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COVID-19: THE STIMULUS FOR VIRTUAL LEARNING IN MEDICAL LABORATORY SCIENCE

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ABSTRACT

The COVID-19 is becoming a global tormentor, holding all activities at a standstill including education and training. Medical Laboratory Science has been a professional course conventionally taught in class rooms and laboratories. For the fact that life should move on amidst coronavirus, training of medical laboratory staff should continue on virtual learning models using COVID-19 as stimulus for such paradigm shift provided that no aspect of the training should be missing in knowledge and practical perspectives of medical laboratory science.

KEY WORDS: COVID-19, Virtual learning, Medical Laboratory Science

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INTRODUCTION

COVID-19 is the disease caused by the SARS-CoV-2 virus which first appeared at the Chinese Province of Wuhan in November 2019. The disease spread quickly overseas and across the globe. The World Health Organization WHO has no option than to declare the COVID-19 a pandemic (Dias et al., 2020). The spread of COVID-19 beyond China, has affected over 61 countries in Africa, Asia, Europe, Middle East, North America and South America and lead to announced and implementing schools and universities localized closures as enforced (Obeta et al 2020a; Woa, 2020).

Since the beginning of the COVID 19 scourge, the human history is being rewritten; humanity is faced with the collapse of medical services followed by overnight lockdowns, quarantines, social distancing and isolation, house confinement. Offices, market places and schools were not spared as they were equally closed. There was an increase in unemployment rates and loss of jobs. There was suspension of sports activities including the Tokyo Olympics 2020 which was rescheduled for 2021 to name a few with an uncertain date for the activities to return.

Rapidly, panic and fear, contagious spread intensified by social and mass media played their part in shaping fears of the corona virus disease. In a way to control spread, many national governments took action declaring COVID 19 a national emergency. International

flights were canceled, frontiers closed, transportation across the countries controlled, schools, universities, shopping centers, touristic points, retail business all but essential businesses (pharmacies, groceries and supermarkets) in general were closed, various public activities suspended (Dias et al., 2020). Though the pandemic is ravaging, the medical laboratories need to be updated (Obeta et al., 2020b) just as the professionals and the professionals under training need to be at the same page with the knowledge during the pandemic. Since March 2020, educational institutions, teachers, professors instructors, trainees after an initial shock and panic gradually joined effort to design ways to avoid a complete stop in classes all over the country, also to find creative ways to engage students online. Many countries substituted classroom teaching temporarily and substituted it with live streaming technology, or video and audio presentation sent across through various social media platforms.

Medical Laboratory Science defined by Obeta et al. (2019) in line with Medical Laboratory Science Council of Nigeria (MLSCN) Law 2003 as "the practice involving analysis of human or animal tissues, body fluids, excretions, production of biologicals, design and fabrication of equipment for the purpose of Medical Laboratory Diagnosis, treatment and research. It encompasses; Medical Microbiology (bacteriology, parasitology,

virology, mycology), Clinical Chemistry (Chemical Pathology), Haematology & Blood Transfusion Science, Histopathology, Forensic Science, Molecular Biology and Laboratory Management". The professionals in medical laboratory science are called medical laboratory scientists or Biomedical Scientist, though the nomenclature may differ according to countries across the globe (Obeta et al., 2020c). The training in Medical Laboratory Science is by theory and practical with more emphasis in practical which has been face-to-face in class rooms or laboratories for a long time. Training institutions and regulatory bodies in Medical Laboratory Science finds it difficult to adopt online and distance learning approach to training before now. The COVID-19 pandemic could become an eye opener for distance/online learning in medical laboratory science using various online / virtual platforms invoke as a result of the tormentor pandemic.

This article is aimed at presenting the facts on virtual learning as a good alternative for the study of medical laboratory science across the globe and in Nigeria in particular where such technologies are new towards continuing medical laboratory education as soon as possible.

VIRTUAL LEARNING PLATFORMS FOR MEDICAL LABORATORY SCIENCE

Due to the increased use of network computer, the internet and advances in telecommunication technology, virtual

and e-learning has been widely recognized as a valuable tool for learning and training (Kimberly, 2004) of which medical laboratory science (MLS) cannot be an exception. The current technology being actively and heavily researched as an educational platform that MLS can cue into is the World Wide Web (www). The www represents a platform for information, storage and dissemination can be accessed in minimum time and this is very important to the educational and medical Laboratory science community. The fact is that the transition from digital society to a global village information society causes the traditional (face-to-face) instructional mode to be unable to cover the instructional needs of modern societies. The globe is faced with a transition from a state economy to a new knowledge driven economy (Omoregbe et al., 2015). According to Akinyolu et al., (2014) a virtual classroom is an environment conducive for learning which takes place in the cyber space. It provides the tools that learners need and brings together education and learners to share information and ideas. The virtual learning is a special form of e-learning that finds relevant application in enriching the conventional learning methods making it that e-learning can be displayed using a wide range of technologies and media. The various learning platforms that can work for MLS includes: the ICT means of video conferencing, online chat service through cloud-based, Google duo, Webex Meet, Canvas Student, Skype, WhatsApp, Hangouts, Google meeting and Zoom.

Zoom is a communication software which is featured by zoom and video communication which is a North American communication technology company headquartered in San Jose, California and founded in 2011. Zoom may support 11,000 participants per meeting (Dias et al., 2020). WhatsApp and Zoom are taking the lead across the globe and many Nigerians are taking a cue in the usage. The MLS institutions and regulatory agencies can take a critical look at them for unanimous approval for use in MLS training.

COMPARISON OF FACE TO FACE AND VIRTUAL LEARNING IN MEDICAL LABORATORY SCIENCE

Learning in medical laboratory science can be done in both ways. Theories can be done using the virtual learning for easy access and understanding. Face to face learning in medical laboratory is mostly joined with practical which has an easier communicating skill.

Due to research by the information technology service management (ITSM) discipline leader, the mode of delivering subject material for the ITSM discipline was changed to a multi-model approach where lectures were delivered on internet and tutorials maintained a face to face mode of delivery (Signor, 2003). MLS can adopt this multi-model approach. The students' theory lectures can be delivered as virtual lectures, power point presentation with text, image and audio capabilities accessible on the Internet. The

virtual lectures provide flexibility for the student to listen to the lectures at home, at work and at any time of convenience. Still emphasis was placed on students attending tutorials which maintained the face to face mode of delivery. Though many may insist of theories by virtual and practical through face to face, there is also an opportunity to teach practical using virtual platforms to demonstrate practicals. This is very possible in a time like this across the globe.

Peat and Franklin (2003) discovered an improvement in students' results when using different forms of virtual delivery. Signor replaced face to face tutorials with virtual tutorials and felt that virtual is as good as face-to-face provided sufficient guidance and integration is offered by the system (Signor, 2003). Though virtual learning may be viewed to be difficult in MLS, other health professionals like Physiotherapy (Gardner et al., 2016) and Nursing (Moule et al., 2010) students have used it and it worked. Different methods (Morton et al., 2016) of learning in MLS can be adopted and practiced which can help medical laboratory scientists and those on training to carryout research with ease, effective and efficient. There should be further study to compare practical learning through virtual platforms and face-to-face for clear understanding that there may be no difference.

MEDICAL LABORATORY SCIENCE PRACTICAL DEMONSTRATION IN VIRTUAL LEARNING

In Nigeria today, there are over 17,000 certified medical laboratory scientists (MLScts) working at various levels of health care. They are champions in the fight against infectious diseases especially the COVID-19 as at present. Their rigorous education goes a long way in developing their skills and those under training.

In the field of MLS where advances on technology and science are constantly evolving and improving laboratory practices keeping abreast of new advances is critical, and access to information is more important than ever. The government of Nigeria requires MLScts to renew their practicing licenses annually by earning continuing professional development (CPD) credits. However, there is no organized process for providing opportunities to scientists who are unable to attend face to face conferences and workshops (Ihimekan et al., 2015). It is evident that online and virtual learning in MLS has started among practicing medical laboratory scientists but not those under training with funding support from USAID/Nigeria since 2012, the knowledge for health (K4health) project at Johns Hopkins Center for Communication program, the MLSCN and the AMLSCN partnered to revitalise the country's CPD policy, which institutionalises the use of CPD credits for relicensing of MLScts. Though there is no evidence of the practical aspect in this programme, it is an opportunity to start the virtual learning in training institutions as they will graduate to join such online training afterwards. Leveraging the experimental growth of the

internet and technical assistance from K4health, AMLSN developed e-learning courses which have been launched and accredited by MLSCN on up-to date development in HIV/AIDs, TB, malaria diagnosis and quality improvement. Since the first four courses were published in 2012, more than 7,500 Nigerian MLS have registered with the e-learning platform and more than 14,500 certificates of completion have been earned. Based on evaluation findings, we have learned that not only are the accredited e-learning courses more popular than accredited face to face events, but also MLS perceive that what they have learned from the e-learning courses positively impacts their job performances at higher rate than the face to face activities (Ihimekpen et al., 2015). If this is possible among practitioners, then among the students who are on training would be better if virtual training is adopted.

Recorded video of practical demonstration can be used in MLS virtual platforms. Practical can also be done live in the laboratory while students on training can be following from their various locations. A good pedagogical practical model for students under training could be developed using Zoom or WhatsApp to accommodate practical / demonstrations where a student can follow up a practical session at their comfort zone. The model can be further developed for medical laboratory posting. Considering that students on training are MLScts in the making, they should not be at home all the

time as they can be opportune for physical practical and posting when necessary.

ADVANTAGES AND DISADVANTAGES OF VIRTUAL LEARNING IN MEDICAL LABORATORY SCIENCE ADVANTAGES

ADVANTAGES

Virtual learning diminished commutes. There is no case of overcrowding, discomfort or poor level environment as the student creates the comfort for self.

Ease of access for learners who have career and family obligation. This encourages flexibility where the learners go by their pace especially when videos of virtual lectures are uploaded for participants or students regardless of location, time and materials.

Virtual learning facilitates learning to the extent that it develop interaction between students and facilitators/lecturers thereby causing improvement in both technical and pedagogical teaching/learning tools (Regmi and Jones, 2020; Paladino and Peres, 2007).

Provides a good systemic approach to learning thereby moving from simple to complex learning in order to achieve learning goals while creating social construction of knowledge (Morton et al., 2016; Moule et al., 2010). It creates creativity, motivation, quality, accessibility, and alternative education approach that can take one higher than the curriculum to advance knowledge (Regmi and Jones, 2020).

Lower costs to the university and students. Analysis of cost of classrooms, classroom components and support staff is reduced on the part of universities and institutions while transportation, feeding, hostel residence facilities are reduced on the part of the students. There is higher accessibility of education for students with disabilities and student who live in geographically rural areas There is increased control for learners regarding how they consume the courses information styles (Holmes & Reid, 2017).

DISADVANTAGES

There is lack of information technology (IT) skills in the use of navigators in the online/virtual platforms making so many students unable to contribute or participate fully in learning activities.

There is high dropout rate with virtual / online learning environment may be due to poor networks, power failure or other domestic distractions Lack of experience in virtual learning among MLS students and institutions causing problematic issues in attempt to migrate to virtual platforms and online curricula. Also, there is difficulty to adapt to change to new learning / teaching order by trainers/teachers in MLS There is students' perception of isolation and lack of community interaction (Holmes & Reid 2017). This is because the student may feel isolated without challenging class mates making everyone to be on their own from various locations.

There is lack of good learning attitudes, self-discipline and suitable learning

materials (Bao, 2020) which creates poor motivation and expectation attitudes. Thus, internal factors like poor engagement, perception and motivation, limited flexibility, anxiety and stress, lack of self-discipline, poor interaction between learners and instructors with external factors like course structure, poor pedagogical design, clarity of purpose, goal, education management policies, educational paradigms, learners diversity, finance, technology challenges and adaptability to change may play roles in low expectation performance (Regmi and Jones, 2020).

CONCLUSION

As of today, COVID-19 still remains the world most pandemic disease. Virtual learning helps in all means within the MLS and the outside scope. This system of learning serves as a remedy to the problems and weakness observed in the old system. Virtual learning in MLS as of this pandemic makes the learning experience more flexible stimulating and available at any point in time, place with internet facilities.

When COVID-19 pandemic is over, the virtual learning still remains the essential means of learning for MLS as so many have experienced the importance and ease of e-learning which is done in comfort and at any time.

The virtual learning is hereby advocated in medical laboratory science and across the globe whether theory or practical provided the system is able to provide

social interaction and collaboration between students and lecturers where feedback and support fosters an academic dialogue. Such virtual learning should be flexible, student oriented and MLS-focused while creating styles that is affordable towards improving knowledge and practical bases of medical laboratory science.

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