



## **Risk Perception and Willingness of Medical Students in North East Nigeria to Participate in Mitigating COVID 19 Pandemic**

**A. Mohammed<sup>1,2\*</sup>, A Mohammed<sup>3</sup>, I. U. Mohammed<sup>4</sup>, M. A. Danimoh<sup>1,2</sup>  
and C. H. Laima<sup>5,6</sup>**

<sup>1</sup>*Department of Community Medicine, Faculty of Clinical Sciences, College of Medical Sciences, Gombe State University, Gombe, Nigeria.*

<sup>2</sup>*Department of Community Medicine, Federal Teaching Hospital Gombe, Gombe, Nigeria.*

<sup>3</sup>*Department of Biochemistry, Faculty of Basic Medical Sciences, College of Medical Sciences, Abubakar Tafawa Balewa University, Bauchi, Bauchi, Nigeria.*

<sup>4</sup>*Department of Biochemistry, Faculty of Basic Medical Sciences, College of Medical Sciences, Yobe State University, Damaturu, Yobe, Nigeria.*

<sup>5</sup>*Department of Obstetrics and Gynaecology, Faculty of Clinical Sciences, College of Medical Sciences, Gombe State University, Gombe, Nigeria.*

<sup>6</sup>*Department of Obstetrics and Gynaecology, Federal Teaching Hospital Gombe, Gombe, Nigeria.*

### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JAMMR/2020/v32i730456

Editor(s):

(1) Chan-Min Liu, Xuzhou Normal University, China.

Reviewers:

(1) Devang Bharti, ABVIMS & Dr. RML Hospital, India.

(2) Luiz Antonio Del Ciampo, University of São Paulo, Brazil.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/57453>

**Original Research Article**

**Received 09 May 2020**

**Accepted 25 May 2020**

**Published 30 May 2020**

### **ABSTRACT**

**Background:** The recent COVID 19 pandemic has negatively affected health care systems in developed and developing countries. The weak health systems in Nigeria with low Human Resource for Health (HRH) poses a threat to mitigating this pandemic with the rising number of COVID 19 cases in the country. It is therefore necessary to consider measures to improve on the availability of human resources in the health sector.

**Methodology:** The study was a cross sectional study which studied 475 medical students from four medical colleges across the North Eastern region. The close group whats-app platform for

\*Corresponding author: E-mail: mohammedamina004@gmail.com;

selected schools and classes were used to obtain information on the knowledge, perception and willingness to assist in providing health care services during this pandemic.

**Results:** Majority of the respondents had good knowledge and perception on COVID 19 (80.4% and 96% respectively). In addition, 78.3% of the respondents felt that they were at risk of becoming infected, however 93% of them stated that they were willing to assist in providing health care services during this pandemic. Parental disapproval and fear of becoming infected were the reasons given for those who were unwilling to be involved in provision of health care during this period. More male respondents (67.3%) were willing to participate in providing health care service during the pandemic compared to 32.7% of females and this was statistically significant with a p-value of <0.001.

**Conclusion:** This study has shown that majority of medical students in the North East have a good knowledge and perception on COVID 19 and are willing to assist in providing health services if needed during the COVID 19 Pandemic. These services could be specific low risk tasks and responsibilities which lie predominantly with prevention of COVID 19 in the region. Their willingness should be regarded as a great sacrifice to humanity and could go a long way in bridging the gap of low HRH in this region.

*Keywords: COVID 19; pandemic; Human Resource for Health (HRH); mitigate.*

## 1. BACKGROUND

Recently, the COVID 19 pandemic has tested health systems preparedness towards pandemics globally. While the rise in cases in developed countries is a source of concern despite the stronger health systems, Low- and Middle-Income countries (LMICs) especially those in Africa also continue to have increased incidence of the disease which poses a threat to the already weak health systems [1].

In order to improve the number of Human Resource for Health (HRH), some countries have resulted to recalling retired health care workers or making use of medical students to ease the hardship faced by health workers. In Michigan USA, medical students provided care as Respiratory Therapist Extenders (RTE), [2] they also served as ventilator therapy assistants in Denmark [3] and even served as frontline health care workers as occurred during the Spanish flu pandemic [4]. Although the American Association of Medical Colleges (AAMC) does not support the use of medical students during this pandemic unless it becomes very necessary [4]. The arguments are that they could contribute to the misuse of scarce Personal Protective Equipment (PPEs) or increase the risk of transmission to patients or clinicians. Others are that they lack of contractual agreement, indemnity and expected roles and responsibilities during this pandemic [5]. However, some clinicians in America think that medical students could perform tasks such as providing information through health education on COVID 19, care for those with mild symptoms of COVID 19, triaging patients and

provide routine care for other patients such as antenatal care under supervision [4,6]. This helps to relieve the pressure on frontline health care workers who could attend to COVID 19 emergencies.

Nigeria's health care system has been faced with challenges in all the health system building blocks [7]. Availability and retention of adequate pool of healthcare workers in the right mix is a challenge across all the levels of health care in almost all the states despite the task shifting and task sharing policy [7]. According to the geopolitical zones in the country, the North East and North West have the lowest proportion of HRH/100,000 population [7]. This raises concern on how the already inadequate Health Care Workers (HCWs) are expected to provided care for the almost 200 million Nigerians. With the rise in incidence of COVID 19 the threat is becoming more evident. Over the last month (April 2020), there has been an 11-fold increase in the number of COVID 19 cases across the country with almost all states recording at least a case of the disease. Presently, Nigeria has recorded 3,526 cases with 601 recoveries and 107 deaths. Of this number of cases, 364 are in the North East region, with Borno and Gombe having higher number of cases compared to the other states in the region [8]. Although no suggestions have been made in the country on the role medical students could play in this pandemic, it is not out of place to consider their roles if this pandemic continues. However, this should be dependent on their willingness to participate, their level, mode of supervision and tasks assigned to them. This study therefore aims to determine the

perception of medical students on COVID 19 and determinants of their willingness to participate in providing health care during this pandemic.

## 2. METHODOLOGY

This study was carried out across the North East region, it is one of the six geopolitical zones in the country consisting of Bauchi, Gombe, Adamawa, Taraba, Maiduguri and Yobe states. There are presently 4 medical colleges across the North East. These are situated in Bauchi, Gombe, Maiduguri and Yobe with 140, 198, 600 and 54 medical students from 200 to 600 level respectively. A descriptive cross-sectional study design was used and medical students in selected schools who gave consent to participate in the study were included. Using the Cochran's formula and a prevalence of 87.1% of medical students in India who had good knowledge on COVID 19, a sample size of 190 was calculated, this included a 10% non response [9]. However, 475 respondents were studied. Probability proportion to size was used to calculate the minimum number of students from each institution. As such, minimum of 26, 38, 115 and 10 respondents from Bauchi, Gombe, Maiduguri and Yobe respectively were to be studied. It was web-based research in which data was collected online using the closed WhatsApp group platform for the respective institutions and classes for medical students. This was done with the aid of the class representatives and representatives of the medical student's association of the selected institutions. A pretested self-administered questionnaire which was adapted from the study in India was used to collect data [9]. It was in four sections and included questions on knowledge and perception on COVID 19 and willingness to participate in offering medical care during this pandemic. This questionnaire was left open for one week.

Seven questions were asked on knowledge, each correct response was given 2 marks while incorrect responses had a score of 0. The total marks were 14, as such all responses that scored 8 -14 were regraded as those with good knowledge, while those who scored 0-6 points were regarded as having poor knowledge. There were five questions on perception and each correct perception was awarded 2 points while each wrong perception was awarded 0. Those who had 0-4 points were regarded as those with a poor perception while those who scored 6

points and above were regarded as those with good perception.

All data collected was analysed using Statistical Package for Social Sciences (SPSS) version 23, independent variables such as age, sex and willingness to participate in providing care during the pandemic were presented in tables and charts. Chi-square test was used to determine the association between some sociodemographic characteristics, perception and willingness to participate and knowledge and willingness to participate in providing care during the pandemic. A p-value of <0.05 was considered to be statistically significant.

## 3. RESULTS

Most of the respondents were aged 21-25 years (54.9%), males (65.1%) and from University of Maiduguri (55.6). Majority of them were single (94.1%).

Majority of the respondents (80.4%) had good knowledge on COVID 19 with 19.6% of them having poor knowledge. Almost all the respondents know that COVID 19 is caused by a virus and that elderly people were more at risk of complications with poorer prognosis. In addition, 50.9% and 26.1% of the respondents believe that most people with the infection will show signs and symptoms of the disease and that Chloroquine is the certified drug with proven efficacy respectively.

All the respondents believe that there are patients with COVID 19 in Nigeria, however 13.3% believe it doesn't exist in their respective states. Almost half (48.0%) of the respondents believe that the virus is a biological weapon which was created in the lab. In addition, as many as 78.3% of the respondents believed that they are at risk of becoming infected with COVID.

Majority of the respondents are willing to participate in providing health care services during the COVID 19 pandemic. Only 7% of the respondents reported their unwillingness to assist in providing health care services during the pandemic. The fear of becoming infected with COVID 19 and parental disapproval were the reasons why some respondents are unwilling to participate in providing any form of health care services during the COVID 19 pandemic.

**Table 1. Sociodemographic characteristics of respondents**

Variable	Frequency (%) n=475
<b>Age group (years)</b>	
<20	150(31.6)
21-25	261(54.9)
26-30	51(10.7)
>30	13(2.7)
<b>Sex</b>	
Male	309(65.1)
Female	166(34.9)
<b>Marital status</b>	
Married	28(5.9)
Single	447(94.1)
<b>Respondent's school</b>	
ATBU	84(17.7)
GSU	99(20.8)
YSU	28(5.9)
UNIMAID	264(55.6)
<b>Respondent's class (Level)</b>	
200	147(30.9)
300	108(22.7)
400	70(14.7)
500	73(15.4)
600	77(16.2)

Key: ATBU- Abubakar Tafawa Balewa University, GSU- Gombe State University, YSU- Yobe State University; UNIMAID- University of Maiduguri

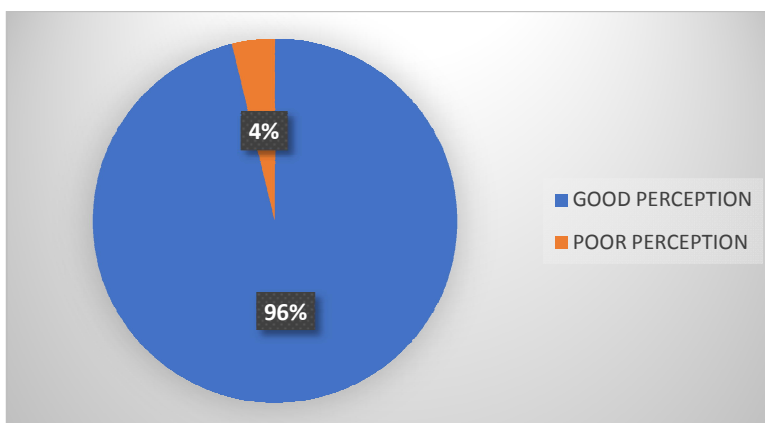
**Table 2. Knowledge of respondents on COVID 19**

Variable	Frequency (%) n=475
<b>Cause of COVID 19</b>	
A virus (correct response)	472(99.3)
Mosquito	0(0)
Witchcraft	0(0)
It does not exist	3(0.7)
<b>Common mode of spread of COVID 19</b>	
Airborne	112(23.6)
Droplet nuclei (correct response)	360(75.8)
Blood and blood product	3(0.6)
<b>Individuals at risk of complications due to COVID 19 infection</b>	
Very young individuals	6(1.3)
Elderly or people with pre-existing conditions (correct response)	455(95.8)
Drivers	12(2.5)
Artisan	2(0.4)
<b>Most people show signs and symptoms of disease</b>	
YES	242(50.9)
NO (correct response)	233(49.1)
<b>Stroke is a new clinical presentation observed in younger individuals</b>	
TRUE (correct response)	84(17.7)
FALSE	391(82.3)
<b>CQ is the certified drug with proven efficacy</b>	
TRUE	124(26.1)
FALSE (correct response)	351(73.9)
<b>Cloth mask can effectively protect HCWs from being infected</b>	
YES	409(86.1)
NO (correct response)	66(13.9)

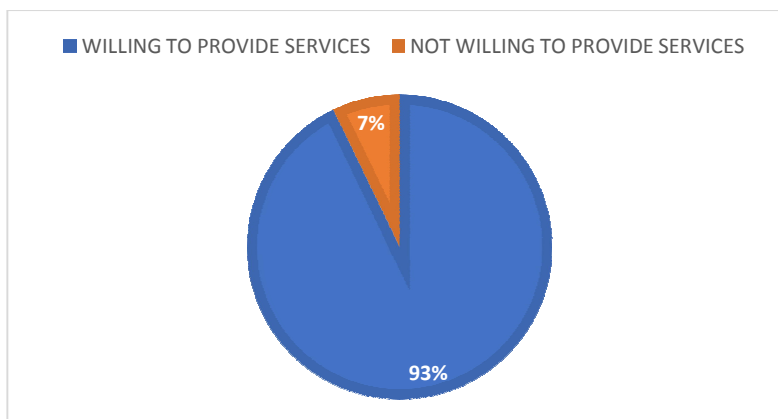
CQ: Chloroquine, HCWs: Health Care Workers

**Table 3. Domains on perception of respondents on COVID 19**

Variables	Frequency (%)
<b>I believe that some people are infected with COVID 19 in Nigeria</b>	
YES	475(100)
NO	0(0)
<b>I believe that some people are infected with COVID 19 in my state</b>	
YES	412(86.7)
NO	63(13.3)
<b>Believe about origin of the virus</b>	
It is a biological weapon created in the lab	228(48.0)
It is a naturally occurring disease	247(52.0)
I don't believe that the disease exists	0(0)
<b>Perception on self isolation</b>	
Self isolation is a good preventive measure and I will be willing to be self isolated	456(96.0)
Self isolation is not helpful and I will not be willing to be self isolated	19(4.0)
<b>Do you think that you are at risk of becoming infected with COVID 19?</b>	
YES	372(78.3)
NO	103(21.7)
<b>Why do you think that you are not at risk of being infected with COVID 19?</b>	
I take all the precautionary measures	88(85.4)
I don't fall into the at-risk category	15(14.6)



**Fig. 1. Perception of respondents on COVID 19**  
Majority of the respondents (96%) had a good perception on COVID 19



**Fig. 2. Respondents willingness to provide health care services during the COVID 19 pandemic**

**Table 4. Factors associated with willingness to participate in provision of health care services during COVID 19 pandemic**

Variable	Willing to participate Frequency (%) n=441	Not willing to participate Frequency (%) n=34	$\chi^2$	df	p-value
<b>Age of respondents (Years)</b>					
<20	135(30.6)	15(44.1)	3.047	3	0.384
21-25	245(55.6)	16(47.1)			
26-30	49(11.1)	2(5.9)			
>30	12(2.7)	1(2.9)			
<b>Sex</b>					
Male	297(67.3)	12(35.3)	14.265	1	< 0.001
Female	144(32.7)	22(64.7)			
<b>Respondents level</b>					
Pre-clinicals	231(52.3)	24(70.6)	4.200	1	0.040
Clinicals	210(47.6)	10(29.4)			
<b>Perception</b>					
Good perception	423(95.9)	34(100)			0.630*
Poor perception	18(4.1)	0(0)			
<b>Knowledge</b>					
Good knowledge	353(80.0)	29(85.3)	0.552	1	0.457
Poor knowledge	88(20.0)	5(14.7)			

\*Fischer's exact

More male respondents (67.3%) are willing to participate in providing health care service during the pandemic compared to 32.7% of females and this was statistically significant with a p-value of <0.001. The level of knowledge or perception on COVID 19 were not statistically significantly associated with willingness to participate in provision of health care service with p- values of 0.630 and 0.457 respectively.

#### 4. DISCUSSION

Majority of the medical students in this study had good knowledge on COVID 19 with almost all the respondents knowing that the disease is caused by a virus. The level of knowledge in this study is comparable to a study among medical students in India and Iran where 87.1% and 79.6% respectively of the respondents had good knowledge on COVID 19 [9,10]. The high level of knowledge could be attributed to the increased publicity and effect of the pandemic on lives and livelihood. In addition, almost half of the respondents in this study are not aware that majority of the cases are asymptomatic with some reporting that chloroquine is a certified drug of choice. This may imply that some of these respondents may probably not be getting updated or accurate information about the disease causing the pandemic. Although the academic session has been suspended due to the pandemic, the responsibility of getting correct

information from reliable sources still lies with these students especially in this critical period. In some instances, some communities view medical students as doctors and as such are relied upon for information and health care [11]. Therefore, improving their knowledge through training can make them serve as advocates of change especially now that some individuals still do not believe in the existence or risk of developing the disease [12].

Furthermore, majority of the respondents in this study had a good perception towards COVID 19, although up to half of them believed that it was created in the laboratory. Many of them also believe that they are at risk of becoming infected, however, that did not influence their willingness to participate in health care activities during this pandemic. This finding is similar to studies in United Arab Emirates (UAE) where most of the respondents had good perception towards COVID 19, [13] and in Iran where the risk perception among the study respondents was moderate. Males were more willing to assist in providing health care during this pandemic, this could be linked to some perceived male attributes such as being courageous and assertive [14]. Having a good perception with majority of the students willing to assist in providing health care services could serve as an advantage for this region which already is faced with shortage of health care workers [7]. Health

care services include; promotive, preventive, curative and rehabilitative services, as such these students could be assigned specific low risk tasks and responsibilities which lie predominantly with prevention of COVID 19 in the region. It should depend on the number of years that they have spent in medical school and the ability to be trained on short courses. The health care services could include provision of adequate, correct and consistent information to members of the general public and aiding in surveillance activities. In the hospital environment, they could be trained and given tasks such as triaging and provision of routine care for other health care conditions as suggested in some studies [4,6]. This strategy will afford opportunities for HCWs to provide more specialised health care for patients with COVID 19 emergencies. It will also relieve the pressure on the HCWs and encourage provision of quality health care while reducing burn-out and fatigue among HCWs.

## 5. CONCLUSION

This study has shown that majority of medical students in the North East have a good knowledge and perception on COVID 19 and are willing to assist in providing health services if needed during the COVID 19 Pandemic. This should be regarded as a great sacrifice to humanity and could go along way in bridging the gap of low HRH in this region.

## CONSENT AND ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. World Health Organization. Coronavirus disease 2019 ( COVID 19) situation report 101. [Last accessed 4<sup>th</sup> May 2020] Available: <https://www.who.int/diseases/situationreport>
2. Hester TB, Cartwright JD, Di Giovine DG, Karlic KJ, Kercheval JB et. al. Training and deployment of medical students as Respiratory Therapist Extenders during COVID 19. *ATS J* [Internet]; 2020. Available: <https://doi.org/10.34197/ats-scholar.2020-0049PS>
3. Rasmussen S, Sperling P, Poulsen MS, Emmerson J, Anderson S. Medical students for health care staff shortages during the COVID 19 pandemic. *Lancet*. 2020;395(10234):E79–80.
4. Miller DG, Pierson L Doernberg S. The role of medical students during the COVID 19 pandemic. *Ann Intern Med* [Internet]; 2020. Available: <https://annals.org>
5. Representatives of the STARGSurg collaborative, and TASMAn Collaborative. Medical students involvement in the COVID-19 response. *Lancet*. 2020;395(10232):1254. DOI: 10.1016/S0140-6736(20)30795-9
6. Bauchner H, Shafstein J. A bold response to the COVID 19 pandemic: Medical students, National service and Public Health. *JAMA*. 2020;323(18):1790-1791. DOI: 10.1001/jama.2020.6166
7. Federal Republic of Nigeria. National Human Resource for Health Strategic Plan. [Last accessed 4<sup>th</sup> may 2020] Available: <https://www.who.int/countries>
8. National Centre for Disease Control. An update on COVID 19 outbreak in Nigeria [Internet]. 2020 [Cited 2020 May 2] Available: [ncdc.gov.ng/diseases/sitrep](http://ncdc.gov.ng/diseases/sitrep)
9. Taghir MH, Borazjani R Shiraly R. COVID 19 and Iranian medical students; asurvey on their related knowlegde, preventive behaviours and risk perception. *Arch Iran Med*. 2020;23(4): 249–54.
10. Modi PD, Nair G, Uppe A, et al. COVID 19 Awareness among healthcare students and professionals in Mumbai metropolitian region: A questionnaire based survey cereus. 2020;12(4):e7514. DOI: 10.7759/cereus.7514
11. Mendelsohn SC. Student doctors (Umfundi wobugqirha). The role of student-run free clinics in medical education in Cape town, South Africa. *African J Heal Prof Educ* [Internet]. 2014;6(1). Available: <https://www.sajsm.org.za>

12. BBC News. Coronavirus: 26% of Nigerians believe say COVID 19 no fit catch 'children og God'- Research [Internet]. Available:<https://www.bbc.com/3Epidgin>
13. Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi A Bandari DK. Novel coronavirus (COVID 19) Knowledge and perceptions: A survey of health workers; 2020.
14. Horowitz JM, Igeilnik R, Parker K. Views on leadership traits and competencies and how they intersect with gender. Pew Research Centre; 2018. [Last assessed 6<sup>th</sup> May 2020]
15. Available:<https://pewsocialtrends.org>

---

© 2020 Mohammed et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*  
*The peer review history for this paper can be accessed here:*  
<http://www.sdiarticle4.com/review-history/57453>