

Original Research Article

Knowledge and Health-seeking Behaviour of COVID-19 among Adolescents in Rivers state, Nigeria

Comment [taskeen1]: Title needs to be re-phrased: need to put study subjects characteristics after 'health seeking behaviour

Abstract

COVID-19 pandemic has posed an enormous threat to global public health and the human social life, adolescents exposed to COVID-19 are as likely as old people to become infected and spread the infection. The study was conducted to determine the knowledge and health-seeking behaviour of adolescent during the COVID-19 pandemic in Rivers state Nigeria. This survey employed a cross-sectional study; about 200 responses were received within two months via an online Google-doc questionnaire administered through WhatsApp instant messaging. About (45%) were middle adolescent (14-16 years) and 48% were males. Majority (80%) and (76%) respectively reported that droplets of affected person and surfaces touched by affected persons could spread COVID-19. However, some of the adolescents were not sure if touching of bank notes, dealing with pets, stool from public toilet, goods imported from China could spread coronavirus. Majority of the adolescents identified fever, dry cough, headache and difficulty in breathing as symptoms of COVID-19. About (54%) of the adolescents had ever felt ill and thought they might be infected with COVID-19 of which (48%) tried seeking for help and the majority experienced fever as the major signs and symptoms during the COVID-19 pandemic. Among adolescents who sought for help, more than half (56.3%) sought help from their parents and (89.6%) were satisfied. Adolescents' had fair knowledge on symptoms and spread of COVID-19, therefore continuous awareness is necessary to curb the spread of the virus. Findings of this study would help develop evidence-based educational intervention to improve adolescents' knowledge and health-seeking behaviours.

Comment [taskeen2]: % please

Key words: Knowledge, Health-seeking behaviour, Adolescent, COVID-19

Comment [taskeen3]: Make it according to the format with proper headings

Comment [taskeen4]: Bold them

Background

Coronavirus disease 2019 (COVID-19) is caused by a new strain of coronavirus (SARS-CoV-2) that was not previously recognized in humans (CDC, 2020). It was first reported to the World Health Organization on the 31st of December, 2019 in Wuhan China (NCDC, 2020). COVID-19 is noted to be highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea (Zhong et al., 2020). Person-to-person spread of SARSCoV-2 occurs primarily through close connection with an infected person, mainly via respiratory droplets and after touching contaminated objects. Research is currently undergoing on additional routes of transmission including fecal viral shedding (Xu et. al., 2020). The governments worldwide in response to the pandemic have implemented a number of measures to curtail the spread of the disease. These include closing sites of public recreation and education, such as schools and universities, and limiting face-to-face interactions through enforced social distancing (Andrews et al., 2020)

COVID-19 greatly affects lives around the world and due to isolation measures, contact restraints and economic shutdown; it imposed a complete change to the psychosocial environment of affected countries including Nigeria. The current situation affects children, adolescents and their families in an exceptional way (Fegert et al., 2020). COVID-19 pandemic has posed an enormous threat to global public health and the human social life (Chen et al., 2020). The lockdown and closures of non-formal education opportunities implemented affects adolescents greatly depriving them of social engagement with their peers and educators. This prolonged periods of closures and movement restrictions may lead to additional emotional unrest and anxieties (UNFPA, 2020). Adequate information is required to achieve successful adherence to protective measures so that individuals would understand what they need to do, how to follow instructions and guidance, and how to eventually make effective decisions in relation to their own health and the health of others (Id et al., 2020).

Adolescents' constitute a significant population (UNICEF, 2020), during adolescence there is an increasingly quest for independent which poses a need for them to be responsible for their own health behaviours (Id et al., 2020). Health-seeking behaviour is seen as a process by which an individual acts to maintain the state of physical fitness and well-being that enables man to manage the physical, social and biological environments to his/her own satisfaction (Adaramaja

Comment [taskeen5]: You can put it in the later paragraphs to build your rationale and can even be omitted

& Tijani, 2015). The act of being healthy in the face of diseases or illness involve individual engaging in what is referred to as health-seeking behaviours when is essential (Olaigbe & Bode-okunade, 2020) especially during the COVID-19 pandemic.

Adolescents and young people exposed to COVID-19 are as likely as old people to become infected and spread the infection. However, strict adherence to national guidelines around screening, testing, containment and care and practice social distancing is essential to curb its spread (UNFPA, 2020). Behavioural compliance is vital due to the critical role of person-to-person transmission in the spread of coronavirus especially for adolescents as they socialize in close peer groups (Id et al., 2020). The study was conducted to determine the knowledge and health seeking behaviour of adolescent during of COVID-19 pandemic in Rivers state Nigeria. The study is timely, relevant and the outcome of this study will help inform health practitioners, public health professionals, parents and the government to understand the knowledge and health seeking behaviours of adolescents during the COVID-19 pandemic and to develop possible interventions.

The study was guided by the following research questions;

1. What is the knowledge of adolescent on COVID-19 spread and symptoms?
2. What were the common signs and symptoms experienced by adolescents during the COVID-19 pandemic?
3. Did the adolescents try seeking for help and who did they sought help from?
4. Were the adolescents satisfied with the feedback received?

Comment [taskeen6]: How is this answered? If not then omit it

Methodology

Study area

Rivers State is one of the 36 states of Nigeria. According to National Bureau of Statistics (2016) the g population is at 7,303,924 persons i.e. 3,525,690 males and 3,778,234 females. Young adults aged 15-24 years have a population of 2,629,412 comprising of 36% of the entire population. The capital of Rivers state is Port Harcourt and is the largest city which is

economically important as the centre of Nigeria's oil industry. The individuals from Rivers State are known as "Riverians". The inland part of the state consists of tropical rainforest; near the coast, the typical Niger Delta environment consists of many mangrove swamps.

Study design

This is a descriptive cross sectional study conducted from July to August 2020 (during the time of the national COVID-19 pandemic lockdown with interstate travel restrictions, school and market closures in Rivers state, Nigeria).

Sample Size Estimation

The sample size was determined using Cochran's formula

$$n = \frac{Z\alpha^2 pq}{d^2}$$

Where; $Z\alpha$ = a variable with a critical value of 1.96 at 95% confidence interval

P= 10.1% Proportion of respondents that sort help from health facility during Covid-19 pandemic in Oyo state (Olaigbe & Bode-okunade, 2020)

$$q = 100 - p$$

$$100 - 10.1 = 89.9\%$$

$$d = \text{precision} = 5\%$$

$$n = 139.5 = 140$$

$$20\% \text{ nonresponse} = 28$$

$$n = 140 + 28 = 168$$

About 200 respondents participated for this study

Study population and sampling

The study was conducted online, circulated through an instant message via WhatsApp Application and using Google Doc Form. A survey link was generated and distributed to individuals and WhatsApp groups involving adolescents. The adolescents further shared the link with their circle of friends in Rivers state. In addition, the researchers linked up with other adolescent researchers and programmers in their networks to disseminate the link of the online questionnaire to eligible participants within their networks. About 200 adolescents responded

Comment [taskeen7]: What was the sampling technique used? Non-probability convenient sampling???

and completely filled the questionnaire. Information was collected from adolescents aged 10-19 years in Rivers State to assess their knowledge and health seeking behaviour during the COVID-19 pandemic.

Comment [taskeen8]: How did 10 year old approach?

Inclusion and exclusion criteria

Inclusion criteria

1. Adolescents within the ages of 10 to 19 years
2. Those that assent to participate in the study
3. Both in and out of school adolescents

Exclusion criteria

1. Those that cannot read or write
2. Those without a mobile phone or no access to internet
3. Those who do not assent to participate in the study

Data collection instrument

A self-administered anonymous online questionnaire was used to elicit information from the respondents. The questionnaire was developed following review of literatures.

Validity and Reliability

The study instrument was validated and pretested before the commencement of the study. The questionnaire was developed to capture the objectives of the study. The instrument was validated by experts in the field of public health and reviewed by the adolescent health to test their comprehension. The questionnaire was pretested with a Cronbach's alpha value for the reliability of 0.7 was obtained.

Data analysis and management

The Statistical Package for the Social Science (IBM-SPSS version 21) was used for the analysis of quantitative data. Descriptive and analytic statistics were conducted. Categorical data were presented in form of frequencies and percentages with results presented in tables and charts. Chi square was used to determine association and the level of significance was set at 0.05.

Comment [taskeen9]: Use sign (< or ≤)

Ethical consideration and consent to participation

Ethical approval was gotten from the University of Port-Harcourt Teaching hospital Ethical Committee. For adolescent below 18 years consent was sought from their parents or caregivers and assent to participate in the study was sought from the adolescents. For those above 18 years informed consent was obtained from them.

Comment [taskeen10]: How?

Information obtained from the respondent was kept private; to ensure the confidentiality of the participants no names were used for identification of respondents. The questionnaires were properly kept in a safe place and were accessible only to the research team.

Results

Information on Socio-Demographic Characteristics of Adolescents

Table 1 shows the socio-demographic characteristics of the respondents. About two hundred questionnaires were completely filled from all that were distributed online. About (104, 52%) were females and (90, 45%) were middle adolescent. About (90, 45%) were in senior secondary classes and (52, 26%) had completed secondary school. More than half 134(67%) were from monogamous family, 14(7%) from step family and 76% their parents stayed together.

Comment [taskeen11]: Remove bracket from the frequency value

Table 1 Socio demographic characteristics of adolescents in Rivers state, Nigeria

| Characteristics | N=200 | % |
|--------------------------------|-------|------|
| Sex | | |
| Male | 96 | 48.0 |
| Female | 104 | 52.0 |
| Age | | |
| Age in group | | |
| Early adolescent (11-13) | 40 | 20.0 |
| Middle Adolescent (14-16) | 90 | 45.0 |
| Late Adolescent (17-19) | 70 | 35.0 |
| Highest school attended | | |
| Junior secondary | 58 | 29.0 |
| Senior secondary | 90 | 45.0 |
| Completed secondary | 52 | 26.0 |
| Family type | | |
| Monogamy | 134 | 67.0 |
| Polygamy | 34 | 17.0 |
| Single parents | 18 | 9.0 |
| Step family | 14 | 7.0 |
| Parents stay together | | |
| Yes | 152 | 76.0 |
| No | 48 | 24.0 |

Comment [taskeen12]: 10 years included??

UNDETERMINED

Knowledge on spread of COVID-19

Table 2 shows the level of knowledge on spread of COVID-19 among the respondents. Of the 7 items on knowledge of spread of COVID-19, only 3 items of the responses scored above fifty percent. About (160, 80%) knew that droplets of affected person could spread COVID-19, 152(76%) knew that surfaces touched by affected persons could spread COVID-19 and 104(52%) knew that dealing with pets would not spread COVID-19. However, about (62, 31%) reported that touching bank notes could spread COVID-19 and 68(34%) were not sure if goods imported from China could spread COVID-19. About (88, 44%) reported that COVID-19 could be spread by asymptomatic persons.

UNDER PEER REVIEW

Table 2 Knowledge of spread of COVID 19 among adolescents in Rivers state, Nigeria

| Spread of COVID 19 | N=200 | % |
|---|--------------|----------|
| Droplets of affected person (with cough or expiration) | | |
| Yes | | |
| No | 160* | 80.0 |
| Not sure | 34 | 17.0 |
| | 6 | 3.0 |
| Surfaces touched by affected person | | |
| Yes | 152* | 76.0 |
| No | 34 | 17.0 |
| Not sure | 14 | 7.0 |
| Touching bank notes | | |
| Yes | | |
| No | 62 | 31.0 |
| Not sure | 86* | 43.0 |
| | 52 | 26.0 |
| Dealing with pets | | |
| Yes | 50 | 25.0 |
| No | 104* | 52.0 |
| Not sure | 46 | 23.0 |
| Stool (e.g. in public toilets) | | |
| Yes | | |
| No | 64 | 32.0 |
| Not sure | 86* | 43.0 |
| | 50 | 25.0 |
| Goods imported from China | | |
| Yes | 40 | 20.0 |
| No | 92* | 46.0 |
| Not sure | 68 | 34.0 |
| Disease could be transmitted from asymptomatic person | | |
| Yes | | |
| No | 88* | 44.0 |
| Not sure | 62 | 31.0 |
| | 50 | 25.0 |

Comment [taskeen13]: Is no correct answer here

Comment [taskeen14]:

- Correct answer

Comment [taskeen15]: Doesn't match the legend used in the table

Knowledge on symptoms of COVID-19

Table 3 shows the level of knowledge on symptoms of COVID-19 among the respondents. Of the 10 items on knowledge of symptoms of COVID-19, only 5 items of the responses were correctly answered and scored above fifty percent. About (172, 86%) reported the symptoms of COVID-19 as fever, 170(85%) as dry cough, 176(88%) as difficulty in breathing and 106(53%) as headache. About 128(54%) noted that vomiting wasn't symptoms of COVID-19. However, 96(48%) did not know that body aches were part of symptoms of COVID-19, likewise 84(42%), 74(37%), 88(44%) did not know that loss of smell/taste, tiredness, sore throat were part of symptoms of COVID-19 respectively. Nevertheless, 28(14%) and 50(25%) were not sure that headache and diarrhea were symptoms of COVID-19 respectively.

Table 3 Knowledge of symptoms of COVID 19 among adolescents in Rivers state, Nigeria

| Symptoms of COVID 19 | N=200 | % |
|--------------------------------|-------|------|
| Fever | | |
| Yes | 172* | 86.0 |
| No | 24 | 12.0 |
| Not sure | 4 | 2.0 |
| Dry cough | | |
| Yes | 170* | 85.0 |
| No | 22 | 11.0 |
| Not sure | 8 | 4.0 |
| Body aches | | |
| Yes | 48* | 24.0 |
| No | 96 | 48.0 |
| Not sure | 56 | 28.0 |
| Difficulty in breathing | | |
| Yes | 176* | 88.0 |
| No | 24 | 12.0 |
| Not sure | 0 | 0 |
| Vomiting | | |
| Yes | 40 | 20.0 |
| No | 128* | 54.0 |
| Not sure | 32 | 16.0 |
| Loss of smell or taste | | |
| Yes | 72* | 36.0 |
| No | 84 | 42.0 |
| Not sure | 44 | 22.0 |
| Headache | | |
| Yes | 106* | 53.0 |
| No | 66 | 33.0 |
| Not sure | 28 | 14.0 |

- Correct answer

Comment [taskeen16]: Legend doesn't match or put * before 'correct'

Table 3 Knowledge of symptoms of COVID 19 among adolescents in Rivers state, Nigeria

| Symptoms of COVID 19 | N=200 | % |
|-----------------------------|--------------|----------|
| Tiredness | | |
| Yes | 74* | 37.0 |
| No | 88 | 44.0 |
| Not sure | 38 | 19.0 |
| Sore throat | | |
| Yes | 88* | 44.0 |
| No | 76 | 38.0 |
| Not sure | 36 | 18.0 |
| Diarrhea | | |
| Yes | 26* | 13.0 |
| No | 124 | 62.0 |
| Not sure | 50 | 25.0 |

*Correct answer

UNDER PEER REVIEW

Sources of information on COVID-19

Figure 1 shows the sources of information on COVID-19 among the respondents. About (84, 42%) first heard of COVID-19 from the radio/television, (38, 19%) first heard it from friends, (32, 16%) first heard from social media platforms and (4, 2%) from school.

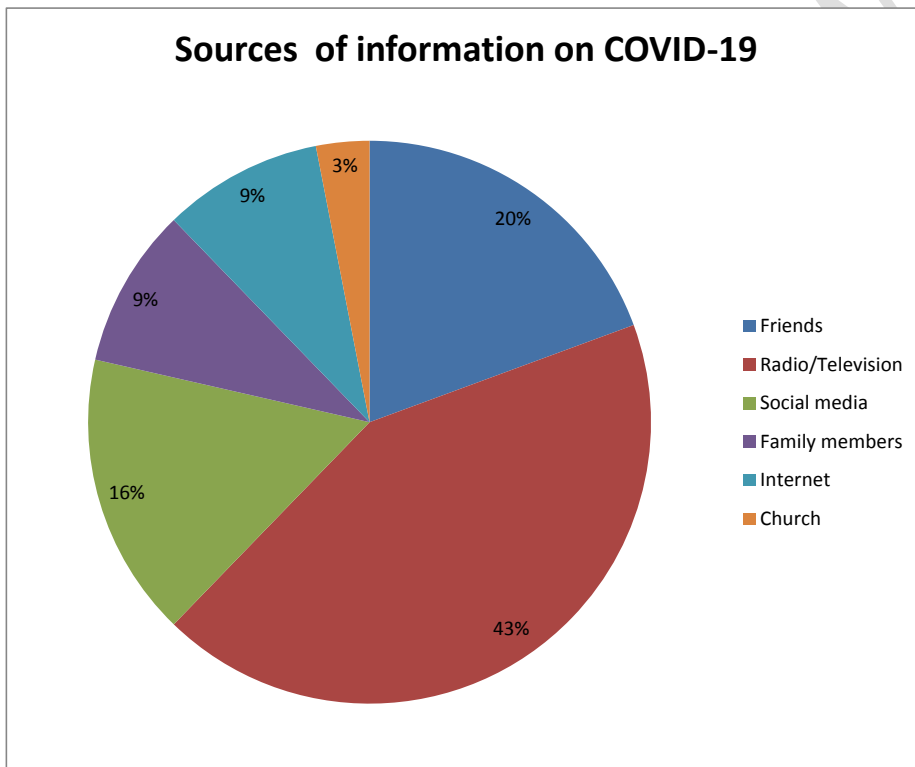


Figure 1 shows the sources of information on COVID-19 among adolescents in Rivers state Nigeria

Health seeking behaviour on COVID-19

Table 4 shows health seeking behaviour on COVID-19 among the respondents. About (108, 54%) had ever felt ill and thought might be infected with COVID-19 of which about (96, 48%) tried seeking for help. About (54, 56.3%) sought help from their parents, 12(12.5%) sought help from their friends, 6(6.3%) sought help from religious leaders and 4(4.2%) sought help from social media and internet. Among the ninety six people that sought help 89.6% were satisfied and 10.4% were not satisfied.

Table 4 Health seeking behaviour on COVID 19 among adolescents in Rivers state, Nigeria

| Characteristics | N=200 | % |
|--|-------|------|
| Ever become ill and thought might be infected with COVID 19 | | |
| Yes | 108 | 54.0 |
| No | 92 | 46.0 |
| Tried seeking help | | |
| Yes | 96 | 48.0 |
| No | 12 | 6.0 |
| Who sought help from (N = 96) | | |
| Doctor/health worker | | |
| Parents | 12 | 12.5 |
| Family members | 54 | 56.3 |
| Friends | 4 | 4.2 |
| Religious leaders | 12 | 12.5 |
| Trusted persons | 6 | 6.3 |
| Social media platforms | 4 | 4.2 |
| Internet | 2 | 2.1 |
| Satisfied with feedback (N=96) | | |
| Yes | 86 | 89.6 |
| No | 10 | 10.4 |

Health seeking behaviour on COVID-19 – Symptoms felt

Table 5 shows health seeking behaviour on COVID-19 among the respondents. Of the one hundred and eight respondents that felt ill and thought might be infected with COVID-19, 78(70.9%) felt symptoms of fever, 32(29.1%) felt symptoms of dry cough, 26(23.6%) felt loss of smell or taste and 18(16.4%) felt difficulty in breathing

Table 5 Health seeking behaviour on COVID 19 among adolescents in Rivers state, Nigeria

| Characteristics | N | % Responses | % Cases |
|---|----|-------------|---------|
| Symptoms felt (Multiple Responses) | | | |
| Fever | 78 | 40.2 | 70.9 |
| Dry cough | 32 | 16.5 | 29.1 |
| Body aches | 22 | 11.3 | 20.0 |
| Difficulty in breathing | 18 | 9.3 | 16.4 |
| Loss of smell or taste | 26 | 13.4 | 23.6 |
| Stooling | 4 | 2.1 | 3.6 |
| Vomiting | 14 | 7.2 | 12.7 |

Comment [taskeen17]: Table 4 and 5 can be merged

Association between age, gender, schooling status and health seeking behaviour

Table 6 shows the association between age, gender, schooling status and health seeking behaviour on COVID-19 among the respondents. There was no statistical significant between age, gender, schooling status and health seeking behaviour of adolescents ($p > 0.005$).

Table 6 Association between socio-demographic characteristics and tried seeking for help among adolescents in Rivers state, Nigeria

| Variable | Tried seeking for help | | Total N = 108 |
|--------------------------------|------------------------|-----------------|---------------|
| | Yes n(%) | No n(%) | |
| Sex | | | |
| Male | 52(89.7) | 6(10.3) | 58 |
| Female | 44(88.0) | 6(12.0) | 50 |
| | $\chi^2 = 0.074$ | P Value = 0.785 | |
| Age in group | | | |
| Early adolescent (11-13) | 18(81.8) | 4(18.2) | 22 |
| Middle Adolescent (14-16) | 40(90.9) | 4(9.1) | 44 |
| Late Adolescent (17-19) | 38(90.5) | 4(9.5) | 42 |
| | $\chi^2 = 1.403$ | P Value = 0.496 | |
| Highest school attended | | | |
| Junior secondary | 26(90.0) | 6(10.0) | 32 |
| Senior secondary | 46(88.5) | 26(28.9) | 52 |
| Completed secondary | 24(100) | 0(0) | 24 |
| | $\chi^2 = 5.660$ | P Value = 0.129 | |

Discussions

This study was aimed at assessing the knowledge and health-seeking behaviour of adolescents in Rivers state, Nigeria. The adolescents that participated in this online survey were more of middle adolescents 90(45%) than early adolescents 40(20%), about (52%) were females, most were in secondary school and from monogamous family of which majority their parents stay together.

In assessing the knowledge of adolescents on COVID-19, majority about (80%) and (76%) respectively reported that droplets of affected person and surfaces touched by affected persons could spread COVID-19. However, some of the adolescents were not sure if touching of bank notes, dealing with pets, stool from public toilet, goods imported from China and asymptomatic persons could spread coronavirus. A similar finding was found among students in Southern Philippines were about 73.58% of the students knew that the COVID-19 could spread through touching, sneezing, kissing, and food (Baloran, 2020). A study conducted in Nairobi, Kenya found that most (83%) knew anyone could be infected (Austrian et al., 2020). Also in line with the current study, a survey among the Malaysian public found that most participants knew that people who had contact with an infected person should be immediately isolated as an effective way to reduce the spread of the virus. However, 35.7% answered correctly when asked if eating and touching wild animals could result in infection (Azlan et al., 2020). The similarities found in the knowledge of spread of COVID-19 from the current and prior study may be attributed to the awareness and publicity on the spread of COVID-19 during the pandemic.

With regards to knowledge on symptoms of COVID-19 it was found that of the 10 items on knowledge of symptoms of COVID-19, only 5 items of the responses were correctly answered and scored above fifty percent. Majority of the adolescents identified fever, dry cough, headache and difficulty in breathing as symptoms of COVID-19. More than half noted that vomiting wasn't the symptoms of COVID-19. However, some of the adolescents did not know that body aches, loss of smell/taste, tiredness and sore throat were part of symptoms of COVID-19. Also, some of the adolescents were not sure if headache and diarrhea were symptoms of COVID-19. This was in accordance with a study conducted among students in Southern Philippines and Nairobi, Kenya that reported fever and cough as primary symptom of the COVID-19 infection (Baloran, 2020; Austrian et al., 2020). Also, a survey among female midwifery students in Turkey reported that fever, cough, difficulty in breathing, diarrhea were the most common

symptoms of coronavirus diseases (Sögüt et al., 2020). Also in line youths in Kenya found that knowledge on symptoms of COVID-19 was generally high (Karijo et al., 2020). In contrary, a study conducted in Nairobi, Kenya found that only 42% listed difficulty breathing as symptoms of COVID-19 and more than half reported sneezing (56%), even though this is not a COVID-19 symptom (Austrian et al., 2020) . The differences between the current and prior studies may be due to the study locale and population.

Regarding the sources of information on COVID-19, the adolescents first heard of coronavirus on the radio/television (42%), from friends (19%), from social media platforms (16%) and from school (2%).A study among adolescent in Norway found that TV (86%) and family (81.1%) were indicated to be the main sources of pandemic-related health information, while 58.6% also reported reading newspapers for information (Id et al., 2020). The difference between the present and former study is that the present study focused first heard of COVID-19 while the former study focused on sources of pandemic-related health information.

Health seeking behaviour is seen as illness behaviour or sick-term behaviour. It encompasses activities undertaken to maintain good health, to prevent ill health, as well as dealing with any departure from a good state of health (MacKian, 2003; Latunji & Akinyemi, 2018). The present study tried to determine adolescents' illness behaviour when they suspected they might be infected with coronavirus. During the COVID-19 pandemic, it was found that about (54%) of the adolescents had ever felt ill and thought they might be infected with COVID-19 of which 48% tried seeking for help. A study conducted in Ibadan, Nigeria found that majority of the respondents (85.9%) reported having experienced signs and symptoms of any kind of illness during the COVID-19 pandemic (Olaigbe & Bode-okunade, 2020). The difference in the current and prior study is that, the prior study focused on all kinds of illness while the current study focused on signs and symptoms related to COVID-19.

Among adolescents who sought for help, more than half sought for helps from their parents, while others sought help from their friends, religious leaders, social media and internet. In contrary, a study conducted in Nairobi, Kenya found that when participants were asked what they would do if they had symptoms of COVID-19, the most likely response was “go to a clinic” (71%) and only 42% said they would call the government's toll-free hotline, and only 19% said

they would stay at home more (Austrian et al., 2020). The difference in current and prior study may be due to the study locale and population.

Research reports that adolescents in most cases are more likely to seek help or support from people and places they know and where they feel some sense of belonging, rather than making calculated assessments of the quality of the help or service (Barker, 2007). This corroborates findings from the present study that found that majority of the adolescents sought help from their parents and among the ninety six people that sought help 89.6% were satisfied with the feedbacks.

This current study also found that of respondents that felt ill and thought might be infected with COVID-19, the majority (70.9%) felt symptoms of fever, other symptoms felt include dry cough, loss of smell or taste, felt difficulty in breathing, body aches, vomiting and stooling. There was no statistical significant between age, gender, schooling status and health seeking behaviour of adolescents. This may be due to the fact that health seeking behaviour for adolescents is not a function of their socio-demographic characteristics but a function of the availability of trusted individuals with whom they can relate with.

In conclusion, the adolescents had a fair knowledge on the spread and symptoms of coronavirus disease. The majority of the adolescents were aware that droplets of affected person and surfaces touched by affected persons could spread COVID-19. However, some of them were not sure if touching of bank notes, dealing with pets, stool from public toilet, goods imported from China and asymptomatic persons could spread coronavirus. Also, majority of the adolescents identified fever, dry cough, headache and difficulty in breathing as symptoms of COVID-19. Nevertheless, some of the adolescents did not know that body aches, loss of smell/taste, tiredness and sore throat were part of symptoms of COVID-19. The major sources of information were from radio/television. During the COVID-19 pandemic, more than half of the adolescents had felt ill and thought they might be infected with COVID-19 of which less than half tried seeking for help, they mostly sought for help from their parents and were mostly satisfied with the feedbacks. Adolescents' knowledge on symptoms and spread of COVID-19 were on the average, therefore continuous awareness on spread and symptoms is necessary to curb the spread of the virus.

Comment [taskeen18]: Specific please

The study had limitations, the study was conducted online and this may be prone to biases. Also, since convenience sampling was used in recruiting participants, therefore the study may be not generalized to all adolescents in Rivers state. In addition, adolescents without a mobile and with restricted access to internet were exempted from the survey and therefore not a total representation of the population. Notwithstanding the limitations, the findings of this study would help develop evidence-based educational intervention to improve adolescents' knowledge and health seeking behaviours.

Conclusion, conflict of interest, Acknowledgment

Comment [taskeen19]: Missing headings, Discussion and conclusion can be minimized to create room for the conclusion

References

- Adaramaja, S. R., & Tijani, O. M. (2015). Demographic Factors as Correlates of Health – Seeking Behaviour of the People of Oyo State, Nigeria. *Ghana Journal of Development Studies*, 11(2), 100. <https://doi.org/10.4314/gjds.v11i2.7>
- Andrews, J. L., Foulkes, L., & Blakemore, S. J. (2020). Peer Influence in Adolescence: Public-Health Implications for COVID-19. *Trends in Cognitive Sciences*, 24(8), 585–587. <https://doi.org/10.1016/j.tics.2020.05.001>
- Austrian, K., Pinchoff, J., Tidwell, J. B., White, C., Abuya, T., Kangwana, B., Ochako, R., Wanyungu, J., Muluve, E., Mbushi, F., Mwanga, D., Nzioki, M., & Ngo, T. D. (2020). COVID-19 Related Knowledge, Attitudes, Practices and Needs of Households in Informal Settlements in Nairobi, Kenya. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3576785>
- Azlan, A. A., Hamzah, M. R., Sern, T. J., Ayub, S. H., & Mohamad, E. (2020). Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. *PLoS ONE*, 15(5), 1–15. <https://doi.org/10.1371/journal.pone.0233668>
- Barker, G. (2007.). *Adolescents , social support and help-seeking behaviour consultation with recommendations for action*.
- Baloran, E. T. (2020). Knowledge , Attitudes , Anxiety , and Coping Strategies of Students during COVID-19 Pandemic. *Journal of Loss and Trauma*, 25(8), 635–642.

<https://doi.org/10.1080/15325024.2020.1769300>

Chen, X., Gao, H., Zou, Y., & Lin, F. (2020). *Changes in psychological wellbeing , attitude and information-seeking behaviour among people at the epicentre of the COVID-19 pandemic : a panel survey of residents in Hubei province , China.*

Centers for disease control and prevention Novel Corona virus, Wuhan, China 2020; 2019. Available:<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html>

Fegert, J. M., Vitiello, B., Plener, P. L., & Clemens, V. (2020). Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: A narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child and Adolescent Psychiatry and Mental Health*, 14(1), 1–11. <https://doi.org/10.1186/s13034-020-00329-3>

Id, K. R., Helseth, S., Id, K. H., Torbj, A., & Id, R. (2020). *Adolescents ' health literacy , health protective measures , and health-related quality of life during the Covid-19 pandemic.* 1–13. <https://doi.org/10.1371/journal.pone.0238161>

Karijo, E., Wamugi, S., Lemanyishoe, S., Njuki, J., & Boit, F. (n.d.). *Knowledge , attitudes , practices , and the effects of COVID-19 on health seeking behaviors among young people in Kenya.* 1–25.

Latunji, O. O., & Akinyemi, O. O. (2018). Factors Influencing Health-Seeking Behaviour Among Civil Servants in Ibadan, Nigeria. *Annals of Ibadan Postgraduate Medicine*, 16(1), 52–60. <http://www.ncbi.nlm.nih.gov/pubmed/30254559><http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC6143883>

MacKian S. A review of health seeking behaviour: problems and prospects. Health Systems Development Programme. 2003.

NCDC (2020). *COVID-19 SITUATION REPORT. AUGUST*, 1–5.

Olaigbe, T. A., & Bode-okunade, A. S. (2020). *A Survey of Health-Seeking Behaviour of Residents in Two Local Government Areas in Ibadan , Oyo State , Nigeria during COVID-19 Pandemic*. 41(15), 33–45. <https://doi.org/10.9734/IJTDH/2020/v41i1530356>

Sögüt, S., Dolu, İ., & Cangöl, E. (2020). The relationship between COVID-19 knowledge levels and anxiety states of midwifery students during the outbreak: A cross-sectional web-based survey. *Perspectives in Psychiatric Care*, April, 1–7. <https://doi.org/10.1111/ppc.12555>

UNICEF (2012) Progress for Children: A report card on adolescents. Socio-demographic profile of adolescents: Number 10 April 2012 UNICEF. Figure: 2.1 Page 6.

UNFPA (2019). *Coronavirus Disease (COVID-19) Preparedness and Response UNFPA Interim Technical Brief Adolescents and Young People & Coronavirus Disease (COVID-19)*. 1–3.

Xu Y, Li X, Zhu B, et al. Characteristics of pediatric SARS-CoV-2 infection and potential evidence for persistent fecal viral shedding. *Nat Med*. Published online March 13, 2020. doi:10.1038/s41591-020-0817-4

Zhong, B. L., Luo, W., Li, H. M., Zhang, Q. Q., Liu, X. G., Li, W. T., & Li, Y. (2020). Knowledge, attitudes, and practices towards COVID-19 among chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. *International Journal of Biological Sciences*, 16(10), 1745–1752. <https://doi.org/10.7150/ijbs.45221>