

INFORMATION AND COMMUNICATION TOOLS FOR EFFECTIVE DISEMINATION OF COVID-19 PREVENTIVE EDUCATION IN NIGERIA

1. Rashid A. ADERINOYE; 2. Oyedunni ARULOGUN; 1. Omobola O. ADELORE; 4. Morufu A. OYEBAMIJI, 3. Tolulope V. GBADAMOSI; 1. Abiola A. OMOKHABI; 5. Ladan BABANGIDA; 5. Auwalu HALILU; 4. Joy I. EZEALA; 1. Uchechukwu C. OSU; 1. Solomon O. OJEDEJI; 1. Rosheedat ADENIJI; 1. Rukayat O. OGUNDIPE & 1. Oluwamayowa A. ADEDAYO
Email: morufu.oyebamiji@uniport.edu.ng

1. Department of Adult Education, University of Ibadan; 2. Department of Health Promotion and Education, College of Medicine, University of Ibadan; 3. Department of Arts and Social Sciences Education, University of Ibadan; 4. Department of Adult and Non-Formal Education, University of Port Harcourt, 5. Department of Adult Education and Community Services, Bayero University, Kano.

Abstract

This paper examined Information and Communication Technology tools for effective dissemination of Covid-19 preventive education in Oyo, Rivers and Kano States of Nigeria. ICT refers to varieties of technologies that facilitate communication and information sharing. The descriptive survey research design was adopted for the study. The population of the study consists of all young adults (18-35 years) and adults (36 years and above) in Oyo, Kano and Rivers States (which were three of the states with high prevalence of the pandemic) as well as the stakeholders in preventing Covid-19 (officials of Nigerian Centre for Disease Control (NCDC), National Orientation Agency, Ministry of Health and Education). A total of 9000 respondents were selected purposively through multi-stage sampling procedure for the study. The instrument used for data collection was "Preventive Education Strategies as a Vaccine to COVID-19 Prevalence and Related Diseases" (PESVCPRD). The instrument was validated by three experts, while an overall reliability coefficient value of 0.91 was obtained using Cronbach Alpha statistical tool. The descriptive statistics such as percentages, frequency counts were used to analyse the research questions. Findings revealed television as the most preferred media for information dissemination; that the most preferred delivery mode/channel for conveying Covid-19 information is jingles and that the media channels used in disseminating preventive education strategy materials have positive impact on respondents' knowledge and behaviour on Covid-19 pandemic. The researchers recommended among others that television channel should adopt the language of the immediate environment for disseminating preventive education for effective handling and better understanding of COVID-19 prevalence and related diseases.

Key words: *ICT Tools, Covid-19, Information Dissemination, Preventive Education*

Introduction

The global outbreak of COVID-19 pandemic has affected the order by which human beings operate on the planet and has led to

the emergence of a 'new normal', a state to which a society settles following a crisis which differs from the situation that

prevailed prior the start of the crisis. While few countries were hardly adversely affected by the pandemic, most countries had all institutions on total lockdown. In Nigeria, Rivers State ranked sixth in the order of hierarchy of confirmed cases in the year 2020 (National Digital Library of India cited in Kabiru & Qudus, 2022). According to the World Health Organisation, (WHO, 2020) Corona Virus disease is an infectious disease caused by a newly discovered corona virus that affects people in different ways. Covid-19 seems to spread from person to person by the same mechanism as other common cold or influenza viruses, that is, by face-to-face contact with a sneeze or cough, or from contact with secretions of people who are infected (WHO, 2020). This COVID-19 brought about serious dislocation to human activities resulting in unprecedented disruptions to work, closure of educational institutions and other human activities thereby inducing stress, whether one is affected by the pandemic directly or indirectly. Prevention involves changing individual behaviours that spread the pandemic as well as creating an environment which makes people less vulnerable to the pandemic. Some of the preventive measures taken were maintaining a high level of social distancing and avoidance of crowded places. Kabiru and Qudus, are of the opinion that the high rate of infection in the COVID-19 pandemic may be due to:

- a. lack of proper information dissemination and
- b. public awareness of the virus.

The above assertions necessitated the need to identify Information Communication Technology tools for effective dissemination of preventive education messages on COVID-19 and other related diseases in Oyo,

Rivers and Kano States of Nigeria due to the pandemic increase daily.

Review of Related Literature

The Concept of Preventive Education:

The word preventive according to Oxford Dictionary means ‘to keep something undesirable such as illness or harm from occurring’. Education on the other hand means ‘the process of receiving or giving systematic instruction’. Preventive education simply means ‘the process of receiving or giving a systematic instruction in order to keep someone free from illness or harm. Prevention is as important as finding a vaccine that will eliminate COVID-19. Prevention is, therefore, a key factor in saving lives during the current pandemic crisis. Sun et al. in Reynosa, Guerra, Casimir, Vélez-Jiménez, Casimiro-Urcos et al (2021) proposed that the vital way to reduce mortality is a strong early intervention to prevent disease progression. Preventive education continues to be the most effective strategy in the continued mitigation and spread of COVID-19 as it was for HIV/AIDS. Prevention involves changing individual behaviours that spread the pandemic as well as creating an environment that makes people less vulnerable to the pandemic. The response will require political will, and leadership commitment to actions at national, state, local government areas and local communities. Prevention education could be school based, public places, religious centres and historical educational centres. Preventive education messages given to the populace against covid-19 includes:

- a. hand washing, coughing and sneezing into the elbow,
- b. social distancing, wearing a face mask, avoid touching of eyes, nose and mouth,

- c. do not shake hands or hug any person,
 - d. self-isolation within 14 days after travel.
- Uchibori, Ghanznavi, Murakami, Eguchi, Kunishima et al (2022) reiterated three preventive measures to COVID-19 to include:
- i. avoiding the 3Cs – closed spaces, crowded places, and crowded spaces.
 - ii. hand hygiene and
 - iii. respiratory hygiene.

COVID-19 and Information Dissemination

In the words of Unhale, Bilal and Sanap (2020), there exists limited research on the way corona virus spreads from one person to another. However, researchers believe that the virus is transmitted through fluids in the respiratory system, such as mucus. A list of ways the virus can be transmitted thus include: coughing and sneezing without covering the mouth which can disperse droplets into the air; touching or shaking hands with a person who has the virus; making contact with a surface or object that has the virus and then touching the nose, eyes, or mouth. Similarly, some group of people have been identified as having the highest risk of developing complications due to COVID-19. These include young children; people aged 65 years or older; pregnant women; among others (WHO, 2020).

Information dissemination simply means an order alerting service designed to keep individuals informed about the new developments in their particular field of interest and situation. According to Ojukwu, Kuku, Mustapha, Saidu (2021); Kabiru and Qudus (2022), dissemination basically sends information to an audience without direct

contact with the receiver and without the direct response or clarification method that a conversation or dialogue would have. Chhiato (2018) described information dissemination as the activity of conveying and spreading one's ideas and knowledge through the exchange of thoughts and messages by symbols, signs, speeches, visuals, signals, writing or behaviour. It is the exchange of information between two or among a group of people using defined channels and media in order to reach various target audience. Wu, Yang, and Li (2016) saw information dissemination as the transportation of information to the intended recipients while meeting certain requirements such as delays, reliability, and so on. Dhawan (2018) saw information dissemination as a proactive information service designed to educate and inform various groups of users on social, economic, and educational issues, problems, and opportunities of interest to them. It requires systematic planning, collection, organisation, and storage of information for its delivery to the target. The events of information dissemination are conferences, meetings, festivals, and procession, and the mediums of information dissemination are journals, newspapers, radio, television, and video (Daudu & Mohammed, 2013). Phones, computers, satellites and the Internet are the technologies of information dissemination and professionals in the act of information dissemination include librarians, journalists, advertisers, public relations personnel, camera crews, and newsreaders. According to Bello and Aghadiuno (2019), information dissemination is the channel by which facts are linked to the appropriate individual seekers and organisations. Information and communication technology, therefore, help in providing the needed information for solving emergent problems that may occur

within the society, thus the need to put in place such technology/technologies.

Information and Communication Technology Tools for Effective Dissemination of COVID-19 Preventive Education

The term ‘ICT’ – Information and Communication Technology according to Wikipedia (2023) refers to an extensional term for Information Technology(IT) that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage and audiovisual, that enable users to access, store, transmit, understand and manipulate information. It went further to say that ICT is an umbrella that includes any communication device, encompassing radio, television, cell phones, computer and network hardware, satellite systems and so on, as well as the various services and appliances with them as video conferencing and distance learning. Analog technology, such as paper communication (newspaper, textbook etc.), and any mode that transmits communication are also refer to as ICT (Wikipedia, 2023).

During the COVID-19 lockdown, some social media platforms such as WhatsApp, Twitter, Facebook and Instagram were used as a medium of communication among individuals and groups. Zoom, Google Meet and Telegram served as venues for online classes for teachers and their students in order to maintain the rule of social distancing. Most working class (men and women) for government and private parastatals were told to be working from their homes. The radio and television (jingles and news) were used as channels to transmit or disseminate information about happenings around the world and on

COVID-19. Print media such as hand bills, posters, bulletin, and newspapers helped people with the right information for prevention of the virus. Institutions such as Nigeria Center for Disease Control (NCDC), Ministry of Health, Ministry of Education, National Orientation Agency saddled with the responsibility of controlling and managing COVID-19 in Nigeria usually make use of their official websites to send updated information, outbreak severity, health tips and advice and government measures to people. ICT tools are digital infrastructure for effective dissemination of COVID-19 preventive education:

- i. **Facebook:** This continues to be among the world’s most popular social networking site with more than a billion users. Busuyi, Christopher, Azeez and Olugbenga (2020) asserted that Facebook’s functions include messages, news feeds, timelines, groups, photos, pages, subscriptions and video calling. The Facebook timeline allows users to customize their Facebook page. The news feed depicts pictures, status updates, links, wall posts, and more, based on what the people in one’s network are posting. Facebook members are able and free to post pictures, messages, links, blogs and videos on the walls and timelines of those in their network. Social media platform Facebook makes use of informative articles, videos, info graphics, and animated creations to send out messages to their targeted audience (Weitzel and Middleton, 2020).
- ii. **WhatsApp:** This is a mobile application that is purposely used for instant messaging and easily replaces the normal phone short messages

(SMS) as a result of its capacity to disseminate a large volume of messages and media files unlike the phone SMS (Fawzi in Busuyi, Christopher, Azeez and Olugbenga (2020). WhatsApp can be regarded as messenger, cross platform instant messaging subscription for smart phones and selected feature phones that use the Internet for communication. Individuals who use WhatsApp can easily send audio, images video media messaging and their location using the integrated mapping feature. Users can start communication with people in their lists or invite new users to WhatsApp. It enables two people to chat and make video or voice calls. It also allows groups of people to engage in group chats using Internet/Wi-Fi connection or data charges. Weitzel and Middleton, 2020 are of the opinion that social media platform such as Whatsapp makes use of informative articles, videos, info graphics, and animated creations to send out messages to their targeted audience.

- iii. **Twitter:** This is known as an online micro blogging and social networking service that enables users to read and send "tweets" that contain text messages limited to 140 characters. Busuyi, Christopher, Azeez and Olugbenga (2020) were of the opinion that users access Twitter through the text messages sent directly to/from a cell phone or mobile device app as well as through a website interface. Twitter provides an avenue for users to interact and communicate freely with each other. Twitter users are able to follow other

users and the tweets serve as a source for the dissemination of information. According to Weitzel and Middleton (2020), social media platform such as Twitter makes use of informative articles, videos, info graphics, and animated creations to send out messages to their targeted audience.

- iv. **You tube:** YouTube contains an extensive array of video content such as television clips, movie clips, music videos and educational videos. YouTube was founded in 2005 as the world's most popular online video community, where millions of people could share, discover and watch originally created videos. Social media platform like You Tube make use of informative articles, videos, info graphics, and animated creations to send out messages to their targeted audience (Weitzel and Middleton, 2020). According to Comscore in Busuyi, Christopher, Azeez and Olugbenga (2020), a leading measure of digital technology, YouTube ranked at the top of video Internet viewing sites. YouTube users can subscribe to other users' channels, which connect the users into a social network.
- v. **Television:** People believe that TV is still the most effective media for health communication according to Sushil and Yogesh (2017). TV being a unique media affecting two senses of human being (eyes & ears) proves to be the most effective media for covid-19 preventive information dissemination. Radio and TV stations are environment friendly and serve the environment they belong to with regards to the language, culture, and identity of region. Electronic media

- like television as disclosed by Weitzel and Middleton (2020) allows experts and public health authorities to explain in detail the epidemiological situation and severity of the outbreak in audience friendly languages. They also affirm that different jingles and advertisement to enhance people's understanding are easily done through this medium.
- vi. **Radio:** In radio communication system, information is carried across space using radio wave. At the sending end, the information to be sent is converted by some type of transducer to a time-varying electrical signal called the modulation signal. The modulation signal is applied to a radio transmitter. Electronic media like radio as disclosed by Weitzel and Middleton (2020) allows experts and public health authorities to explain in detail the epidemiological situation and severity of the outbreak in audience friendly languages. Different jingles and advertisement to enhance people's understanding are easily done through this medium. The mass media through radio programmes and jingles will educate the populace on the preventive measures on health issues (Nnadimele, Benson, Nnadimele and Anyira, 2021). Anyonje, Onyango and Nkangi (2022) revealed that the radio remains the media that has disseminated most messages on COVID-19 in Vihiga and Busia countries; that the rural population have showed high level of trust towards messages gotten through radio.
- vii. **Newspaper:** Print media has been playing a vital role in spreading awareness on the Corona Virus pandemic and COVID-19 disease caused by it as disclosed by Pandey and Kumar (2020). According to Ocheni and Nwankwo in Nnadimele, Benson, Nnadimele and Anyira (2021), the mass media through publication in the newspapers and magazines can educate the masses on issues of political, economic and social importance in nation-building; and offers great potential for educating the public about health issues. However, Shalvee and Sambhav (2020) maintained that print media was one of the most affected media during the pandemic due to lockdown. They are of the opinion that the method of handling during distribution and people's fear of contracting the disease by handling newspapers were major issues with the print media. They also were of the view that newspapers were, however, vital to public awareness about the pandemic. Anecdotal evidence also shows the massive usage of posters to bring about awareness. Walking into financial institutions, stores, and restaurants during the phases of the ongoing reopening of business, reveals that posters are at most business premises to guide people on procedures to avert COVID-19 and to spread awareness. The use of posters, billboards, leaflets, and adverts on pages of newspaper and/or magazines are also employed by governments to convey COVID-19 information. These are done in health

care facilities, public markets, public spaces, and public transports.

The work of Mousa and Awwad (2023) revealed that communicating health information through print media is effective during a health crisis, and people's likelihood of engaging in precautionary behaviours is proportional to the exposure to COVID-19-related information on different media channel. Communication channels such as newspapers, magazines, radio, movies, television, the internet, and online social networks are all examples of media.

Objectives of the Study

This study examined information and communication technology tools for effective dissemination of COVID-19 preventive education strategies in Nigeria. The specific objectives were to:

- i. identify the preferred media for COVID-19 information dissemination;
- ii. disseminate developed preventive education strategy content using identified preferred channels; and
- iii. determine the impact of the media channel in disseminating preventive education strategy materials.

Research Questions

The following research questions were stated for the study:

- i. What are the preferred media for COVID-19 information dissemination?
- ii. Are the identified preferred channels used to disseminate developed COVID-19 preventive education strategy?

- iii. What are the impacts of the media channels in disseminating COVID-19 preventive education strategy materials?

Methodology

Research Design: This study adopted a descriptive research design of the survey type. This design according to Nworgu (2015) aimed at collecting data on, and describing in systematic manner the characteristics, features or facts about a given population. The design was, therefore, considered appropriate for the study for the fact that it examined information and communication technologies as tools for effective dissemination of COVID-19 preventive education strategies in Nigeria.

Population: The population of the study consist of 9,000 young adults (18-35 years) and adults (36 years and above) across places of worship (church and mosque); market places; motor parks; senior secondary schools; and tertiary institutions in Oyo, Kano and Rivers States (which are three of the states with high prevalence of the pandemic) as well as the stakeholders in preventing COVID-19 (officials of Nigerian Centre for Disease Control (NCDC), National Orientation Agency, Ministries of Health and Education).

Sample Size and Sampling Technique

The convenience sampling technique was used to select 9000 respondents across places of worship (Church and Mosque); market places; motor parks; senior secondary schools and tertiary institutions. A multi-stage sampling procedure was used in selecting the three states and Local Governments for the study. This was done as follows:

Stage 1: In this stage a purposive sampling technique was used to select 3 states in Nigeria with high prevalence of the

COVID-19 Pandemic (Oyo, Kano, and Rivers).

Stage 2: This involves the use of a purposive sampling technique to select three local government areas (with high prevalence of the COVID-19 Pandemic) in each of the 3 states selected (based on information from COVID-19 task force).

Stage 3: In this stage, a convenient sampling technique was used to select 1000 respondents from each of the 3 local government areas in each of the 3 states. Thus, 3,000 respondents from each of the three states were used for the study.

Instrumentation/Data collection and analysis

Data for the study was collected through the use of copies of an interviewer-administered questionnaire titled “Preventive Education

Strategies as a Vaccine to COVID-19 Prevalence and Related Diseases” (PESVCPRD). The instrument consists of three scales namely, threats to education, socio-economic life and mental health scale; level of knowledge scale; and current strategies scale. This instrument was developed using the 5 Likert-type scale, and validated by experts in the field of measurement and evaluation. Its reliability index was established through trial testing on another population having similar characteristics with that of the main study. A Cronbach alpha coefficient of 0.91 was obtained. Focus Group Discussion and Key Informant Interview were also used to complement the major instrument for the study. The descriptive statistics such as percentages, frequency counts were used to analyse the results.

preferred media for COVID-19 information dissemination?

Table 1: Preferred media for COVID -19 information dissemination

Results

Research Question One: What are the

Media Preference		Newspaper		Television		Radio		WhatsApp		Facebook		Instagram		Twitter
		N	%	N	%	N	%	N	%	N	%	N	%	N
Preferred Media to get information around the world on COVID_19 through	No	6450	76.9	5413	64.5	5469	65.2	7003	83.5	6817	81.3	7716	92.0	7886
	Yes	1938	23.1	2975	35.5	2919	34.8	1385	16.5	1571	18.7	672	8.0	502
Preferred Media to understand information on COVID_19 better is	No	5001	59.6	4282	51.0	4862	58.0	5123	61.1	4813	57.4	5369	64.0	5402
	Yes	3387	40.4	4106	49.0	3526	42.0	3265	38.9	3575	42.6	3019	36.0	2986
Preferred Media to believe any information on COVID 19 is	No	6641	79.2	5276	62.9	5358	63.9	7071	84.3	7013	83.6	7851	93.6	7960
	Yes	1747	20.8	3112	37.1	3030	36.1	1317	15.7	1375	16.4	537	6.4	428
Preferred Media to get unbiased and up-to-date information is	No	6653	79.3	5430	64.7	5512	65.7	7203	85.9	7011	83.6	7816	93.2	7975
	Yes	1735	20.7	2958	35.3	2876	34.3	1185	14.1	1377	16.4	572	6.8	413

Preferred Media to get information due to language used is	No	6652	79.3	5393	64.3	5542	66.1	7184	85.6	6993	83.4	7876	93.9	8043
	Yes	1736	20.7	2995	35.7	2846	33.9	1204	14.4	1395	16.6	512	6.1	345
Preferred Media to get all information on COVID_19 because it is cheap is	No	6677	79.6	5453	65.0	5546	66.1	7115	84.8	6958	83.0	7882	94.0	8045
	Yes	1711	20.4	2935	35.0	2842	33.9	1273	15.2	1430	17.0	506	6.0	343
Preferred Media to get easily accessible information on COVID_19 anywhere is	No	6842	81.6	5622	67.00	5404	64.4	6990	83.3	6793	81.0	7793	92.9	8039
	Yes	1546	18.4	2766	33.0	2984	35.6	1398	16.7	1595	19.0	595	7.1	349

Table 1 revealed that the television is the most preferred media for Covid-19 information dissemination preferences when compared to other sources. This can be seen in terms of receptivity, comprehensible, reliable, trusted and up-to-date, language wise and usage, cheap or affordable, and easily accessible from items 1-7 with 2975(35.5%), 4106 (49.0%), 3112 (37.1%), 2958 (35.3%), 2995 (35.7%), 2935 (35.0%), 2766 (33.0%) respectively. The newspaper followed closely behind at 2975 (23.1%) and 3387(40.4%) for responses to items 1and 2 which are relatively higher than that of the radio; while items 3, 4, 5, 6 and 7 are with 1747(20.8%); 1735(20.4%); 1736(20.7%); 1711(20.7%) and 1546 (18.4%) are relatively lower. The radio garnered a significant 2919 (34.8%) and (3526) 42.0% in items 1 and 2, highlighting its ability to convey information in a way that aids receptiveness and comprehensiveness; while items 3, 4, 5, 6, and 7 2842 (33.9%), 2846 (33.9%), 2876

Research Question Two: Are the identified preferred channels used to disseminate

(34.3%), (3030, 36.1%), 2984 (35.6%) closely followed television and are relatively higher than the responses gotten for newspaper. Digital platforms also played a notable role, with 1385 (16.5%), 3265(38.9%), 1317(15.7%), 1185(14.1%), 1204(14.4%), 1273(15.2%), and 1398(16.7%) of individuals relying on WhatsApp, 1571 (18.7%), 3575(42.6%), 1375(16.4%),1377(16.4%), 1395(16.6%), 1430(17.0%), 1595(19.0%) on Facebook, 672 (8.0%), 3019(36.0%), 537(6.4%), 572(6.8%), 512(6.1), 506(6.0%), and 595(7.1%) on Instagram, and 502 (6.0%), 2986(35.6%), 428(5.1%), 413(4.9%), 345(4.1%), 343(4.1%), 349(4.20%) on Twitter for COVID-19 information dissemination in relation to item no 1-7 respectively. It is worth noting that 442 (5.3%), 2745(32.7%), 253(3.0%), 380 (4.5%), 226(2.7%), 277(3.3%), and 64(0.8%) respectively are other sources outside the above mentioned preferred media by which Covid-19 information can be disseminated to the populace. developed COVID-19 preventive education strategy?

Table 2: Preferred delivery modes that made the respondents information on COVID-19 understandable to

Preferred Media to better understand information on COVID_19 is the one done through	No		Yes		Total	%
	N	%	N	%		
Jingles	4832	57.6%	3556	42.4%	8388	100
Short plays	5813	69.3%	2575	30.7%	8388	100
Posters	6377	76.0%	2011	24.0%	8388	100
Others	8028	95.7%	360	4.3%	8388	100

The data provided in Table 2 above highlights the preferred media formats for better understanding of information about COVID-19. The survey revealed that out of the total number of respondents, 42.4% (3,556) indicated a preference for jingles as a medium for conveying COVID-19 information. Short plays were selected by 30.7% (2,575) of the respondents, while 4.0% (2,011) preferred posters. A smaller percentage of respondents, 4.3% (360), stated that they preferred other media formats. These numbers and percentages reflect the preferences of the respondents when it comes to the media formats that they find most effective in understanding information related to COVID-19.

Research Question Three: What are the impacts of the media channels in disseminating COVID-19 preventive education strategy materials?

Table 3: Impacts of the media on the knowledge of respondents about COVID-19 Symptoms

Symptoms	No		Yes		Total
	N	%	N	%	N
Fever, headache, cough, dryness of throat, sore throat, nasal congestion, constant sneezing, shortness of breath, are the main symptoms of COVID-19	818	9.7	7619	90.3%	8437
COVID-19 spreads through respiratory tract of infected individual during sneezing or coughing of infected persons	971	11.4	7518	88.6%	8489
COVID-19 leads to respiratory failure and death	1022	12.0%	7509	88.0%	8531
Currently, there is no known effective cure for COVID-19, but early symptomatic and supportive treatment can help	1035	12.2%	7469	87.8%	8504
Close contact with an infected persons causes COVID-19	1039	12.1%	7515	87.9%	8554
Currently, there is no known effective cure for COVID-19, but early symptomatic and supportive treatment can help	1082	12.7%	7462	87.3%	8544
Close contact with an infected persons causes COVID-19	1073	12.6%	7415	87.4%	8488
After being in a public place, after nose blowing, coughing or sneezing, people must wash their hands with soap and water, as	1095	12.9%	7400	87.1%	8495

well use hand sanitizer containing alcohol					
COVID-19 spreads through respiratory droplets	1149	13.4%	7396	86.6%	8545
Older persons can easily contact COVID-19	1372	16.1%	7167	83.9%	8539
COVID-19 can be contacted by touching a surface or object, on which the virus is attached	1108	13.0%	7439	87.0%	8547
Touching one's mouth, nose or eyes can cause one to be contacted	1056	12.30%	7531	87.70%	8587

In table 3, it is evident that the impacts on the knowledge of respondents regarding COVID-19 symptoms are relatively high. Out of the total number of respondents, 7619 (90.3%) correctly identified fever, headache, cough, dryness of throat, sore throat, nasal congestion, constant sneezing, and shortness of breath as the main symptoms of COVID-19. Similarly, 88.6% (7518 respondents) recognised that COVID-19 spreads through the respiratory tract during sneezing or coughing by infected individuals. Furthermore, 88.0% (7509 respondents) understood that COVID-19 can lead to respiratory failure and death. It is worth noting that 87.8% (7469 respondents) were aware that there is currently no known effective cure for COVID-19 but early symptomatic and supportive treatment can be helpful. Additionally, 87.9% (7515 respondents) correctly identified close contact with infected persons as a cause of COVID-19. The knowledge levels were consistently high across other statements as well, with percentages ranging from 86.6% to 90.3%. These findings indicate a significant understanding of COVID-19 symptoms and transmission among the surveyed respondents.

Discussion of Findings

The study was designed to examine Information and Communication Technology tools for effective dissemination of Covid-19 preventive education in Oyo, Rivers and Kano States of Nigeria.

Identification of the preferred media for COVID-19 information dissemination in the area of study:

The television is the most preferred media for covid-19 information dissemination in the area of study (Oyo, Rivers and Kano States of Nigeria) as presented in table 1 from the responses of respondents from the three states. Respondents preferred

television above all other media sources because of its receptiveness, comprehensiveness, reliability, trustworthiness, language-friendliness, affordability, and accessibility. This result supported the assertion of Sushil and Yogesh (2017) which stated that people believe that TV is still the most effective media for health communication; its unique nature affects the two senses of human beings - eyes and ears; this proves to be the most effective media for covid-19 preventive information dissemination. Furthermore, the result tallied with Weitzel and Middleton, (2020) which stated that electronic media like television as disclosed allows experts and public health authorities to explain in details the epidemiological situation and severity of the outbreak in audience friendly languages. Despite the fact that the gap between the radio and the television in terms of the responses gotten from the respondents in Nigeria is not quiet much, the radio is still very much effective even in some countries as Anyonje, Onyango and Nkangi, (2022) revealed that the radio remains the media that has disseminated most messages on COVID-19 in Vihiga and Busia countries; and that the rural population have showed high level of trust towards messages gotten through radio. Result from table 1 also revealed that the gap between the radio and the newspaper is not much which shows that, the print media like newspaper also plays a vital role in spreading awareness on the corona virus pandemic and COVID-19 disease caused by it as disclosed by Pandey and Kumar (2020). However, print media was one of the most affected media during the pandemic due to lockdown (Shalvee and Sambhav, 2020). They are of the opinion that the method of handling during distribution and people's fear of contacting the disease by handling newspapers were major issues

with the print media.

Identification of the preferred delivery mode/channel used to disseminate developed COVID-19 preventive education strategy in the study area:

Table 2 contains 3 items representing the numbers and percentages which reflect the preferences of the respondents when it comes to the media formats that they find most effective in understanding information related to COVID-19 in Oyo, Rivers and Kano States of Nigeria. The 3,556 subjects from the sample indicated a preference for jingles as a means for conveying COVID-19 information. The short plays, posters and other channels revealed fewer preferences when compared with the responses the subjects made for jingles as the figures are clearly seen in table 2 above. Finding is in line with Adebayo, Badiru and Ladigbolu's (2022) assertion which clearly stated that broadcast of COVID-19 jingles on television and radio stations should be continued because it yielded a positive behaviour especially since new cases are reported daily.

The impacts of the media channels in disseminating COVID-19 preventive education strategy materials among the subjects:

Table 3 reveals that the majority of the respondents had positive behaviour towards COVID-19 preventive education strategy materials which is clearly seen in their ratings across the 12 items. The knowledge levels were consistently high across other statements as well, with percentages ranging from 86.6% to 90.3%. This finding indicates a significant understanding of COVID-19 symptoms and transmission among the surveyed respondents.

Conclusion

The importance of ICT in the delivery of COVID-19 pandemic preventive education to Nigerians cannot be understated due to the

fact that it has made the entire globe a global village in which sourcing for information is 135 le easier, especially, during COVID-19 pandemic. Information and Communication Technology tools for effective dissemination of COVID-19 preventive education in Nigeria have been clearly revealed as potent tool for exposing and educating Nigerians for effective handling and proper understanding of COVID-19 prevalence in Nigeria in this study. The study has also shown that television is the most preferred media for information dissemination with the jingles as the most preferred delivery mode/channel for conveying COVID-19 information. Media channels in disseminating preventive education strategy materials in this study have helped to bring about a positive change in behaviour among the subjects on the knowledge of COVID-19 symptoms.

Recommendations:

Following the clarifications provided in this paper and the conclusion arrived at, it becomes quite pertinent to recommend as follows:

1. adoption of the television channel, incorporating the language of the immediate environment to the subjects for better understanding of Covid-19 preventive education information.
2. that constant information on Covid-19 preventive education must be relayed to the people so as to reduce the spread of the pandemic.
3. that research study similar to this study might be required to determine the level of acceptance of the television and jingles as preferred media for disseminating information on Covid-19 preventive education among respondents in other countries.

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