spread the disease.[10,11,12,13] With large number of people not knowing they have the infection, the comparable viral load in their upper respiratory tract,[12] droplets and aerosol dispersion even during talking and breathing,[13] and prolonged viral viability outside the body;[14] universal use of face mask is strongly recommended as means of source control in public places during the COVID-19 pandemic.

United States Centers for Disease Control and Prevention (US CDC) and WHO also recommend the wearing of face mask.[15] Facemasks are part of non-pharmaceutical interventions providing some breathing barrier to the mouth and nose that have been utilized for reducing the transmission of respiratory pathogens. Their uses are intended as personal protection to prevent infection and to limit transmission of the virus in a community or healthcare setting.[16]

A series of preventive measures such as regular hand washing with water and soap, social distancing, use of face mask have been recommended by World Health Organization, but it will be challenging to practice these in many cities and rural areas in developing countries. Extreme forms of social distancing are not sustainable and complete lockdown of cities or even whole countries affects the economy adversely. Universal masking is thus an important protective means against cross-transmission through unavoidable

person to person contact during COVID-19 pandemic.

Following the government directives on the use of face mask as one of the COVID-19 preventive measures, the ownership and use of face mask as well as factors affecting its use among adults in Enugu has not been evaluated. Therefore, this study is aimed to achieve this.

METHODOLOGY

Study Setting

Enugu metropolis consists of three local government areas: Enugu North, Enugu South and Enugu East local government areas. It has an estimated total population of 722, 664 people projected from 2006 national population census with a growth rate of 3.05%.[17] Its inhabitants are mainly of Igbo ethnic nationality and are predominantly Christians. The occupation of the people includes civil service, trading, artisanship and farming. The metropolis serves as the administrative capital of Enugu state which is one of the five states in South-East geo-political zone of Nigeria.

Study Design, Population and Sampling Technique

This was a community based cross-sectional study. The study population was heads of households in Enugu metropolis, Enugu state, Nigeria. A household is a group of people who live together and feed from the same pot. The head of household is the individual responsible for leadership and financial decisions in the household. A sample size of 320 respondents was used for the study. Multistage sampling technique was used to recruit respondents. In each household selected, a list of households in each of the selected houses where there were more than one household was made and one household was selected using a simple random sampling technique of balloting. The head of each of the selected household was included in the study.

A pretested semi-structured questionnaire developed by the researchers was used to collect information for the study. The questionnaire was interviewer-administered by trained research assistants.

Outcome Measure

Outcome measure was the proportion of heads of households who wore facemasks during the COVID-19 pandemic. This was after the Government of Nigeria has made the use of face masks compulsory as a way of curtailing the spread of COVID-19. Principal Component Analysis (PCA) was used to develop the socio-economic status of respondents using STATA statistical software version 12. Information from each of the respondents related to the estimated household monthly income and ownership of ten household items were used for the analysis. The ten household items were radio, television, generator, gas cooker, refrigerator, electric iron, personal car, air conditioner and washing machine. Each of the respondents was included in one of the four groups representing the wealth index of his/her household. The four groups were then re-grouped into two, the low socio-economic and high socio-economic class. The other details about the socio-economic status index of the respondent has earlier been reported.[18]

Data Management

Data entry and analysis were done using IBM Statistical Package for Social Sciences software version 25. Categorical variables were summarized using frequencies and proportions while continuous variables were represented using mean and standard deviation. Chi square test was used to compare differences in proportions between two categorical variables. The level of

statistical significance was determined by a *p* value of <0.05.

Ethical Considerations

Ethical approval for the study was obtained from the Research and Ethics Committee of Enugu State Ministry of Health, Enugu State, Nigeria. Written informed consent was obtained from the respondents before the questionnaires were administered. Participants were assured that information obtained for the study will be treated anonymously and confidentially. Participation in the study was voluntary.

RESULTS

One hundred and nine (34.1%) of the respondents were over 44 years old, 69 (21.6%) were never married, 65 (20.3%) had more than 4 children and 13 (4.1%) had no formal education. Only 106 (33.1%) reported having and using face mask for the prevention of COVID 19. However, 309 (96.6%) of the participants were aware of government's directive on face mask; among those that do not own facemask, 166 (77.6%) were planning to own a face mask while 208 (97.2%) reported they were willing to wear a face mask if provided to them (Table 1).

Among the factors examined only gender was shown to be associated with ownership and use of face masks among the participants. A greater proportion of females (59, 38.8%) compared to males (47, 28.0%) were more likely to own and use face mask as COVID-19 preventive measure (*p*=0.04).

DISCUSSION

This study assessed the ownership, willingness to use face mask, actual use of face mask, the factors affecting ownership and use of face mask among household heads in Enugu.

Table 1. Ownership and use of face mask

Variable	Frequency (n=320)	Percent (%)
Has and do use a face mask		
Yes	106	33.1
No	214	66.9
Planning to own a face mask (n=214)		
Yes	166	77.6
No	48	22.4
Willing to wear a face mask if available (n=214)		
Yes	208	97.2
No	6	2.8
Aware of government directive on face mask		
Yes	309	96.6
No	11	3.4

The study revealed that only few respondents owned and used face mask despite their high awareness of government directives on use of face mask and other preventive measures. This shows very poor practice of one of the preventive measures against Covid-19. This poor practice could be as a result of the controversies and misinformation about the Covid-19 pandemic especially in Africa. Most people do not believe in the existence of the virus while some believe that it only affects a certain group of people.[19,20]

These misconceptions and rumours have negatively affected the efforts being put in place by the government of various countries. The study shows the need for consistent health education and sensitization with emphasis on prevention, particularly in developing countries with poor health systems which will likely be overwhelmed if cases of Covid-19 continue to rise. Studies have shown that use of face masks in addition to practice of other preventive measures by majority of the populace can help reduce the spread of the virus and delay the epidemic peak.[21,22]

Table 2. Factors affecting ownership and use of face mask

Variable	Ownership and use of face mask (n=320)		χ^2	*P* value
	Yes (%)	No (%)		
Age group of respondents				
<35 years	34 (30.6)	77 (69.4)	0.495	0.781
35-44 years	34 (34.0)	66 (66.0)		
≥45 years	38 (34.9)	71 (65.1)		
Gender				
Male	47 (28.0)	121 (72.0)	4.233	0.040
Female	59 (38.8)	93 (61.2)		
Number of children				
None	17 (23.6)	55 (76.4)	3.839	0.147
1-4 children	65 (35.5)	118 (64.5)		
≥5 children	24 (36.9)	41 (63.1)		
Marital status				
Married	80 (33.5)	159 (66.5)	0.052	0.820
Single**	26 (32.1)	55 (67.9)		
Education				
Tertiary	75 (33.6)	148 (66.4)	0.085	0.770
Secondary and less	31 (32.0)	66 (68.0)		
Employment status				
Unemployed	3 (27.3)	8 (72.7)	0.609	0.738
Self-employed	59 (31.9)	126 (68.1)		
Salaried employment	44 (35.5)	80 (64.5)		
Socio-economic class				
Low	61 (37.2)	103 (62.8)	2.516	0.113
High	45 (28.8)	111 (71.2)		

**Never married, separated, divorced

Although most of the respondents did not own or use a face mask, majority were willing to use one if it is made available. Not owning a face mask could be due to poverty highlighting the need for distribution of face masks where possible.

A previous study conducted among the general public showed that distribution of face masks through various strategies had some positive impact.[22] It is however worthy to note that majority of the respondents were already making plans to acquire face masks. The male gender is usually known to be strong willed and may be more difficult to convince unlike the females who are more likely to accept change in behavior. One limitation of this study is that it was carried out among household heads in one state and this may limit the extent to which the findings could be generalized. However, the study has revealed the need for consistent health education and sensitization programs which This shows that the respondents already have a positive attitude towards use of facemasks and continuous education and sensitization can play a role in translating the plan to own a face mask to actual usage.

Gender was the only factor found to be associated with ownership and use of face mask. A lower proportion of male respondents were using facemasks compared with the females. A previous study has shown that females are more likely to practice preventive measures such as hand washing.[23]

should be anchored by health authorities to help debunk the misconceptions and also provide adequate information.

CONCLUSION

This study has shown that majority of respondents did not own or use a face mask but were willing to use one if made available. More females compared to males owned and used face mask. We therefore recommend that more efforts should be geared towards educating and sensitizing the public, particularly household heads since they can play a role in ensuring that other family members adhere to the Covid-19 preventive measures.

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