



## Health Literacy on COVID-19 among Older Adults in South-South Nigeria

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### Authors' contributions

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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### ABSTRACT

The aged is one of the most vulnerable cohorts of the COVID-19 pandemic; consequently to curb the spread of the virus public health knowledge is central. This study examines the sources of learning about COVID-19 pandemic, level of knowledge/awareness on the pandemic, and to ascertain if there is variation in the level of knowledge among older adults in South-South Nigeria on the basis of income, gender, education and marital status. The study was carried out in Port Harcourt Metropolis, Nigeria. Using analytical descriptive survey research design, older adults from 60 years and above were randomly selected. The instrument used was a structure questionnaire and an assessment test on Knowledge of COVID-19. Percentage, Mean, range, Standard deviation and ANOVA were used in analyzing the data collected. The study reveals that radio and television were the major sources of learning about Covid-19 among older adults, that their level of awareness of the symptoms of the disease is poor, moderate in prevention of community spread and basic management of patients with the virus. The study also reveals that there is variation in the level of awareness on the basis of income, while no variation was found in terms of gender, education and marital status. From the findings, it was concluded that radio and television were the dominant source of information on health literacy among the older adults and there is an association between level of level of awareness of COVID-19 and level of income of older adults.

**Keywords:** Health literacy; COVID-19; awareness; older adults.

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## 1. BACKGROUND

Public knowledge of the novel coronavirus disease called COVID-19 could be a key in the management, prevention and spread of the disease. In many countries particularly in Africa and Nigeria to be specific people initially express doubt of the prevalence of the pandemic. Health literacy is an important factor in curtailing and preventing the outbreak of any pandemic. Health literacy is defined as the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decision [1]. The health status of a person is dependent on his level of health literacy. According to Geboers, de Winter Lutten et al cited in Chesse et al [1] good health literacy enables older adults to have sustained health condition, autonomy and empowerment whereas older adults with low health literacy usually have unfavorable health behavior and health outcomes such as poor compliance with physical activity guidelines, frequent visits to medical doctors and higher prevalence of chronic conditions. Geboers, Uiters, and Reijneyeld [2] observed that poor health literacy among older adults is associated with poor cognitive function. Thus, low health literacy imposes a serious challenge to public health. This implies that the survival of the older adults' cohort of the COVID-19 pandemic requires higher level of health literacy. Those with lower health literacy may be more vulnerable to be infected with the coronavirus.

Various media space both the traditional media and the new media are awashed with public health education on COVID-19 pandemic. The World Health Organisation (WHO) have also come up with Protocols on appropriate health behaviour to be observed by people to prevent the spread of the pandemic. In spite of these initial efforts there has been increased spread. Many countries have experienced the pandemic with some experiencing second wave of the pandemic like most European countries like Britain, France, Spain, and third wave like Israel. The new strain of Coronaviruses originally seen in Africa but has now spread to Britain and other parts of the world. By the end of May 2020 barely 5 months after the outbreak was announced and was declared a pandemic; over 6, 086, 407 people were said to have been infected and over 368, 468 deaths recorded in the world (John Hopkins Hospital as reported in Nigerian Television Authority (NTA) New of 30

May, 2020). In Nigeria as at 28 December 2020 the total confirmed cases were 84, 81, discharged 71, 357 and 1, 264 deaths (Nigerian Centre for Disease Control as reported in NTA New of 28 December 2020). There has been significant increase in USA, Brazil and Peru in America, Britain, Italy, France and Spain in Europe. In Africa, South Africa, Nigeria, Morocco, Somalia, Ghana, and Cameroon were said to experience increasing spread with World Health Organisation (WHO) expressing fear of escalation of the spread with significant negative impact on the already deteriorating economy with attendant high unemployment, foreign debts, negative growth rate and fragile health care system. In Nigeria, Lagos State is the epicenter of the pandemic while Cross Rivers State was the last state to record cases out of the 36 states and Abuja the federal capital territory.

The first laboratory confirmation of the Coronavirus infection was on 1<sup>st</sup> December 2019 in Wuhan China. It was reported that within the first fifty days of the outbreak in China the virus killed one thousand eight hundred people and infected over seventy thousand people [3]. The virus spread through human to human contact; when person have close contact with an infected person exposed to coughing, sneezing, respiratory droplets or aerosols [4]. On January 30, 2020 WHO declared the coronavirus infection an International Health Emergence and on March 11, 2020 it was declared a Pandemic having reached the benchmark of more than 100,000 people infected in the world. The attendant disease from the coronavirus infection is called COVID-19.

The symptoms exhibited by the coronavirus infected person or one who is down with COVID-19 ranges from fever, dry cough, fatigue, and respiratory symptoms like shortness of breath and breathing difficulty [5]. Others are sore throat, rhinorrhea, hemoptysis, chest pain, gastrointestinal problem (diarrhea, nausea, and vomiting), Musculoskeletal problem (muscle ache), and Neurologic (headache or confusion) and in recent time loss of smile and taste. In a more serious case the outcome may include lower-respiratory tract illness such as pneumonia and bronchitis, or acute respiratory distress syndrome (ARDS) and severe acute respiratory syndrome (SARS) [5]. It was reported that these complication has been more pronounce among the elderly people and people with serious health challenges such as cardiopulmonary diseases and low immune system, diabetics[6]. Similarly,

Boeren, Rournell and Roessger [7] observed that the elderly are among the densely populated that are disproportionately affected by COVID-19. Consequently, with the discovery of vaccine for the COVID-19 the elderly people were the first set of people given the jab.

One of the dominant characteristics of aging is declining health, the deterioration of the body's system. Many diseases like stroke, heart failure are age related and recuperation is very slow. Some health conditions are associated with the elderly or aging. These include deafness, reduced vision, diminished muscle tone, reduced kidney function, osteoporosis, and arthritis. Other health challenges that the elderly often suffer from include less lung capacity, imbalance amid hormones and brain dysfunction [8]. With these numerous health challenges the vulnerability of the elderly and the fatality rate of COVID-19 among the older adults were dramatic and unimaginable. But the infection rate can be curtailed or curbed through proper public health education which will improve their health literacy level and the adoption of appropriate health behaviour. Finden, and Formusa, [8] pointed out that policy around health education for the older adulthood emphasizes that active ageing can have a remarkable effect on the quality of life indicator. So to flatten the curve of the rate of infection and ultimate death among the older adults in Nigeria, the WHO protocols and domestic guidelines issued by local health authorities must be properly disseminated and the elderly educated in the manner that is simple, clear, and provided opportunity for self-conscious critique of their self and their experience to promote reflection and action on health literacy on COVID-19.

According to the United Nation as cited in Zhang, Kaufman, Schell, Salgado, Seah, and Jeremic, [9] most countries have been experiencing increasing aging population due to decreasing mortality resulting from improved health care and declining fertility. It was predicted that the world population of the older adult will increase by 56% by 2030 and 2050. As the older adult population is the hard hit with the outbreak of COVID-19 pandemic, the growth of this population cohort may not be as progressive as predicted. Nigeria with a population of over 200 million, 6.4 million is said to be 65 years and above representing 3.1% of the population. This is an indication that while other countries were experiencing increasing aging population, Nigeria has been experiencing decreasing aging population. The

COVID-19 pandemic is most likely to increase the declining rate and this will be a critical blow to the country's stock of knowledge and wisdom of the elderly people and consequently its cultural capital.

The older adult population is hard to reach, their access to learning opportunities in the formal education is limited but their major source of updating their knowledge and retooling their skill has been through informal and non-formal education with the traditional media, the new media and community education platform as the leading source of learning. If these sources of learning adequately reach out to the older adult cohort on public health education on COVID-19, prevention of community spread and management, then the virus may be contained and the death among the elderly would as well be reduced. Therefore, health literacy on COVID-19 is very important in containing the virus; and ascertaining the level of knowledge among older adult is the key to policy formulation on interventions on health education promotion. Most research on COVID-19 focus on vaccine development and administration, economic consequences of the pandemic, treatment and prevention. Not which has been done in the area of assessment of level of health literacy particularly among older adult. To fill this gap is the main concern of this study. Thus this study seeks to examine the source from which older adults learn about COVID-19, assess the level of knowledge of COVID-19 among older adults; and to ascertain if there is variation in the level of knowledge based on sex and income in South-South Nigeria. To achieve these objectives the study sought to answer the following research questions:

1. What are the sources from which older adults learn about COVID-19?
2. What is the level of knowledge of COVID-19 among older adults?
3. What are the variations in the level of knowledge based on sex, income and geographic location?

## 2. METHODS

This study was conducted in Port Harcourt in South-South Nigeria. Port Harcourt is the hub for oil and gas exploration in Nigeria and the capital of Rivers State. Rivers State ranked 6<sup>th</sup> in the number of confirmed cases of COVID-19 in Nigeria with a total confirmed cases of 3, 398 as at 28 December 2020. Port Harcourt was

established in 1912 as a port town by Lord Frederick Lugard to export coal which was discovered in Enugu in 1909. The city was named after Sir, Lewis Harcourt the then British colonial secretary. Since its establishment, the city has been centre of export of primary products to Europe and others of the world. First, Coal and palm oil were exported in 1940's and from 1958 crude oil and other primary products are exported from this city. Major oil multinational companies including the Liquidified Natural Gas (LNG) all their offices in Port Harcourt. The city is highly urbanized with a wide range of socio-economic, political and cultural activities. Because of its economic viability, there is increasing influx of people into the city. This may make the city more likely to experience community spread from people traveling from places of increasing spread like Europe and America. The southern part of the city is owned by the people of Okirika while the Northern part of the greater part of the city is owned by the people of Ikwerre. The city comprised of two Local Government Areas (Obio/Akpor LGA and Port Harcourt LGA).

The analytical descriptive survey design was adopted in assessing the knowledge of COVID-19 among older adults 60 years and above in Port Harcourt. The target population of this study consists of all older adults resident in Port Harcourt metropolis. We adopt the non-probability sampling technique called the convenience sampling method. This method of sampling was adopted because the numeration of population is difficult and the actual number of older adults in this city cannot be easily ascertained. We used 280 older adults who were accessible and were willing to respond to the test. Thus 280 older adults make up the sample size.

Two instruments were used in this study. These were questionnaire and an Awareness Test. The questionnaire is called Instrument for Assessing Sources of Learning about COVID-19 (IASLC19); while the Awareness test is called COVID-19 Health Literacy Awareness Test (C19-HLAT). The Questionnaire is a six items structured questions with five response options. It also has a section on the demographic characteristics of the respondents. The test covers origin of the virus, symptoms, how it spreads, how to curtail the spread of the virus, and the management of infected patients. The test has a total of 20 items. Each of the questions correctly answered is scored 5 marks making a total of 100%. The

instruments were written in English language, but were translated into Igbo which is the dominant languages in the South-South Nigeria. The translation was done by experts in the Igbo language. A translator was recruited to ensure clarity. The test was designed by the researchers and was validated by three experts one each from the following specialties: Measurement and Evaluation, Community Health, and Adult Education. The method of validation of the instruments was content validity. This was adopted to ensure that the test questions or items cover all the relevant areas of awareness and literacy required on COVID-19 health literacy. To determine the reliability of the instruments a test-retest method was adopted. The instruments were administered to 20 pilot study group that were not part of the study population in Yenegoa, Bayelsa State Nigeria. The pilot study groups were older adults from 60 years and above. The scores obtained from the two administrations were correlated using Pearson Product Moment Correlation (PPMC) statistics. The calculated correlation co-efficient  $r$  was 0.86 for IASLC19 and 0.79 for C19-HLAT. This suggests relatively high internal consistency and the instrument can be adjudged reliable.

The instrument was administered by the researchers with the help of research assistants recruited from the neighborhoods of the city where the study was carried out. The instrument was administered in September and October 2020. Before administering the instrument the respondents were enlightened on the aim of the study and their consent to participate in the study was sought verbally. The respondents were assured that their identity will be kept confidentially and not disclosed at any point in the study.

Different statistical methods were adopted to analyze the data generated. Research question one was analyzed using percentage. In research question two, knowledge of COVID-19 was based on the average scores of respondents (total of correctly answered questions which was summed and multiplied by 5). An average score of less than 50 was rated poor, an average score of 50 to 74 was rated moderate and an average score of 75 and above was rated good. The average score of <50, 50 to 74 as well as 75 and above were the parameters that were set by the investigators to conclude that the respondent's knowledge was poor, moderate or good. The one way ANOVA is used to test the level of variance

in the level of awareness among the various categories of older adults.

### 3. RESULTS

#### 3.1 Demographic Profile of Participants

The participants in this study aged ranged from 60 to 75 years (mean = 69.2). 42% of the participants were female while 58% were male. In respect of the income level of the participants, 18% of the participants were said to be low income earners, 77% were middle income and 5% were said to be high income earners. 76% of the participants were married, 8% were divorced, 8% were widow and another 8% were separated. In terms of educational qualification of the participants, 16% of the participants had primary education only, 38% had secondary education only, while 46% had higher education.

Table 1 shows the various sources in which the older adults learn about COVID-19 in Port Harcourt. The table shows that 98 participants representing 37.69% of the respondents heard about the outbreak of COVID-19 from the Radio, 75 participants representing 28.84% of the respondent heard about the outbreak COVID-19 pandemic from the TV station while 15 participants representing 5.76% of the respondents heard about from the community centre. The table shows that 106 participants representing 40.76% of the participants in the study learnt about the symptoms of the disease from radio stations; while 18 participants representing 6.92% of the participants learnt about the symptoms from the community centre, 99 older adults representing 38.07% of the participants learnt about how to prevent contacting the virus through the radio stations, 73 representing 28.07% through the TV Stations while 13 older adults representing 5% of the participants learnt about the prevention through the community centre, 120 older adults representing 46.15% of the participants got their daily information through the radio stations, 66 older adults representing 25.38% of the participants got their daily information through the TV stations. 88 older adults representing 33.84% learnt about through the TV stations, while 78 older adults representing 30% learnt it through the radio stations. 110 older adults representing 42.30% learnt about it through TV stations while 66 older adults representing 25.38% of the participants learnt it through the radio stations.

Table 2 shows the test scores of the respondents on their knowledge of COVID-19. On the First place of the outbreak of the pandemic the test score of the respondents is 58%. The respondents scored 62% on the name of the virus that causes the COVID-19 disease. 69% of the respondents could state the primary source of the virus which is said to come from wild animal like bat. 55% of the respondents could state the secondary and wide spread sources of the virus which is having contact with person infected that is coughing sneezing and respiratory droplet. 76% of the respondents stated that covid-19 is a global pandemic. 63% of the respondents could state the most vulnerable people to coronavirus which are the elderly people. 64% of the respondents stated imposition of lockdown by the government, 76% of the respondents stated wearing of face mask, 52% of the respondents stated keeping 2 meters away to ensure social distance. 59% of the respondents stated the adoption of hand washing hygiene and use of hand sanitizer; 31% of the respondents stated that people should ensure that while coughing and sneezing they should do so into V shape elbow. 53% of the respondents stated that people should avoid large gathering and public places. 50% of the respondents could state what part of human body that people should avoid touching such as the mouth, eye and nose, 60% of the respondents could state the early symptoms such as fever, dry cough and fatigue; 35% of the respondents could state the most acute symptoms such as Severe Acute respiratory problem; while 21% of the respondents stated that the virus could damage the lungs. 58% of the respondents affirmed that COVID-19 test ought to be conducted on them or massive screening test be conducted at the test centres; 45% of the respondents affirmed that people who had unsafe contact with people with the virus, traveled from regions with high incidence or suspected to have the virus should go on self isolation, while 61% of the respondents stated that those confirmed to have the virus should be treatment at isolation centre, and 44% of the respondents affirmed that contact tracing can be used to avoid community spread.

Table 3 shows the COVID-19 Health literacy mean scores, the SD and range of scores of the respondents. The table shows that the mean score of male respondents is 61.8% while the mean score of women is 67.5% with an SD of 8.99 and 2.5 respectively. The mean score of respondents with primary educational

qualification is 47.5% with range of score of 30% as the lowest score and 55% as the highest. The respondents with secondary educational qualification have a mean score of 67.5% with range of 45% as the lowest and 70% as the highest score. Among those with higher educational qualification, the mean score was 68% with the lowest range of score of 40% and highest range of score of 70%. In respect of income level, those with low income the mean score of the respondents is 45.5% with 40% as the lowest range of score and 60% as the highest score. For the middle income earners, the mean score of the respondents is 54% with 50% as the lowest range of score and 75% as

the highest score; while high income respondents have a mean score of 63.2% with 55% as the lowest range of score and 75% as the highest range of score. In respect of marital status, respondents that are single have a mean score of 65.6%; respondents that are Widow/Widower have a mean score of 50.5% with 50% as the lowest range of score and 75% as the highest range of score; respondents that are deoiced have a mean score of 69.5% with 50% as the lowest range of score and 70% as the highest score, the married respondents have a mean score of 62.80% with 65% as the lowest range of score and 75% as the highest score.

**Table 1. Sources for learning about COVID-19 among older adults**

Object of learning	Number of Respondents				
	Radio	TV	Social Media	Community Centre	Newspaper
News of outbreak of COVID-19	98	75	43	15	29
Symptoms of COVID-19	106	80	36	18	20
How to Prevent contacting the Virus	99	73	56	13	19
Daily Information on COVID-19	120	66	36	—	38
Management of people who contact the virus	78	88	39	12	43
Means of Transmission of the Virus	66	110	44	10	30

*Sources of learning about COVID-19*

**Table 2. Knowledge of COVID-19 pandemic**

Variables	%	Rating
Origin of the Virus		
First place of the outbreak of the pandemic	58%	Moderate
The name of the virus that causes the disease COVID-19	62%	Moderate
The primary source of the virus	69%	Moderate
Secondary and wide spread sources of the virus	55%	Moderate
A global pandemic	76%	Good
Mean	64%	Moderate
Vulnerable Group		
Elder people are more vulnerable to the virus	63%	Moderate
Prevention of Community Spread		
Lockdowns imposed to prevent community spread	64%	Moderate
Wearing of face mask in public place	76%	Good
2 meters away to keep social distance	52%	Moderate
Hand washing hygiene and use of hand sanitizer	59%	Moderate
V shape elbow while coughing and sneezing	31%	poor
Avoid public places or large gathering	53%	Moderate
Avoid touching mouth, eye, nose	50%	Moderate
Mean Score	55%	Moderate
Symptoms:		
Fever, dry cough and fatigue	60%	Moderate
Severe Acute respiratory problem	35%	Poor
Damage of the lung	21%	Poor
Mean Score	38.66%	Poor
Basic Management of Patient:		
COVID-19 Test at Testing centres	58%	moderate
Self-isolation	45%	poor
Treatment at isolation centre	61%	moderate
Contact Tracing	44%	poor
Mean Score	52%	moderate

**Table 3. COVID-19 COVID-19 literacy mean score, sd and range on socio-economic variables**

Variables	N	Mean	SD	Range	f-value
Gender-					
Men	58	61.8	8.99	40-70	0.862
Women	42	67.5	2.5	45-70	
Educational Qualification-					
Primary	16	47.5	10.30	30-55	0.991
Secondary	38	67.5	2.5	45-70	
University Qualification	46	68.0	5.09	40-70	
Income Level-					
Low	15	45.5	10.31	40-60	0.001
Middle	77	54	8.80	50-75	
High	8	63.2	3.20	55-75	
Marital Status					
Single	18	65.6	6.70	55-70	0.881
Widow/Widower	24	50.5	6.26	50-75	
Divorced	15	69.45	7.32	50-70	
Married	43	62.80	5.80	65-75	

*Bold value indicates statistically significant difference between categories  $p>0.05$*

The study also seeks to ascertain if there is variation in the level of literacy on COVID-19 among various socio-economic categories such as sex, marital status, educational level, and income level. Table 3 shows that all categories are not significantly different in the level of awareness on COVID-19 except in the category of income which is significantly different. Older adults with higher educational qualification tend to have higher score of the level of awareness but this is not statistically significant. Similarly, women tend to have higher level of awareness than men, but the difference between men and women is not significant. Also in terms of marital status, the singles tend to have higher level of awareness or knowledge than the married and the devoiced or the widows.

#### 4. DISCUSSION

The study reveals that radio is considered the predominant source of information and education on the outbreak of COVID-19 on matters related to symptoms, transmission, prevention and management. This finding further corroborates the assertion of Darder [10] that radio is a public pedagogy for critical adult education. Radio has been considered more credible sources of information [11]. This is evident in the manner in which in most communities' elderly people are clue to their small transistor radio for news, entertainment and education. In spite of the emergence and the popularity of the social media, radio continues to hold sway as the predominant site of learning among the third and fourth age people.

In respect of the knowledge about COVID-19, the study reveals that participants in the study have

mean score of 87% on the origin of the virus, 77.85% on the prevention of the disease, 65.33% on symptoms, and 75.5% on basic management of the disease. This implies that knowledge on the symptoms of the disease is not widely known among the older adults. This finding corroborates the assertion of Ruiu [12] that since coronavirus is a novel pathogen and high degrees of uncertainty characterized scientific results which perhaps could be responsible for the lack of clear and consensus symptoms for the disease. Apart from in the aspect of symptoms which the respondents scored relatively low, the respondents performed high in other areas like knowledge on prevention, management, vulnerable group, and basic management. This is an indication that the elderly people have higher level of awareness. It has been observed that older adults with low health literacy are likely to have poor health condition. Chesser et al [1] observed that the lack of health related knowledge and or skills may serve as a barrier to the engagement in health behaviors, preventive services, and management; on the other hand, the higher the health literacy of an individual the likelihood of stable health condition. With the high health literacy, people will be able to engage in appropriate health behaviors that will help contain any pandemic. With such knowledge older adults could observe the non-pharmaceutical protocols like wearing of the face mask, the use of hand sanitizers, observing social distance of 2 meters, avoiding public gathering. When they observed these on-pharmaceutical protocols, the likelihood of contacting the virus will reduce so also there will be reduction in the community spread of the virus.

On whether there is variation on the level of awareness among the older adults on the basis of gender, sex, educational status, income level, and marital status, the study shows that there is significant difference in the level of awareness or level of knowledge based on income level. The other categories such as gender, level of education and marital status is not significant. Older adults with higher educational qualification tend to have higher score of the level of awareness but this is not statistically significant. This tends to corroborate the observation of Eronen, Paakkar, Portegijs, Saajanahor, and Rantanen [13] that there is an association between the level of education and the level of health literacy, that those with higher education tends to have high health literacy level. The study could not establish the relationship between marital status and health awareness. Although, married people tend to have higher score on the level of the awareness, the score is not significantly different from other categories of marital status such as married, divorced and widows. The study showed a significant difference in respect of income level. The study reveals that those with higher income tend to have higher level of awareness. This finding indicates that there is an association between high income and high level of health awareness on COVID-19. This finding is in line with Sorensen, Pelikan, and Rothlin cited in Eronen, et al [13] that older adults perceived to have higher income tend to have higher health literacy score. This also indicates that those that have low income are likely to have low health literacy level and consequently likely to have higher health risk and poor health condition. This observation corroborates the assertion of Chesser, Woods, Smothers, and Rogers [1] that older adults with low literacy level also exhibit poor health literacy. The elites seem to be more aware of the pandemic because they are more educated, wealthy and are more informed. They could easily information, listen to radio and television, read newspapers and assess internet. They may also be more concern about the pandemic because of the travel restrictions and the impact on the business and economic activities.

## 5. CONCLUSION

The study shows that in spite of emergence of social media and its popularity, the old media still remain the dominant source of getting information and education on Covid-19 pandemic in particular among the older adults. Thus, it can

be concluded that Radio and Television were the major site of information and education for the elderly on Covid-19. On the basic Covid-19 protocols on prevention and management, the elderly people seem to have moderate awareness from the various Sources of information dissemination on Covid-19. However, their level of awareness on the symptoms of the disease is poor. While there seem to be variation in the level of awareness based on income level with those with higher income been more informed about the Covid-19 pandemic, there is no significant variation in terms of gender, education and marital status.

## 6. RECOMMENDATIONS

The average knowledge on the symptoms of the disease among the older adults is poor, consequently, the media should intensify media information and education on Covid-19 with focus on symptoms and clarify basic symptom for public understanding particularly among the older adults. The Centre for Disease Control should collaborate with relevant stakeholders in the third and fourth age group to educate the older adults on the Covid-19 pandemic.

## 7. LIMITATIONS

The study was carried out in Port Harcourt metropolis among the older adults and as such the findings may not be generalized. Further studies need to be carried out on this area not only because of the novelty of the Covid-19 but the need to assess the level of awareness of older people on health related matters at third and fourth age.

## CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.



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