Impact of Covid-19 Lockdown on The Education and Clinical Training of The College of Health Sciences Students of A Tertiary Institution in Nigeria

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ABSTRACT

Background
This study was mainly aimed at evaluating the impact of COVID-19 pandemic lockdown on the lectures and clinical training of College of Health Sciences' students in the south-western part of Nigeria.

Materials and methods
This was a descriptive cross-sectional study conducted between July and August, 2020 among the clinical students of a College of Health Sciences in Nigeria. The sample size was calculated using Leslie Kish formula and a convenient sampling technique was used. Data were collected through an online pre-designed questionnaire using google form. Data analysis was done using SPSS version 23.

Results
A total of 319 students responded to the survey giving a response rate of 76.1%. The median age of the respondents was 21 years (Range: 17 - 40 years) with a male to female ratio of 1:2.5. All the respondents had virtual lectures during this period while only 74 (23.2%) of them had clinical experience. Two hundred and twenty-one (69.3%) of them had test(s) or end of posting examinations. Only 33 (10.3%) respondents were able to perform promotional examination, of which 17(51.5%) passed. Two hundred and thirteen (66.8%) of them reported that they would not have been able to perform better in the college without clinical group discussions and 262 (82%) of them were eager to resume clinical rotation once COVID-19 lockdown was over.

Conclusion
In spite of the COVID-19 lockdown, most of the respondents were able to continue their didactic activities but their clinical experience was limited.

Keywords: COVID-19, Education, Clinical training, lectures, collaboration

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is new disease caused by a virulent specie of coronavirus referred to as severe acute respiratory syndrome coronavirus 2 (SARS- CoV-2). This novel disease was first reported in Wuhan China in December 2019 and has since then spread rapidly to involve several parts of the world.[1] The pandemic of COVID-19 has caused significant impact on different aspects of human endeavors. Much has been said and done on the health implications and complications of COVID-19.[2-4] It is important to know the impact of this pandemic on the education and clinical training of the Nigerian future healthcare professionals.

In Nigeria, the first COVID-19 confirmed case was announced on the 27th February, 2020 by the Government of Federal Republic of Nigeria and on the 30th March, 2020, three major cities were declared to be in the state of lock-down.[5] Shortly after, many other states joined in the lock-down. On the 19th March, 2020 the Federal Ministry of Education announced the closure all the tertiary institutions in the country including the medical schools to mitigate the effect of the pandemic.[6] However, the lock-down due to the pandemic led to disruption in the education and training of students in medical schools in Nigeria as well as all over the world.[7,8]

Many students were preparing for their final examinations before the outbreak of COVID-19 and because of the pandemic, they remained as students when they should have become healthcare professionals. Lectures and clinical rotations were suspended and the potential effects of these would include extension of the study periods in the colleges, reduced clinical exposures, discouragement on the part of the students, eventual poor examination performance and suboptimal professional competency.[9]

To mitigate the impact of COVID-19 on medical education and training, some relevant initiatives have been implemented in different parts of the world.[10,11] The pre-clerkship curriculum has been transitioned to online equivalent. Examinations have also been conducted online.[8] However, there are varying challenges facing the effectiveness of online education and training of the healthcare students depending on socio-geographical locations. First, there is a problem of poor internet connectivity, relatively costly out-of-pocket internet data bundle and irregular power supply.[7] Moreover, a healthcare student is an essential part of a team who plays a role of a learner requiring supervision.[8] So, such a person cannot be left to learn alone without being practically guided. It may therefore be difficult to imagine the online interactions being able to replace clinical clerkship experience which better enhances skill acquisition, relationship building among the students and personal development.[12] However, it is crucial for the healthcare educators to consider that this pandemic may forever change the means of educating and training our future healthcare personnel.[8]

This study was aimed at evaluating the impact of COVID-19 pandemic on the lectures and clinical training of the students of a College of Health Sciences, in the southwestern part of Nigeria.

MATERIALS AND METHODS

Study design

This was a descriptive cross sectional survey carried out between July and August, 2020 during the first wave of COVID-19 pandemic.

Study participants

The study involved a survey among the clinical students of the College of Health Sciences, Bowen University, Iwo, Osun state, Nigeria. The University is a private institution which is being managed by the Nigerian Baptist Convention. College of Health Sciences is one of the 7 Colleges in the University having a total number of 419 clinical students. The clinical students which formed the study population included Medical, Physiotherapy and Bachelor of Nursing students. Students of the College who were not yet at the clinical levels were excluded from the study.

Sample size determination and sampling method

The sample size was Calculated using Leslie Kish formula. The standard normal deviate of 1.96 was used (at 95% confidence interval with 5% level of significance) and 27.7% of our respondents were assumed to have commenced online education as an impact of COVID-19 from a previous study performed in Libya by Alsoufi et al (2020).[13] The margin of error was set at 5%. The estimated sample size was 308. However, 319 students participated in the study. Convenient sampling technique was used.

Data Collection

Data were collected from these students through an online pre-designed questionnaire. The questionnaire was designed by the author using a google form (Appendix I). The questionnaire was designed in such a way that informed consent had to be given first before the students could proceed with the filling of the questionnaire. The questionnaire was designed using multiple choice and checkboxes pattern. The data collected include their biodata, brief knowledge of COVID-19, how COVID-19 had affected their lectures and clinical training, their relative preference between virtual and in-person models of learning, effect of COVID-19 on the performance of their assignments, end of posting and promotional examinations, impact of collaborative activities among the students on their academic performance and their willingness to continue with their chosen health-related courses. Ethical clearance was obtained from the ethical committee of Bowen University Teaching Hospital, Ogbomoso, Nigeria.

Data analyses:

Analyses of data was done using Statistical Package for the Social Sciences (SPSS) version 23. Categorical variables were summarized using frequencies, ratios or proportions, while continuous variables were summarized using mean and standard deviation or median and range depending on the distribution of the data.

RESULTS

In this study, a total of 319 students out of 419 students of the College of Health Science responded to the survey. The median age of the respondents was 21 years (Range: 17 - 40 years) and a male to female ratio of 1:2.5. One hundred and ninety-five (61.2%) of the respondents were students of the departments of Medicine and Surgery (MBBS), 100(31.3%)

were Physiotherapy students while 24(7.5%) were Bachelor of Nursing students. Almost half of the respondents were in year 4(400 level) while year 6 (600 Level) constitute the least respondents. Averagely 86.9% of the students had a good knowledge of COVID-19.

All the respondents had virtual lectures during the COVID -19 pandemic lockdown, mainly through zoom, smart school hub and google classroom. Two hundred and eighty-seven (90%) of the students commenced their lectures at one month or less after the COVID-19 pandemic lockdown. Moreover, 303(95%) of the students were able to carry out one assignment or the other during the study period out of which 276 (91.1%) of them made use of zoom and google classroom for their assignments. However, only 74 (23.2%) of them had any clinical exposure during the same period, mainly through online classrooms (79.7%). Two hundred and ninety-nine (93.7%) and 310 (97.2%) of the students reported that they did not have preference for the virtual lectures and virtual clinical skills acquisition respectively compared to the pre-COVID-19 pandemic in-person lectures and clinical skills acquisition respectively. In other words, most of them preferred the in-person lectures and face to face clinical training (table 1).

Concerning the evaluation of the academic performance of the students during the pandemic lockdown, 221 (69.3%) students had test(s) or end of posting examinations in which majority (83.3%) of them made use of the smart school hub, online zoom and Google class for their assessments. Only 33 (10.3%) students were able to take promotional examination during this period of which 26 (78.7%) of them made use of the school smart hub, online zoom and Google class for the examinations. Among the 33 students who were able to take their promotional examinations, 17 (51.5%) of them passed and were promoted to their respective next level of course of study (table 2).

In rating their personal depth of academic knowledge during COVID-19 pandemic compared to pre-COVID period, 157(49.2%) of the students rated their academic knowledge as worse, 44(13.8%) as the same, 38(11.9%) as better while 80 (25.1%) were indifferent. In rating their clinical skill acquisition during the pandemic period also compared to the pre-pandemic period, 200(62.7%) of them rated the level of their clinical skill acquisition as being worse, 45(14.1%) as the same, 16(5%) as better and 58(18.2%) of them were indifferent. In figure 1, one hundred and eighty-nine (59.2%) of the students considered their education to have been severely impaired by COVID-19 pandemic while 1(0.3%) of them considered his/her education to have been profoundly enhanced.

With respect to the impact of COVID-19 pandemic lockdown on the collaborative activities of students, table 3 shows that 267 (83.7%) of the students reported that they love to engage in group discussion. However, only 150(47%) of this group of students were able to get involved in one form of group discussion or the other during the pandemic lockdown. In general, 213(66.8%) of the students reported that they would not have been able to perform better in the college without clinical group discussions while 202(63.3%) of them were of the opinion that, to get better performance in their

examination, even during COVID-19 pandemic lockdown, prior group discussions will still be required. One hundred and fifty (47%) of the students were free to interact with their teacher by way of asking questions during online classes, while 169(53%) of them did not feel free to do so online (table 3).

Considering the effect of COVID-19 on readiness of students to continue their studies in the College of health sciences, 262 (82%) of the students were eager to resume clinical rotation once COVID-19 lockdown was over. A good number (59.6%) of them did not consider it unfortunate to be in the College of Health Sciences during this COVID-19 pandemic lockdown and 301 (94.4%) of them did not consider change of their course due to COVID-19. Interestingly, 176 (55.2%) of them were interested in being trained as frontline health workers to control the spread of COVID-19 (table 4).

Table 1. Effect of COVID-19 on lectures, assignments and clinical exposures of the students and assessment of their relative preference between virtual and in-person models of learning.

	Variables	Frequency	Percentage
1	**Have you taken lectures since Covid-19 pandemic?**	**n=319**	
	Yes	319	100.0
	No	0	0.0
2	**Through which medium did you have your lectures?**	*Multiple response*	
	Zoom	102	31.9
	Google classrooms	52	16.3
	Smart school hub	64	20.1
	whatsApp	49	15.4
	Zoom, smart school hub and google classroom	278	87.2
	All options	40	12.5
3	**How soon as after COVID -19 pandemic lockdown did your lectures start?**		
	< 1 week	3	0.9
	1 week	25	7.9
	2weeks	90	28.2
	3 weeks	110	34.5
	4weeks	59	18.5
	>1 month	32	10.0
4	**Have you done any assignment during the COVID-19 pandemic lockdown**	**n=319**	
	Yes	303	95.0
	No	16	5.0
5	**Through what medium was the assignment conducted?**	***n=303 Multiple response***	
	Assignments submitted via mails or on portals	219	72.3
	CBT/School smart hub	59	19.5
	Online(zoom and google) class	276	91.1
	Others	34	11.2
6	**Any clinical exposures since COVID-19 pandemic?**	**n=319**	

	Yes	74	23.2
	No	245	76.8
7	**Through which medium did you have your clinical exposures?**	n=74	
	Face to face clinic teachings	4	5.4
	Online classrooms (Smart school hub, WhatsApp, Telegram, Zoom, Google.)	41	55.4
	Personal online classes	18	24.3
	Others	11	14.8
8	**Do you prefer virtual lectures to pre-Covid-19 in-person lectures?**	**n=319**	
	Yes	20	6.3
	No	299	93.7
9	**Do you prefer virtual clinical skills acquisition to pre-Covid-19 in-person clinical skills acquisition?**	**n=319**	
	Yes	9	2.8
	No	310	97.2

TABLE 2. Effect of COVID-19 on academic assessments of the students

	Variables	Frequency	Percentage
1	**Have you had any test or end of posting examination during COVID-19 pandemic lockdown?**	**n=319**	
	Yes	221	69.3
	No	98	30.7
2	**Through what medium was the test/end of posting examination conducted?**	***n=221 Multiple response***	
	Assignments submitted via mails or on portals	52	23.5
	CBT/ Smart school hub	93	42.1
	Online (zoom and google) class	91	41.2
	Others	25	11.3
3	**Have you had any promotional exams during the COVID-19 pandemic lockdown?**	**n=319**	
	Yes	33	10.3
	No	286	89.7
4	**Through what medium was the promotional examination conducted?**	***n=33 Multiple response***	
	E- mails or on portals	5	15.2
	CBT/School smart hub	8	24.2
	Online (zoom and google) class	18	54.5
	Others	2	6.1
5	**Have you been promoted to the next level of your course of study during the COVID-19 pandemic?**	**n=319**	
	Yes	17	5.3
	No	302	94.7

TABLE 3: Impact of collaborative activities among the students on their academic performance

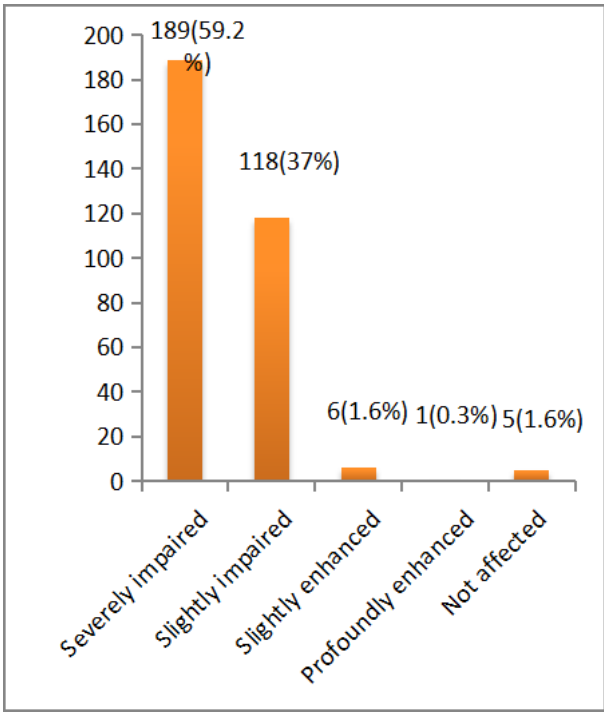
	Variables	Frequency	Percentages
1	**Do you enjoys group clinical discussions?**	**n=319**	
	Yes	267	83.7
	No	25	7.8
	Don't know	27	8.5
2	**Are you presently involve in any group discussions?**	**n=319**	
	Yes	150	47.0
	No	169	53.0
3	**What forms of group discussion are you involved with?**	**n=150**	
	Online	54	36.0
	Physical	91	60.7
	Others	5	3.3
4	**Do you feel free to ask question during online class as much as physical class?**	**n=319**	
	Yes	150	47.0
	No	169	53.0
5	**Would you have performed better in the College of Health Sciences without clinical group discussion?**	**n=319**	
	Yes	27	8.5
	No	213	66.8
	Don't know	79	24.8
6	**If you have had an exam during COVID-19 lockdown, do you think your performance would have been better with prior group discussion?**	**n=319**	
	Yes	202	63.3
	No	37	11.6
	Don't know	80	25.1

TABLE 4: Effect of COVID-19 on willingness of students to continue their studies in the College of Health Sciences

	Variables	Frequency	percentage
1	**Are you eager to resume clinical rotation once COVID-I9 lockdown is lifted?**	**n=319**	
	Yes	262	82.1
	No	19	6.0
	Not sure	38	11.9
2	**Is it unfortunate for you to be a student of College of Health Sciences during COVID-19 pandemic**	**n=319**	
	Yes	104	32.6
	No	190	59.6
	Not sure	25	7.8
3	**Reasons for being unfortunate to be a medical student during COVID-19 pandemic**	**n=104**	
	Effects of Covid-19 prolonging study period	57	54.8
	High risk of contracting Covid-19	43	41.4
	Others(	4	3.8

4	**Have you considered change of course due to Covid-19?**		
	Yes	4	1.3
	No	301	94.4
	Not sure	14	4.4
5	**Are you interested in being trained as a frontline health worker to control the spread of COVID-19?**		
	Yes	176	55.2
	No	75	23.5
	Not sure	68	21.3

Figure 1: Ways by which Covid-19 has affected education of respondents



DISCUSSION

The emergence of the novel coronavirus disease 2019 (COVID-19) has brought disruptions and consequent restructuring in various spheres of life. The education of the future medical and paramedical workforce is not left out of this current crisis.[14] Social distancing which is now termed physical distancing is considered as the most effective preventive measure in the control of this pandemic.[15] Therefore, students were precluded from gathering in lecture halls and small-groups for clinical rotations in a bid to control the spread of the disease.[16] This however, poses a great deal of challenges to the progression of the education and clinical training of the students in the Colleges of Medicines worldwide.[13,17,18] The aim of this study was to evaluate the impact of COVID-19 pandemic lockdown on the lectures and clinical training of College of Health Sciences' students in the south-western part of Nigeria.

More female having responded to the study may be due to the fact that the College study population comprises of more female than male although it has also been reported that female students are more likely to participate in research and volunteering activities than their male counterparts.[19] The MBBS students in the College formed the largest percentage among the study population and that reflected in the study as they constituted 61% of the respondents. However, the nursing students whose number were more than the physiotherapy students in the College had lesser percentage of respondents compared to the Physiotherapy students. The 4th year students had the largest number of the respondents because that level formed the largest group in the study population. The knowledge base of the students on COVID-19 being 86.9% was good and this was comparable with

the knowledge of the disease among the medical students in other parts of the world.[20-22]

Following the closure of Nigerian universities for in-person lectures during the lockdown, all the respondents in this study commenced virtual lectures through online means via zoom, smart school hub and google classroom. Interestingly, 90% of them actually started their online lectures at one month or less after the COVID-19 pandemic lockdown. A similar but multicenter study which also involved Nigerian medical students reported that only 45% of the surveyed medical schools were able to continue online medical education for their students which commenced 4 to 8 weeks after the pandemic.[23] Most of the medical schools which commenced the online medical educational programs for their students were private universities .[23] In another study done by Alsoufi et al. at 2 to 3 months after the pandemic lockdown, it was reported that only 27.7% of the respondents had participated in online medical education during that period.[13] In our study, in addition to lectures, most of the students (95%) were also able to carry out various assignments online mainly via zoom and Google class. However, there was a great limitation to clinical exposures as only 23.2% of the students were able to have virtual form of clinical learning through online classrooms.

Most of the students reported that they prefer in-person medical education and clinical training to the virtual learning model. In the survey carried out by Alsoufi et al., only 21.1% of the students agreed that e-learning could be used for clinical training.[13] Clinical training is the bedrock of medical and paramedical training without which the training is not complete.

During the pandemic study period, academic evaluations were performed for some students. Approximately, 69% of them were able to carry out their tests or end of posting examinations through online platforms while 10.3% of them did promotional examinations. The pass rate was 51.5% for those who performed the examinations. The average performance of these students could be due to the psychological effect of the pandemic,[24,25] lack of interpersonal interaction or lack of motivation on the part of the students. To buttress these points, greater percentage of them reported that their depth of knowledge and clinical skill acquisition had gone worse compared to the pre-COVID period and that their education was severely impaired during the pandemic lockdown (figure 1). The responses from the students reflects what impact the pandemic lockdown had on the students' education and clinical training and it may explain the reasons for the average performance of those who did examinations during that period.

In order to determine the relevance of collaborative activities in the educational and training curriculum of students of the College of Health Sciences, the opinions of the students were further surveyed. Most (83.7%) of them reported that they enjoy group discussions. These interactive activities are so important to them such that most (60.7%) of them who were involved in group discussions during the period of pandemic lockdown came physically together despite the pandemic. However, greater portion (53%) of them in general, did not have any group discussion during the period of pandemic

lockdown. Substantial number (53%) of the students reported that they did not feel free to clarify issues which they did not understand by way of asking questions during virtual classes as compared to in-person classes. Most of them expressed how important group discussion was to them that they could not guarantee their good academic performance in the College even during the pandemic lockdown without group discussions. The impact of Covid-19 on the training of the students is therefore significant having affected the most important means of training them. Ferrel and Ryan also reported that loss of collaborative experiences during the pandemic period has a detrimental potential to education of medical students. They also reported that many faculties have emphasized the value of attending in-person classes and expressed the importance of the real-time feedback mechanism which is hard to replicate in virtual learning classes.[12] However, in study performed by Alsoufi et al. in Libya, 65% of the students reported that they were using online means for participating in study groups and discussions.[13] Although, creating a digital platforms for clinical training and electives may be difficult, however, there are possible ways forward. A three-way telemedicine software which gives room for the students to be part of remote clinical activities could be utilized.[23] It is important for the authorities to formulate policies and actions to mitigate the challenges facing easy access to internet facilities especially at the remote areas of the country where the less privileged students reside.

Despite the knowledge of the respondents on COVID-19 and the effect of the pandemic on their academic activities, most (82.1%) of them were still eager to resume their clinical postings after the lockdown. A good number (59.6%) did not consider it unfortunate that they were students of College of Health Sciences during the pandemic lockdown and 94.4% of them did not consider change of the courses due to COVID-19. This demonstrates the commitment of these students to their chosen health careers to the extent that 55.2% of them were willing to be trained as frontline health workers in the control of COVID-19.

CONCLUSION

From this study, most of the respondents switched over to virtual lectures within one month after the COVID-19 pandemic lockdown and were able to perform their assignments online. However, their level of clinical exposure was low during the lockdown. Most of them preferred the in-person lectures and clinical training to the virtual formats. Considerable number of them had virtual form of tests or end of posting examinations during this period but only few number of them had promotional examinations done. Among those who did examinations, about an average of them passed. Most of them alluded to the fact that group discussions, as collaborative exercises are so important for their academic performance in the College even during the lockdown period. Most of them were eager to continue with their respective health-related courses after the pandemic lockdown.

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