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Dissemination of information in the COVID-19 era in university libraries in Nigeria

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Abstract

In Nigeria, the first case of coronavirus (COVID-19) was reported on 27 February 2020 and as at date, there are about 13,000 confirmed cases across Nigeria. The spread of COVID-19 forced the lockdown of libraries. This study investigated the dissemination of information in meeting the information needs of library patrons during the COVID-19 pandemic and lockdown of university libraries in Nigeria. Using a descriptive survey design, a sample population of 178 librarians from federal, state and private universities in Nigeria was questioned. The findings show that libraries disseminated information on personal hygiene to their patrons (hand-washing, cleanliness and the use of hand sanitizers) and sensitized the general public to COVID-19 by using posters and flyers. The findings also reveal that libraries disseminated information and links to e-resources to support patrons' ongoing research. Moreover, It was revealed in the findings that lack of coordination, strike action by the Academic Staff Union of Universities (ASUU) and none subscription for data for librarians to work from home were challenges.

Keywords

Dissemination of information, COVID-19, coronavirus, library patrons, university library, Nigeria

Introduction

The establishment of libraries as information centres at strategic locations in different communities, cities and academic institutions for the purpose of providing information services to support the information needs of patrons was put to the test during the discovery and spread of the coronavirus (COVID-19) pandemic in late 2019. The fundamental role of libraries remains sacrosanct and sets them apart from other information providers. University libraries in Nigeria have been at the forefront in the adoption of different methods and tools for the dissemination of current information to their patrons, irrespective of their geographical location.

Hence, the rising numbers of cases of COVID-19 in Nigeria, which led to the lockdown of critical sectors of the economy and disruption of library services, have provided an opportunity for libraries to reassess their facilities, resources, strategies and services to respond to the current situation and facilitate access to information to satisfy the information needs of their

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patrons beyond the library walls. Such strategies include but not limited to activation of selective dissemination of information (SDI) services and the use of information and communications technology (ICT) tools for the selection, organization and dissemination of information for library patrons based on their information needs. ICT tools make the dissemination of information easier, whether a library is open or closed to users. According to Omeluzor and Oyovwe-Tinuoye (2017), SDI service is a critical library service that require a conscious effort by librarians to search databases in order to find relevant information for each library user or group of library users to meet their information needs. Uzohue and Yaya (2016) insist that libraries should respond quickly to the information needs of their users through SDI and current awareness services. Hence, the activation of SDI services in libraries across Nigeria has helped with information dissemination to patrons during the pandemic. This study is limited to university libraries in Nigeria and is intended to provide a framework for understanding the efforts of libraries in the dissemination of information to their patrons in the pandemic era. The study is guided by four objectives: (1) to find out if libraries in Nigeria are disseminating information to their patrons during the COVID-19 pandemic era; (2) to ascertain the type of information materials and sources that libraries in Nigeria are disseminating to their patrons during the COVID-19 pandemic; (3) to determine the media/tools that libraries in Nigeria are using to disseminate information to library patrons during the COVID-19 pandemic; and (4) to identify the challenges facing the dissemination of information to library patrons during the COVID-19 pandemic in Nigeria.

Statement of the problem

The discovery and rapid spread of COVID-19 took the entire world by surprise and there was little preparation before the lockdown of critical sectors of the economy, including libraries. The rapid spread of the COVID-19 pandemic led the Federal Government of Nigeria to shut its land borders and all entry points into the country in order to curb the spread of the virus. That order was followed by a lockdown of interstate movement. The shutting down of educational, social, religious and economic activities in Nigeria affected the activities of libraries, resulting in the problem of library patrons having no access to information resources and services. Most university libraries in Nigeria claim to use SDI to deliver information services to their patrons. Such claims appear in the policy books, such as the handbooks and library guides, of most libraries in Nigeria. Research has shown that the claim that information is disseminated using ICT is rhetoric in most university libraries in Nigeria (Omeluzor and Oyovwe-Tinuoye, 2017). Since most sectors in Nigeria are shut down as a way to curtail the spread of COVID-19, it is pertinent to examine the efforts of university libraries in the dissemination of information services to their patrons, who could no longer access the physical library resources and services during the COVID-19 pandemic.

Background to the study

In Nigeria, the first reported case of coronavirus (COVID-19) pandemic was of an Italian who returned from Milan, Italy, to Lagos on 25 February 2020 (Nigeria Centre for Disease and Control, 2020). Following that index case are several cases in Lagos and other states in Nigeria, including Abuja the Federal Capital Territory. The spread of COVID-19 and the increasing number of new cases, confirmed cases, active cases and deaths across states of Nigeria from the initial index case, as shown on the Nigeria Centre for Disease and Control website,[1] led the Federal Government of Nigeria, on 30 March 2020, to heed a call by the Federal Ministry of Health and the Nigeria Centre for Disease and Control to stop all movement into and out of Lagos State, Ogun State and the Federal Capital Territory for 14 days. The order by the Federal Government to restrict movement for an initial 14 days was later adopted by other states where new cases of COVID-19 were discovered, such as Oyo, Rivers, Delta, Ondo, Osun, Akwa-Ibom, Kaduna, Benue, Enugu, Ekiti, Edo, Kwara and Ogun, which later led to a total lockdown of Nigeria's critical sectors, including libraries.

The decision to shut down libraries as a measure to curb the spread of COVID-19 was not peculiar to Nigeria. Some international library associations, such as the Association for Rural and Small Libraries and the American Library Association, recommended the closure of public libraries amid the COVID-19 pandemic (Pearson, 2020). However, the shutting down of libraries has a tremendous impact on the communities they serve (Pearson, 2020). The shutting down of libraries necessitated the need to strategize on how to continuously provide and disseminate information to library patrons. In the midst of the pandemic, efforts were made by several organizations to ensure access to information. For instance, UNESCO's Education Division provided links to valuable educational resources and archives. Similarly, the Australian Library and Information Association and Libraries

Ireland negotiated agreements with national publishers and authors to ensure that public libraries could take storytimes online without having to worry about infringing copyright (IFLA, 2020). In line with these efforts, one may ask whether university libraries in Nigeria are able to fulfil their mandate through information dissemination and provision of information services to their patrons during the COVID-19 era, and what kind of information the libraries have been disseminating to their patrons.

Literature review

Information dissemination is a means of providing information services to library patrons. In any crisis situation, such as a war, pandemic or disaster, libraries have a role to play in ensuring that patrons have continuous access to reliable information to avoid misinformation and fake news. According to Ali and Gatiti (2020), the roles of librarians and information specialists in a pandemic are to promote health awareness by creating and disseminating information relating to preventive measures; support research teams, researchers and faculty by providing information regarding the latest developments, research and literature; and meeting the core needs of regular library users. Echezona (2007) highlights the role of libraries in information dissemination for conflict resolution, peace promotion and reconciliation. Shonhe (2017) reviews literature on information dissemination techniques in the 21st century. Shonhe's (2017) article aims to inform and raise the awareness of 21st-century information professionals about the use of technology in information dissemination. The article discusses various techniques that have been used, including mobile technology, mobile library services, digital content and information repositories, to disseminate information in the 21st century.

Many scholars have emphasized the need to use ICT for SDI services, among others, to reach library patrons. For instance, Uzohue and Yaya (2016) express the need for medical librarians to use current awareness and SDI services for information service delivery to their users. Similarly, Omeluzor and Oyovwe-Tinuoye (2017) assess the use of ICT for the dissemination of information in current awareness and SDI services in university libraries in the southwest zone of Nigeria. Their study reveals the use of tools such as blogs, Really Simple Syndication (RSS) feed, Ask a Librarian, Twitter, Google+, emails, online public access catalogue, Facebook and YouTube for the delivery of SDI and current awareness services to library patrons. The findings also show that few libraries adopted ICT in the delivery of SDI and current awareness services to their patrons, while none of the state university libraries had ICT features on their web pages. Omeluzor et al. (2014) observe that the advent of ICT in libraries has enhanced the gathering, processing, storing, retrieving and dissemination of information. ICT thrives on communication media, including radio, television, computers, CD-ROMs, communication gadgets and the Internet.

With regard to the media services adopted for the dissemination of information to library patrons during the COVID-19 pandemic, the findings of Ishtiaq et al. (2020) reveal that out of the 27 respondents in their study, 15 (55.6%) used email to disseminate information to library users during the pandemic. The findings further show that mobile applications, live chats and social media such as Facebook, YouTube, LinkedIn and Instagram were used to disseminate information to patrons in the COVID-19 era by university libraries in Sindh, Pakistan. Furthermore, González-Padilla and Tortolero-Blanco's (2020) study identifies the influence of social media in the COVID-19 pandemic. The study reveals some of the advantages and disadvantages of social media with regard to information dissemination, and concludes that social media are a potent means of disseminating information quickly about new discoveries, sharing diagnostic, treatment and follow-up protocols, and comparing different approaches from other parts of the world.

The levels of response of libraries around the world to the needs of their patrons during the COVID-19 pandemic cannot be overemphasized. For instance, Duke University Libraries informed its user community on its official website that it was closing its physical access area and services to patrons as a result of the coronavirus pandemic but would continue online services to provide resources and consultation for its patrons. Duke University Libraries also extended its Ask a Librarian chat services for research and reference questions, and provided direct connections and access to subject specialists, who would provide support for remote consultation and instruction. Furthermore, Duke University Libraries made available its resources and reference services, including its digital materials and repositories, to its registered and non-registered users, while its staff worked remotely to support these services (Duke University Libraries, 2020).

Similarly, the National Institutes of Health (2020) reported that the National Library of Medicine opened avenues for support in its COVID-19 response through new initiatives with the global publishing community and artificial intelligence researchers. The National Institutes of Health (2020) further reported that the National Library of Medicine expanded access to scientific papers on the coronavirus for

researchers, care providers and the public, and for text-mining research. It also adapted its standard procedures for depositing articles into PubMed Central to provide greater flexibility and ensure that coronavirus research was readily available. Furthermore, the National Library of Medicine has engaged with journals and publishers that do not currently participate in PubMed Central but are within the scope of its collection. The collaborative efforts of the National Library of Medicine is to ensure the timely dissemination of quality research on COVID-19 to users around the world. Furthermore, Dadhe and Dubey (2020) carried out a content analysis of major technological institutions' websites and online scholarly resources on COVID-19 in India. The study shows some level of organization of online information resources, which allows for the faster dissemination and easy access of COVID-19-related information. Moreover, Elsevier Library Connect (2020) has prepared a list of COVID-19 resources, which has been shared on its website for librarians and library users to access during the COVID-19 pandemic. The aim is to disseminate and enhance access to quality and reliable information for libraries and their users.

A survey by Hinchliffe and Wolff-Eisenberg (2020) on academic libraries' response to COVID-19 in the USA reveals that access to both technologies and print materials remained largely unaffected by the COVID-19 pandemic. Their findings further show that the vast majority of libraries (80%) reported no changes to their existing technology lending programmes, while 85% reported providing access to print materials. With regard to their services, 65% of the libraries were providing reference services and 25% maintained limited hours in the provision of their available services while providing access by phone and online. The study's findings also show that 34% of the libraries provided synchronous instruction virtually. Similarly, a study by Parikh et al. (2020) reveals the reading habits of library users during the COVID-19 lockdown. The study shows that 70% of students and 53% of faculty preferred reading print books, while 7% of students and 3% of staff preferred e-books during lockdown. Their preferences in the use of information resources determined how the library would meet their needs during the COVID-19 pandemic. In the COVID-19 era, the University of the Pacific (2020) and University of Adelaide (2020) libraries transited to remote operations, making online resources and services available through their library websites. The online resources included access to e-books, e-journals, publisher databases and streaming videos, while an email address and a link to aid communication between the librarians and patrons were made available for patrons. A study by Chan et al. (2020) at the Prince of Wales Hospital, a tertiary academic hospital in Hong Kong, advocates the use of social media such as Twitter and WeChat for rapid knowledge dissemination to patrons during the COVID-19 pandemic.

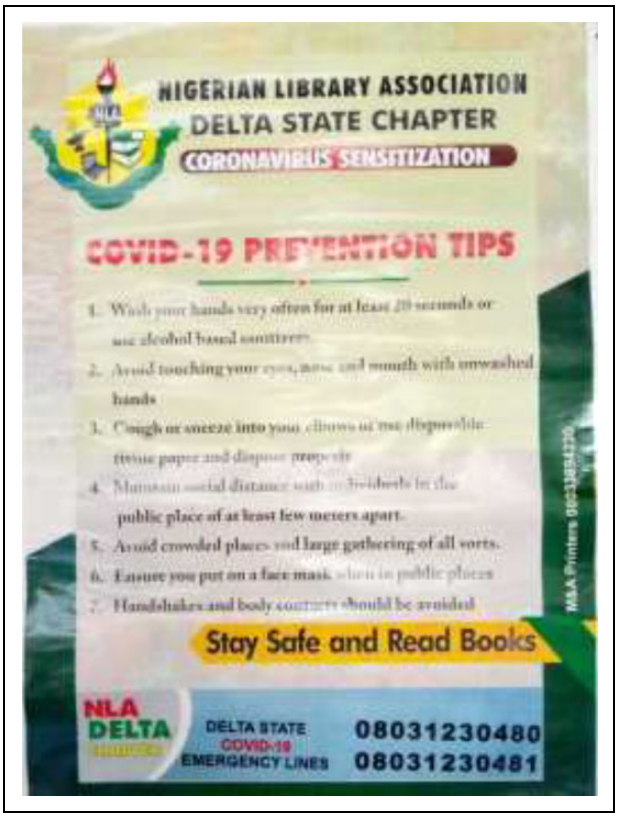


Figure 1. Poster promoting COVID-19 prevention tips.

In Nigeria, the COVID-19 pandemic has changed the ways and manner in which libraries disseminate information and respond to users' information needs. Instead of the usual routine processes, most librarians are making use of ICT tools such as WhatsApp, Twitter and social media to share and disseminate critical information to colleagues and patrons. The Delta State Chapter of the Nigerian Library Association hosted a webinar on fake news and misinformation in the era of the COVID-19 pandemic. The webinar brought together information professionals from all over the world, who shared a common belief in the importance of ICT for the dissemination of information. As a means of sensitization and curbing the spread of COVID-19, the Delta State Chapter distributed posters (Figure 1) and flyers, in addition to hand sanitizer, to all public and academic libraries in the state.

Methods

Research approach

This study adopted a descriptive survey design. The descriptive survey design was a reliable means of

providing the researchers with the opportunity to use the data collected for this study to ascertain how libraries in Nigeria responded to the needs of their patrons through SDI services during the COVID-19 pandemic and total lockdown of some critical sectors of the Nigerian economy, including libraries.

Population

The population of this study was drawn from all university libraries in Nigeria. The sample population cut across all librarians in different sections of libraries in federal, state and private universities in all the states of Nigeria. Because of the large number of universities in Nigeria, a convenience sampling method was used to select six universities from each of the six geopolitical zones of Nigeria and one from the Federal Capital Territory, giving a total of 37 universities. From these 37 universities, a convenience sample of five respondents from each was used, giving a total of 185 respondents. The main reason for selecting 185 respondents was to use that number as a sample and to reduce the cost and time constraints in using a larger population.

Development of research instrument

The instrument for data collection was a structured online questionnaire that was designed by the researchers. The research instrument was developed using Google Forms to provide answers to the research objectives. The instrument had five sections (Sections A to E). Section A provided the demographic information of the respondents. Section B had 10 questions that elicited answers on the level of information dissemination among the libraries during the COVID-19 pandemic in Nigeria. It had questions with a 4-point rating scale, where 4 was the highest and 1 the lowest (4 = *strongly agree*; 3 = *agree*; 2 = *disagree*; 1 = *strongly disagree*). Section C had four questions and attempted to find out the type of information materials and sources that the libraries disseminated to their patrons during the pandemic. It had questions with a 4-point rating scale, where 4 was the highest and 1 the lowest (4 = *strongly agree*; 3 = *agree*; 2 = *disagree*; 1 = *strongly disagree*). Section D had 13 questions which considered the medium that the libraries used to disseminate information to library patrons during the COVID-19 pandemic. It had questions with a 4-point rating scale, where 4 was the highest and 1 the lowest (4 = *strongly agree*; 3 = *agree*; 2 = *disagree*; 1 = *strongly disagree*), while Section E was an open-ended question that required the respondents to list the challenges that libraries encountered in the course of disseminating information to their patrons.

Distribution and data collection

The questionnaire was distributed to the respondents through their respective WhatsApp/email addresses; the addresses were retrieved from past Nigerian Library Association annual conference/general meeting attendance lists. Sending the questionnaire directly to the respondents' email boxes and WhatsApp numbers eliminated responses from unintended respondents. However, because the researchers could not contact all of the respondents via their individual email/WhatsApp accounts, we resolved to use the WhatsApp platforms of the Nigerian Library Association and the Nigerian Library Association's Information Technology Section. The use of these platforms was an alternative to using a face-to-face approach because of lockdown and spreading COVID-19. It also helped in contacting those respondents who could not be reached, since all of them were registered members of the groups' platforms. The responses received through the platforms were carefully sifted to eliminate duplicate responses from those respondents who had been contacted earlier via their personal email/WhatsApp accounts. We did not hesitate in using the Google response tool, which helped us to identify each respondent by their university, thus making it easier to eliminate duplicate responses. Out of the expected 185 responses, a total of 178 responses were received. The use of the aforementioned platforms therefore assisted the researchers in achieving a 96% response rate, which was suitable for completing the study. Before the administration of the questionnaire to the intended respondents, pre-reliability tests were conducted by sending the instrument to 15 librarians who worked in public libraries and were not part of this study. The 15 questionnaires were all returned and were analysed using the Cronbach's alpha correlation coefficient at a .50 level of acceptance, which gave a result of $r = .80$. This result meant that the instrument was reliable and good for data collection for this study since the test result was above the acceptance point of .50. Furthermore, the instrument was examined by a researcher in order to ensure content and construct validity, and it was confirmed to be suitable. The data collected was analysed using the Google Forms analysis tool and Statistical Package for Social Sciences (SPSS) version 7.0. The results are presented using standard deviation, frequency, percentage and chart for clarity. In Tables 1 and 2, the mean scores are rated as

Table 1. Dissemination of information to library patrons during the COVID-19 pandemic.

Statement	*n*	Maximum	*M* ($\bar{x}$)	*SD*
The library disseminates information on personal hygiene (hand-washing, cleanliness and use of hand sanitizers)	124	4.00	2.7	0.98
The library supports the dissemination of electronic information resources to patrons during the COVID-19 pandemic	86	3.00	2.4	0.87
The library disseminates information using flyers, posters and handbills to sensitize the general public to the prevention and control of the COVID-19 pandemic	83	4.00	2.3	0.75
The library shares current awareness information in other areas of research interest with registered patrons	78	4.00	2.2	0.83
The library disseminates information to its patrons on the symptoms of COVID-19	72	3.00	2.1	0.55
The library disseminates information on how to curb the spread of COVID-19	72	3.00	2.1	0.55
The library disseminates flyers about government decisions on the treatment of COVID-19	72	3.00	2.1	0.55
The library shares links with its patrons to access online information in all areas of study	60	3.00	2.0	0.49
The library disseminates information to support users in their ongoing research	62	4.00	2.0	0.83
The library sends out information on how to access help for people with COVID-19	60	3.00	2.0	0.49

Note: $N = 178$. Acceptable mean score = 2.5.

follows: a mean of 0.1 to 1.9 is very low, 2.0 to 2.4 is low, 2.5 to 2.9 is high, and 3.0 and above is very high.

Results

Demographic information of the respondents

The survey cut across librarians in university libraries in Nigeria. The focus of the study was to elicit information on the efforts of libraries in the dissemination of information to patrons during the COVID-19 pandemic in Nigeria. Among the respondents, 98 (55%) were male while 80 (45%) were female. The majority (56%) of the respondents had a Master's degree, 32% had a PhD and 12% had a Bachelor's degree in Library and Information Science. With regard to the designation of the respondents, the results show that a high number (40%) of the respondents were Librarian II, 20% were senior librarians and 16% were assistant librarians or Librarian I, while 8% were university librarians. Concerning the Department of the respondents, the results reveal that the majority (47%) were ICT/automation librarians. Moreover, 24% of the respondents were serials librarians and 23% were reader services librarians, while 6% were administrators. In respect of the work experience of the respondents, the results reveal that the majority (36%) of the respondents had 11–15 years of work experience, 32% had worked between 6 and 10 years, and 24% had 16 years or more of working experience years or more of work experience, while a lower percentage (8%) had work experience of 1–5 years. It may be deduced that a total of 92% of the respondents had worked for many years in the library sector and therefore should have been able to devise ways of supporting their patrons during a crisis such as the COVID-19 pandemic.

Findings

The first objective was to find out if libraries in Nigeria disseminated information to their patrons during the COVID-19 pandemic. The results in Table 1 reveal that libraries in Nigeria disseminated information on personal hygiene (hand-washing, cleanliness and use of hand sanitizers) to patrons ($M = 2.7$) during the COVID-19 pandemic. Table 1 also shows that libraries disseminated electronic information resources to patrons to enable them to have access to information for their research, with a mean score of 2.4. Moreover, Table 1 shows that libraries used posters and flyers to disseminate information as a means of sensitizing the general public to the prevention and control of the COVID-19 pandemic, with a mean of 2.3. The overall results in Table 1 indicate that libraries disseminated information to their patrons on all of the items that were examined in this study – for instance, information on the symptoms of COVID-19, information on curbing the spread of the

Table 2. Types of information materials and sources disseminated by libraries to patrons during the COVID-19 pandemic.

Statement	Strongly agree	Agree	Strongly disagree	Disagree
The library disseminates print materials to its patrons during the COVID-19 pandemic	33 (19%)	10 (6%)	50 (28%)	85 (48%)
The library disseminates e-books and e-journals to its patrons during the COVID-19 pandemic	45 (25%)	88 (49%)	30 (17%)	15 (8%)
The library provides access to online databases	37 (21%)	67 (37%)	44 (25%)	30 (17%)
The library delivers newspaper cuttings and new arrivals to patrons during the COVID-19 pandemic	54 (30%)	50 (28%)	33 (19%)	41 (23%)

COVID-19 pandemic, and the distribution of flyers on government decisions on the treatment of COVID-19 each had a mean score of 2.1. Furthermore, the results in Table 1 reveal that libraries disseminated information through sharing links with patrons to access online information in all areas of study to support their ongoing research, as well as disseminating information to patrons on how to access help for people with COVID-19, each with a mean score of 2.0.

The second objective was to ascertain the types of information materials and sources that libraries disseminated to their patrons during the COVID-19 pandemic in Nigeria. The results in Table 2 show that fewer respondents (43 or 25%) had access to print materials, while the majority (135 or 76%) did not. The results in Table 2 also show that libraries disseminated e-books and e-journals to their patrons during the pandemic, as indicated by 133 (74%) of the respondents. The majority of the respondents (104 or 58%) agreed that libraries provided access to online databases during the COVID-19 pandemic. Similarly, the results in Table 2 reveal that the majority (104 or 58%) of the respondents agreed that libraries distributed newspaper cuttings and new arrivals to their patrons during the COVID-19 era.

The third objective was to determine the media/tools that libraries used to disseminate information to library patrons during the COVID-19 pandemic in Nigeria. The results in Table 3 show that libraries used Ask a Librarian, online public access catalogues, email and repositories, which each had higher mean scores of 2.6. They also used FAQs ($M = 2.7$) and print media ($M = 2.8$) to disseminate information to patrons. Moreover, the results in Table 3 reveal the use of professional networking platforms and mobile technology and library services to disseminate information to patrons ($M = 2.3$). The results further show the use of websites, WhatsApp and social media ($M = 2.2$) to disseminate information to patrons, while blogs and audiovisual media were also used ($M = 2.1$).

The fourth objective was to identify the challenges facing the dissemination of information to library patrons during the COVID-19 pandemic in Nigeria. The findings in Figure 2 show that 170 of the respondents indicated that the inadequate coordination of library activities was a challenge for the dissemination of information during the COVID-19 pandemic in Nigeria. This means that libraries may have to prioritize facilities, tools and personnel to cushion the effects of such an occurrence in the future. The results in Figure 2 also reveal that 140 of the respondents indicated that the closure of tertiary institutions by the Nigerian government as a result of the COVID-19 pandemic was a challenge, and 120 expressed that the nationwide strike action embarked on by the Academic Staff Union of Universities (ASUU) of Nigeria was a challenge. The results in Figure 2 further reveal that 65, 50 and 45 of the respondents, respectively, stated that the physical closure of libraries, inadequate power supplies and the downtime of Internet connections were challenges to the dissemination of information to library patrons during the lockdown in Nigeria as a result of the COVID-19 pandemic.

Among those who responded in the 'open-ended' section of the survey instrument, one stated:

> The physical library is closed because of large crowd[s] of users. But the Electronic Library (E-Library) remain[s] accessible through the Internet. The statistics show low interactions. Only lecturers and some researchers are allowed to use the library carrels. This also limit[s] the number of users during the COVID-19 period in Nigeria. Nevertheless the library continues to give out information through every available means, be it electronic or print posted on library signposts or display shel[ves].

This assertion shows that libraries in Nigeria were not open to users as a result of the COVID-19 pandemic but e-libraries were available to disseminate information and enable access to e-resources. However, the respondent reported a low number of

Table 3. The media/tools used by libraries to disseminate information to patrons during the COVID-19 pandemic.

Statement	*n*	Maximum	*M* ($\bar{x}$)	*SD*
The library uses Ask a Librarian to disseminate information to patrons during the COVID-19 pandemic	152	4.00	2.6	0.83
The library uses Frequently Asked Questions (FAQs) to disseminate information to patrons during the COVID-19 pandemic	130	4.00	2.7	0.83
The library uses a library blog to disseminate information to patrons during the COVID-19 pandemic	68	4.00	2.1	0.56
The library uses a library website to disseminate information to patrons during the COVID-19 pandemic	65	3.00	2.2	0.83
The library uses online public access catalogues to disseminate information to patrons during the COVID-19 pandemic	142	3.00	2.6	0.83
The library uses professional platforms, such as LinkedIn, ResearchGate, Mendeley, ORCiD, Academia.edu, Kudos and Research Square, to disseminate information to patrons during the COVID-19 pandemic	72	3.00	2.3	0.50
The library uses mobile technology and mobile library services to disseminate information to patrons during the COVID-19 pandemic	74	3.00	2.3	0.51
The library uses print media such as newspapers and magazines to disseminate information to patrons during the COVID-19 pandemic	165	3.00	2.8	0.82
The library uses audiovisual media such as radio and television to disseminate information to patrons during the COVID-19 pandemic	58	3.00	2.1	0.54
The library uses social media such as Facebook, Twitter and Instagram to disseminate information to patrons during the COVID-19 pandemic	85	4.00	2.2	0.83
The library uses WhatsApp to disseminate information to patrons during the COVID-19 pandemic	96	4.00	2.2	0.82
The library uses email to disseminate information to patrons during the COVID-19 pandemic	142	4.00	2.6	0.84
The library uses repositories to disseminate information to patrons during the COVID-19 pandemic	142	4.00	2.6	0.83

Note: $N = 178$. Acceptable mean score = 2.5.

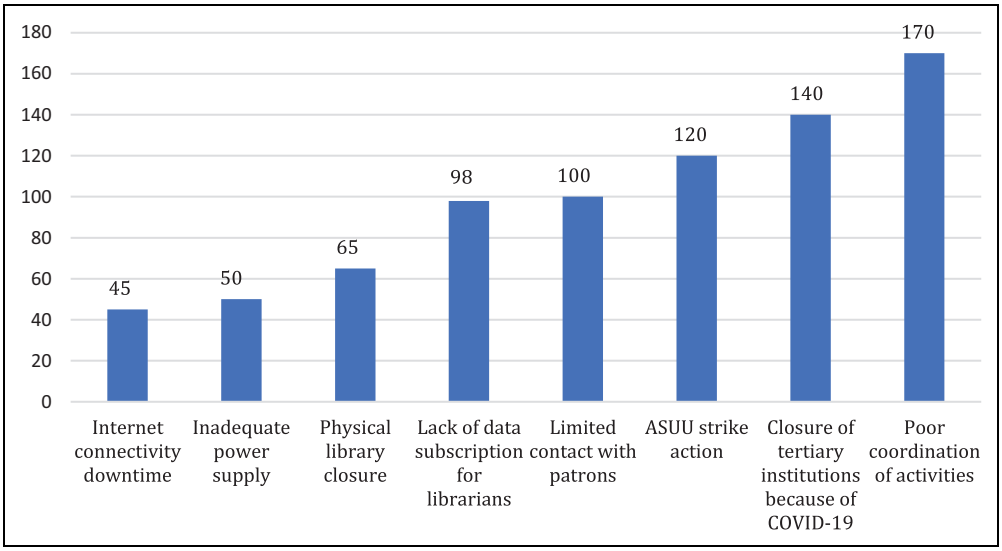


Figure 2. The challenges facing the dissemination of information during the COVID-19 pandemic.

interactions between the librarians and patrons who used the e-library. This indicates that most of the users may not have been aware of the e-library and other available electronic resources.

Discussion of findings

The findings in Table 1 concerning the activities of libraries during the COVID-19 pandemic show that libraries disseminated information to their patrons on

all the items that were examined. The dissemination of information on hygiene is critical, as viruses such as COVID-19 thrive in a dirty environment and can easily spread from one person to another – hence the efforts of the libraries to sensitize the general public to curbing the spread of the virus. The findings in Table 1 also reveal the efforts of libraries to disseminate electronic information resources and links to external databases to patrons during the COVID-19 pandemic. The dissemination of e-resources and links to databases would have enhanced the ongoing research of patrons, as well as keeping patrons abreast of current happenings around the world during the COVID-19 pandemic. The findings in Table 1 are similar to the efforts being made by organizations and libraries in other areas – for instance, Elsevier Library Connect, UNESCO and the National Library of Medicine have provided online access to information resources and avenues to support researchers in their ongoing research on COVID-19.

The provision of access and the dissemination of reliable and up-to-date information materials are the fundamental reasons for establishing a library. Hence, during the COVID-19 pandemic, the dissemination of information materials in both print and electronic formats by libraries has remained sacrosanct. The findings in Table 2 reveal that print materials were not disseminated to library patrons during the COVID-19 era. This scenario reveals the negative impact of COVID-19 on library services. The inability of libraries to disseminate print books during the pandemic was a result of lockdown and the restriction of access to public places such as libraries. The inability of libraries to disseminate print books during the COVID-19 pandemic may have affected the reading, learning and research activities of library patrons who may prefer print books to other formats, as revealed in the findings of Parikh et al. (2020), where 70% of the students and 53% of the faculty in their study preferred reading print books during the COVID-19 pandemic. However, the findings in Table 2 show that libraries quickly adjusted to electronic resources such as e-books, e-journals and databases, as well as the dissemination of newspaper cuttings to their patrons during lockdown and the COVID-19 pandemic in Nigeria. The dissemination of e-resources during COVID-19 in Nigeria would have gone a long way in reaching people who were cut off from accessing physical libraries and their resources.

The findings in Table 3 show that libraries activated several tools and media for the dissemination of information to patrons who were not able to access the physical library services. These mechanisms included Ask a Librarian, FAQs, blogs, online public access catalogues, professional platforms, websites, mobile technology, radio, television, print media, social media, WhatsApp, emails and repositories. The findings in Table 3 corroborate Ishtiaq et al.'s (2020) study, which reveals the use of similar tools for the dissemination of information to library patrons during the COVID-19 era. The findings in Table 3 further show that the pandemic has allowed most of the libraries in Nigeria to adopt media for the dissemination of information. It is important to state that media may have provided an opportunity for libraries to disseminate information services to a wider audience during the COVID-19 pandemic. This finding agrees with Omeluzor and Oyovwe-Tinuoye's (2017) research, which shows the use of ICT tools such as Ask a Librarian, emails, online public access catalogues, blogs, Twitter and Facebook to disseminate information on current awareness and SDI services in university libraries in the south-west zone of Nigeria. Similarly, Hinchliffe and Wolff-Eisenberg (2020) acknowledge the use of both technologies and print materials by academic libraries in the USA to disseminate information on the COVID-19 pandemic to patrons. The findings in Table 3 are synonymous with the activities of libraries around the world. For example, the University of the Pacific (2020) and the University of Adelaide (2020) libraries, among others, transited to remote operations, making online resources and online services (digital materials and repositories) available through their library websites.

The findings in Figure 2 reveal the challenges that militated against the dissemination of information during the COVID-19 pandemic. They show that libraries had a slow start because of the poor coordination of their activities. Most libraries in Nigeria were caught by surprise and had no proper preparation or structures to mitigate the sudden lockdown and COVID-19 pandemic, which affected the dissemination of information to patrons. Moreover, some libraries may have lacked personnel and the facilities to use ICT tools, and hence were unable to have a head start. The lack of coordination of libraries' activities may lead to the delivery of poor services, the duplication of efforts, a waste of time and resources, stress on librarians and delays in the dissemination of information to patrons. The need for proper coordination of library activities is necessary to achieve library goals, and will lead to the delivery of quality services to patrons.

The findings in Figure 2 also show that the closure of all tertiary institutions in Nigeria because of the COVID-19 pandemic and the ASUU strike was the major factor that affected the dissemination of information to patrons. COVID-19 and the ASUU strike

were two major events that obstructed the dissemination of information and services to library patrons, as librarians were not allowed to enter libraries. The closure of libraries due to COVID-19 did not affect patrons in Nigeria alone – the American Library Association recommended that public libraries should close their doors amid the COVID-19 pandemic (Pearson, 2020). The findings reveal the challenges of limited contact with library patrons. The COVID-19 era resulted in an increase in skeleton services, online services and the use of several platforms for the dissemination of information, thereby reducing the usual one-on-one service provision. The findings in Figure 2 show that there was no provision for data subscription for librarians to disseminate information. The findings reveal that some librarians used their personal mobile phones and data to disseminate information to patrons – this was confirmed by one of the respondents who reported using his personal mobile phone and subscription to disseminate information to library patrons. Librarians would require subscription to be able to disseminate information to the patrons from home using their mobile phone as none subscription may hinder the information dissemination to the library patrons during crisis such as COVID-19 pandemic.

The findings in Figure 2 with regard to the physical closure of libraries and inadequate power supply were less of a challenge because the figures are lower than 50% of the total respondents in this study. They may be considered as less of a challenge to the dissemination of information in the COVID-19 era because, during the lockdown, libraries were not open. Therefore, one cannot talk about power supply and Internet connections. The respondents may have been expressing the usual challenges they faced on a daily basis that affected the dissemination of information during a normal working day.

Specific findings

The specific findings from the study may be summarized as follows:

1. Libraries across Nigeria disseminated information on how to curb the spread of COVID-19, government decisions and personal hygiene (hand-washing, cleanliness and use of hand sanitizers) through social media, posters and flyers during the COVID-19 pandemic.
2. Libraries engaged their users through the provision of access to electronic resources and newspaper cuttings to support the ongoing research of library patrons.
3. Libraries adopted tools, media and professional platforms to disseminate information to library patrons.
4. The findings reveal some major hindrances to the dissemination of information to library patrons during the COVID-19 pandemic, which should be considered by library management teams to avoid their future occurrence.

Conclusion and recommendations

The connection between libraries and their patrons lies in the satisfaction and value that patrons get from the library services, mostly through accessing, retrieving and using information, especially during a crisis. The participation of libraries in the provision and dissemination of information to patrons during the COVID-19 pandemic in Nigeria has increased the image of libraries among other information providers. The lockdown and spread of the COVID-19 pandemic brought to the fore the importance of developing libraries' ICT facilities to enhance the continuous provision and dissemination of information services to patrons, irrespective of time, space and geographical location. Libraries remain key institutions and have a responsibility to provide relevant information sources and services to the communities they serve. Hence, efforts have been made by libraries in Nigeria to fulfil their mandate by disseminating information to their patrons in the COVID-19 era. The ability of libraries to sustain the provision and dissemination of information to patrons during a crisis increases the trust that patrons have in them as their last recourse for information access and provision. The study reveals the adoption and use of media and tools for accessing information and disseminating information to library patrons in Nigeria during the COVID-19 era. Furthermore, it is clear that lockdown and the COVID-19 pandemic uncovered the level of support that libraries offer and the challenges that hinder their efforts in the dissemination of information to patrons. The adoption of viable ICT tools and electronic resources by libraries in supporting their user communities during COVID-19 is evident. Such efforts enabled patrons to have regular access to information sources and services to meet their information needs. However, the study shows that libraries still need to increase the use of online resources and ICT tools for the delivery of information services to users. Some of the challenges that this study reveals would not prevail if libraries in Nigeria consistently harnessed ICT tools and e-

resources, among other services, during a crisis such as COVID-19.

In view of the foregoing, the following recommendations are offered: (1) there is a need to overhaul the current strategies of attending to patrons' information needs in a time of crisis in university libraries across Nigeria and other parts of the world; (2) library management should assemble a team to put together a crisis management strategy that will ensure uninterrupted services for patrons during a pandemic; (3) library management, in collaboration with university management, should develop the library's ICT units with qualified personnel, adequate Internet connections and facilities that will enhance the dissemination of information to patrons; (4) libraries' ICT units should ensure the adoption of sustainable information technology tools such as blogs, repositories and professional networks (e.g. LinkedIn, ResearchGate and Academia.edu) for the provision of online information services to patrons; and (5) library management should provide adequate data subscription for librarians to enhance the dissemination of information via mobile phones to patrons at all times.

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Notes

1. See https://covid19.ncdc.gov.ng/

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