MEDIA & COMMUNICATION STUDIES | RESEARCH ARTICLE

Achieving sustainable e-health with information and communication technologies in Nigerian rural communities

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Abstract: Modern information and communication technologies (ICTs) may be used to improve health care. Residents in rural areas appear to be at risk because they may still be plagued by diseases that might have been more easily prevented or managed if they have easy access to online e-health information provided by modern ICTs. Good health is vital for meaningful progress. Achieving good health is the third in the United Nation’s Sustainable Development Goals. However, this goal may not be achieved among the people living in some rural areas because they do not have quick and adequate health information online. A field survey was carried out to sample the opinions of 621 respondents from 14 rural communities in Ota, Western Nigeria, on their access to online services. Since they have little or no access to online health information, their active participation and contribution to achieving sustainable e-health are almost non-existent. This study recommends that government and non-governmental organizations take urgent steps to

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PUBLIC INTEREST STATEMENT

The rapid advancement of information and communication technologies, especially the internet, have changed many communities’ faces. Diverse kinds of information can be easily accessed, even by simple folks, at the click of the mouse. Good health is of interest to most people. When the citizens are in poor health, they suffer because they cannot contribute their quota to national development. Some may not even have easy access to health-care facilities. Today, e-health is diffusing through many societies and sharing meaningful information online. It covers broad areas like health records, information and management. While the wonders of e-health are spreading, some communities in rural Ota appear to be caught off. Some of the residents do not even know of or have access to the internet. Thus, their disabilities have effectively cut them off from participating in e-health programmes. This, in turn, continues to frustrate the United Nations goal of achieving sustainable health for all.
increase residents’ access to the internet to facilitate their adoption of e-health and, by extension, SDG Goal Three’s speedy achievement.

**Subjects:** ICT; Mass Communication; Health Communication; Media Communication

**Keywords:** e-Health; health care; internet; rural areas; sustainable development goals (SDGs); health communication; information and communication technology (ICT); innovation

1. Introduction

Information and communication technologies (ICTs) refer to different means of creating, passing, sharing, storing, and retrieving messages. Popular ICTs include the internet, wireless networks, cell phones, computers, social media platforms and applications. ICTs can be used in health care and in achieving the United Nations Sustainable Development Goals (SDGs). Seventeen SDGs were established with the primary objective of transforming the world through environmental protection, social inclusion and economic growth. One of the SDGs, precisely SGD-3, revolves on health and well-being of all people irrespective of their age or location. Sustainable health is achieved when people can obtain quality primary health services without gross financial hardship (World Health Organisation, 2018). Kalule-Sabiti et al. (2014) write that essential universal health includes the prevention and treatment of communicable and non-communicable diseases including sexual, reproductive and mental health. Amoo et al. (2020) add drug use and high-risk sexual behaviour.

People seeking health care ordinarily go to hospitals. At times, doctors call at homes. However, the invasion of new communication technologies is changing this routine. e-Health uses the new media to empower participants with information that they can use to make informed decisions. It is an innovation that is growing more popular as citizens browse online for different pieces of facts on health and well-being. According to Ossebaard and Van Gemert-Pijnen (2016), e-health uses information and communication technology (ICT) to support health and health care. They add that it strengthens the chances for self-care, self-management and patient participation, and increases the range of disease prevention and health education. Online health vaults make it possible for individuals to access necessary data on managing their health appropriately. People can easily access information on routine health care without leaving the comfort of their homes.

Maintaining good health is a concern for most people. Good health practice should reduce preventable diseases and premature deaths (Adetoro & Amoo, 2014; Amodu et al., 2017; Chetley, 2006). e-Health has the capacity to increase access to quality, timely, and cost-effective health care and revolutionize the way physicians care for patients (Lopez, 2019; World Health Organisation, 2020). Poor health negatively affects families, communication, learning and lifestyle. World Bank (2004) asserts that ICTs can transform how health services are delivered across the African continent. The internet provides a viable platform for achieving the third SDGs goal, which is to “ensure healthy lives and promote well-being for all at all ages.” It is necessary to be in good health because health affects every other thing done by man. Information and communication technologies can get citizens to be engaged online (Kayode-Adedeji et al., 2019; World Health Organisation, 2018) and may lead to higher productivity (Amusan et al., 2018). They have the potential to help improve health care and health information dissemination. For instance, ICTs can connect remote health centres with experts, enhance monitoring, and facilitate communications between frontline health workers, specialists and patients (Bogdan-Martin, 2017, p. 12; Ossebaard & Van Gemert-Pijnen, 2016). It is doubtful if SDG 3 can be achieved without the support of ICTs.

In 2015, Nigeria started to make plans for e-health (Eysenbach, 2001; National Health ICT Strategic Framework 2015–2020, 2015). However, there are still some challenges with its adoption (Adebayo & Ofoegbu, 2014; Idoga, 2016). The National Communications Commission (NCC) reports about 91.6 million internet users in Nigeria in 2017 (Vanguard, 2017: para 1). It may not be out of place to say
that ICT has diffused into Nigeria. If it is so, then Nigeria would be ready to capitalize on e-health to achieve SDG 3 to ensure healthy lives and promote general well-being. Residents in Nigeria’s urban areas may have embraced new communication technologies, including mobile phones and the internet. To what extent have people in rural areas followed in the same footsteps? Therefore, in this study, the problem for investigation is finding out how accessible online facilities are to residents in rural communities in Ota and the extent to which these residents engage them in e-health.

2. Literature review
Communication is crucial to human existence. Usaini et al. (2016) claim that ICTs can be used to pass across information, create awareness, facilitate education; mobilize, develop and persuade (Ekamen & Sobowale, 2017). The messages they carry do influence people’s attitudes (Mogaji et al., 2016). What are communication and information technologies? Shreedeeep’s (2016) answers that they cover the broad fields of data and information processing, transmission and communication that connects different parts of the world. The internet is a communication technology. Notably, it has become a critical enhancer of government and political transformation; social and economic change; business and citizens’ interaction; and providing new and better ways of handling development issues (Ericsson, 2016). It is doubtful that there can be sustainable development without communication. Communication and development are entwined. Amodu (2008) comments that the reason for holistic and sustainable development is to secure the future. According to him, this can only be achieved through communication at all levels, including the grassroots.

Baran and Davis (2010, p. 6) explain that the mass communication environment has changed due to the internet entrance. Sobowale et al. (2015, p. 8232) remark that the internet as “the newest vehicle of communication has acquired a phenomenon higher rise above other channels of communications.” This communication technology and its accompanying tools are revolutionary advances in communication, creating what Amodu (2008) terms, “a next-door effect”. So far, the past three decades have witnessed tremendous growth and expansion in the capabilities and reach of Information and Communication Technologies (Sobowale et al., 2016, p. 8006). New communication technologies affect how health care is delivered. The media can be used to tell people about viral diseases. Wilson (2008, p. 2) points out that “human development is today powered by the driving force of technology...”. Expectedly, new communication technologies cause cultural changes. Aririguzoh (2013, p. 120) confirms that “communication methods shape human existence. Changes in communication technology inevitably create changes in both culture and the social order.”

The internet and digital technologies have made it possible for some people to access and disseminate news, knowledge, and information. Eysenbach (2001) explains that “e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the internet and related technologies. In a broader sense, the term characterizes not only a technical development but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and world-wide by using information and communication technology.” Faghihi et al. (2016) add that electronic health includes creating electronic records and integrating data on various stakeholders’ health care. Information and communication technologies are relatively new innovations in some communities, especially in rural areas. Gilhooly (2005), Heeks (2010), Henry (2012), Poster (2010), and World Health Organisation (2018) report that they have the potency for global connectivity. Useful innovations foster development.

It is only a healthy person who can engage in long sustenance acts (Palamuleni & Adebowale, 2014; World Health Organisation, 2020). As the adage says, health is wealth. Healthy individuals make up healthy societies. It is sad to note that not everybody has access to good and affordable health care. Some cannot promote, protect or restore good health to themselves, their families and loved ones because they do not have access to health facilities.
2.1. Theoretical framework

Everett Rogers propounded the Diffusion of Innovation theory to explain how innovations are taken up in a society. Rogers (1983, p. 5) describes diffusion as the “process by which an innovation is communicated through certain channels over time among the members of a social system.” Rogers identifies four significant elements in the diffusion of innovation. These are innovation, communication channel, time and the social system. He describes innovation as an idea, practise or object that is considered new by those who adopt it. Whether or not the idea is entirely brand new is of little relevance as long as the adopters agree it is new to them. The communication channel refers to the participants’ processes to create and share information to achieve mutual understanding. Here, the information shared is on the innovation. Time is the only measurement of an early or late adopter of innovation in a social system. Few innovators, early adopters, and early majority embrace innovation first, while the late majority and laggards bring up the rear as they usually resist changes. A social system consists of interrelated units engaged in a drive to solve a joint problem and achieve a common goal. The units in a social system include individuals and organizations (Rogers, 1983, p. 10).

Diffusion is a social process that leads to social change. Through the introduction of an innovation, the social system experiences an alteration in its structure and function. Change is inevitable whether the invention is accepted or rejected because both choices have their attending consequences. Rogers observes that the diffusion of any innovation is often difficult irrespective of how obvious its advantages are. A wide gap tends to exist between the available information and the extent to which it is used in most social systems. Rogers says that no innovation can sell itself. The rate of its diffusion depends essentially on the disposition of the members of the social system. Aririguzoh (2004) comments that information impinges on the political and sociocultural sub-systems.

The Diffusion of Innovation Theory provides a valuable theoretical basis for our current study because it helps us examine how well some residents in rural Ota communities have adopted ICT use. The internet is commercially available globally, and the Nigerian Communications Commission (NCC) reports that there are about 91.6 million internet users in Nigeria in 2017 (Vanguard, 2017: paral). These people consume electricity (Okorie et al., 2020). As Amoo et al. (2019) point out, science, technology, and demography link them. These factors may influence the adoption of new technologies. It may not be out of place to say that ICT has largely diffused in Nigeria. If it is so, then Nigeria is ready to capitalize on e-health to achieve the Sustainable Development Goal of ensuring healthy lives and promoting general well-being. On the other hand, some residents in some communities in Nigeria are still to adopt the innovation. Therefore, the theory serves as the framework for our study of Ota rural communities in Ogun State, Nigeria.

2.2. Research design

This study adopted the survey method. This procedure is a blueprint showing how data related to this study were collected and analyzed. The survey method allowed the researchers to gather the relevant information needed about the population. The researchers went to different communities where the respondents lived, to administer copies of the questionnaire. Since it was impossible to use all the residents in these different communities, a smaller number of these residents were randomly selected from each location. From their responses, generalizations were made about the other residents. They were sampled based on their online access and participation in sustainable e-health. These respondents completed close-ended copies of the questionnaire.

2.3. Study population

The population in this study are all the residents in the communities studied. These communities are Abule Ijoko, Afobaje, Borehole, Igbele Atan, Igboro Ijoko, Illogbo, Iyesi, Iyana Atan, Joju, Okede, Okesuna, Oko Baba Agege, Onibukun and Arinko. These residents are already grouped into different clusters or communities based on their geographical locations in Ota’s 14 communities.
2.4. Sampling size and sampling procedures
Some of the communities have identifiable streets or pathways, leading to different houses. In such communities, the first street or track was selected. The next two were left out until the area under investigation was covered. Where the houses were appropriately arranged in rows, sampling started with picking respondents living in the first houses on both sides of the street. The next two houses and the residents were ignored. This procedure continued for all the chosen places on the streets. Where the houses were not properly arranged, respondents were randomly picked from accessible households in the areas. Nevertheless, only one respondent, who must be at least 15 years old, was randomly selected from each available household. This is to ensure that the sampled elements are representative of the population of the study, and that every resident has an equal chance of being chosen. Overall, only 621 respondents were selected.

2.5. Data analysis
The responses from the returned copies of the questionnaire were coded into the SPSS (Version 25) software to generate an electronic spreadsheet. These individual responses are the numerical values of the responses from each respondent. The study used only two levels of analysis, namely: univariate and multivariate analytical techniques. Only frequency distributions were used in the univariate segment, while the two hypotheses formulated were tested using a linear regression technique.

2.6. Reliability and validity
This study is valid as the questionnaire measured what it sets out to measure concerning the study’s main objectives: online access and participation in achieving sustainable e-health using ICTs. The responses to the copies of the questionnaire and the interviews generated quantitative and qualitative data on testing the hypotheses. The responses did produce the required information necessary to measure the variables of interest. Therefore, whatever results are deduced from this study can be concluded to be valid. Cronbach’s alpha, α (or coefficient alpha), reliability was run to see if the questions accurately measured the two variables of interest: access and participation of the respondents. Cronbach’s alpha for access is 0.634, and that for participation is .819. These values indicate that the questions address these variables.

3. Results
The interpretations of the tables are presented first before the data tables. From Table 1, it can be seen that there were 621 respondents aged 15 and above. Most of the respondents were between 15 and 40 years old. They formed four-fifths of the respondents. However, those in the age bracket of 21–30 formed slightly less than a third of the total respondents. The male respondents were slightly more than half of the respondents. The rest were females. Slightly less than half of these respondents were married. The rest were not. Most of the respondents have some form of formal education. However, the bulk of them attended elementary and secondary schools. They live in 14 distinct communities in various parts of Ota.

From Table 2, it can be seen that more than half of the respondents do not have easy access to computers. Their not having easy access to use computers mean that these residents may not easily access information stored in computers or even store some, including those on health. Slightly less than two-thirds of the residents are aware of the internet. This means that they are aware of this ICT platform, and they can use the same to access information, especially on health. It must also be pointed out that more than one-third of the respondents are ignorant of this world-wide communication technology. Slightly more than half of the respondents claim to know how to use the computer. Most of the respondents in this category came from Afobaje, Joju and Iyana Atan. Yet still, a large number of the respondents do not know how to use the computer. Affected localities include Igbele Atan, Ilogbo and Oke Baba Agege. This could mean that the residents either do not have internet-enabled devices or do not have the necessary training to use such tools. More than half of the respondents have opportunities to use the internet. However, a large proportion of the respondents still does not. Perhaps, these are the citizens who do not have computers or other
mobile means to access the internet. They may also be not literate enough to operate such devices even though they may have them. However, two-thirds of the respondents who claim that they have opportunities to use the internet say that their access to this technology is restricted. In other words, they do not have full freedom and complete liberty to use the internet whenever they want to and however they wish to. Some limitations constrain these respondents.

From Table 3, it can be seen that most of the respondents cannot even use online facilities. Some others use it with difficulties or are assisted. These two groups add up to 55.2%. This means that more
than half of the respondents cannot use or easily use online facilities enough on their own. The rest can easily use and most efficiently use online facilities by themselves. The data show that slightly more than a third of the respondents who access the internet do so through their phones. Mobile telephones, especially smartphones, are very popular in Nigeria. Most average-income people can afford the cheap China phones that seem to have all types of features but are not very durable. Some other respondents visit cybercafés to access the internet. However, the number of respondents who use cybercafés is so low. In fact, during this fieldwork, the researchers only noticed two cybercafés in the communities visited. Both were not functional. Others personally subscribe while the smallest group uses the facilities available at their workplaces. However, it is necessary to note that a significant chunk of the respondents—forming a third of the whole respondents—does not even have access to the internet at all.

Almost one-third of the residents in rural Ota do not use the internet. This seems to agree with some respondents' claim that they do not have easy access to computers, are ignorant of

| Ease of use of online facilities                     | % (n = 621) |
|------------------------------------------------------|-------------|
| Most easily                                          | 21.3        |
| Easily enough                                        | 23.5        |
| Used with difficulties                               | 25.4        |
| Cannot even use it                                   | 29.8        |
| Total                                                | 100.0       |

| How the internet is accessed                        | % (n = 621) |
|------------------------------------------------------|-------------|
| Mobile phone                                         | 34.4        |
| Visiting cybercafé                                   | 16.7        |
| Personal subscription                                | 9.8         |
| Using office facilities                              | 5.8         |
| Do not access                                        | 33.3        |
| Total                                                | 100.0       |

| Regularity of using the internet                     | % (n = 621) |
|------------------------------------------------------|-------------|
| Everyday                                             | 25.4        |
| Every other day                                      | 8.2         |
| At least once a week                                 | 13.2        |
| At least twice a week                                | 21.1        |
| Do not use it                                        | 32.1        |

| Online facilities readily available                  | % (n = 621) |
|------------------------------------------------------|-------------|
| Social media                                         | 51.2        |
| Email                                                | 12.2        |
| Databases                                            | 7.9         |
| None                                                 | 28.7        |

| Hours spent weekly online                            | % (n = 621) |
|------------------------------------------------------|-------------|
| 1–2                                                  | 24.5        |
| 3–5                                                  | 15.5        |
| 6–8                                                  | 8.0         |
| 9–11                                                 | 5.6         |
| More than 12                                         | 13.5        |
| None                                                 | 32.9        |
| Total                                                | 100.0       |
the existence of the internet technology and do not even use it. Of the rest of the respondents that use it, about a quarter of these respondents do so daily. The rest use the internet at least once or twice a week. A least number of respondents use the internet every other day. The most readily available online facility for respondents is social media. There, the respondents make new friends and re-establish contacts with older acquaintances. They can also post and download contents freely. Some other respondents also have e-mail facilities, while the least percentage searched different databases for various information of interest. Nonetheless, more than one-third of the respondents do not use online facilities because they do not use the internet. Most of the respondents who use online facilities spend 1–2 hours doing so every week. A few number of respondents spend between 3 and 5 hours per week. Yet some others spend 6–8 hours online every week. The fewest number of respondents spends 9–11 hours every week. A few online addicts spend more than 12 hours weekly. Nevertheless, about one-third of the respondents do not spend any time online. This is consistent with the earlier findings that some respondents do not have easy access to computers, do not know how to use computers and have no opportunity to use online facilities.

3.1. Bivariate analysis illustrating association among variables of interest

The tables below show the relationships between some variables of interest. These variables are age and marital statuses.

Most respondents are aware of the internet, especially those in the age bracket of 15–40. From this table, residents who are 41 years and above know less about the internet. It can be said that knowledge of internet technology is inversely related to age. In other words, younger residents are more aware of the internet than older citizens.

Table 5 shows that more male respondents find it most easily and effortlessly enough to use online facilities than females. Nevertheless, an equal percentage of both genders find it difficult to use online facilities without assistance. Most females cannot even use the online facilities. In summary, it can be seen that male respondents find it slightly more comfortable than their female counterparts to use online facilitiesTable 4.
Table 5. Gender of respondents and ease of use of online facilities

| Age group               | Male (%) | Female (%) | Total (%) |
|-------------------------|----------|------------|-----------|
| Most easily             | 15.0     | 10.5       | 25.4      |
| Easily enough           | 12.2     | 11.3       | 23.5      |
| Assisted/with difficulties | 10.6    | 10.6       | 21.3      |
| Cannot use it at all    | 12.4     | 17.4       | 29.8      |
| Total                   | 50.2     | 49.8       | 100       |

3.2. Multivariate analysis on the impact of community residents’ access to online facilities and adoption of e-health

The first hypothesis tested whether the community access to internet impacts on e-health where e-health is the dependent variable, and available online facilities, easy access to computers, ability to use computers and awareness of the internet are the independent variables.

Table 6, which is a summary of the model, shows that residents’ access to online facilities impacts their adoption of sustainable e-health. The $R$ value of 0.713 implies that 71.3% of sustainable e-health is explained by the dependent variable of having opportunities to access online facilities. The ANOVA summary shows $F = 125.219$ at $p = 0.0001$. This shows that access to online facilities indicators significantly influences the adoption of sustainable e-health.

Respondents’ opportunities to use online facilities are measured by their ability to use and have easy access to computers, their awareness of the internet and what is available to them online. These factors influence their chances to access online facilities and directly impact their adoption of sustainable e-health. The coefficient table for the model indicates the coefficients of each of the indicators. The estimated parameters influencing respondents’ opportunities to access online facilities include their ability to use computers ($0.233; p < 0.01$), their ability to easily access computers ($0.182; p < 0.01$), awareness of online technology ($0.210; p < 0.01$) and availability of online facilities ($0.074; p < 0.01$). All of these coefficients have significance levels that are less than 0.05 level of significance. The decision rule rejects the null hypothesis but accepts the alternative hypothesis if the significance level is below .05. The significance level of .0001 is below this benchmark. Therefore, Hypothesis 1 is accepted because it can be concluded that residents’ access to online facilities influences their adoption of sustainable e-health.

3.3. Multivariate analysis on the impact of community residents’ online participation towards the achievement of the SDG goal on health

The second hypothesis tested to know if residents’ contribution to achieving the SDG goal on health is more significantly influenced by their online participation, where participation is the

Table 6. Linear regression illustrating respondents’ access

| Selected variable        | Unstandardized Coefficients | Standardized Coefficients | t  | Sig. |
|--------------------------|----------------------------|---------------------------|----|------|
| (Constant)               | 0.349                      | 0.056                     | 6.261 | .000 |
| Ability                  | 0.233                      | 0.038                     | 6.170 | .000 |
| Easy access              | 0.182                      | 0.034                     | 5.406 | .000 |
| Awareness                | 0.210                      | 0.043                     | 4.895 | .000 |
| Available online facilities | 0.074                    | 0.011                     | 6.998 | .000 |

$R = 0.713$ and $R^2 = 0.508; F = 125.219$ at $p = 0.0001$. 

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Table 7. Multivariate analysis on the impact of community residents’ online participation towards the achievement of the SDG goal on health

| Selected variable | Unstandardized Coefficients | Standardized Coefficients | t     | Sig. |
|-------------------|-----------------------------|---------------------------|-------|-----|
|                   | B              | Std. Error | Beta |     |     |
| (Constant)        | .844           | .118        | -    | 7.144 | .000 |
| How Accessed      | .138           | .035        | .154 | 3.964 | .000 |
| Where used most   | .417           | .041        | .445 | 10.128 | .000 |
| Used to do most   | .113           | .017        | .252 | 6.530 | .000 |
| Weekly Time       | -.172          | .030        | -.225 | -5.740 | .000 |
| Restriction       | .342           | .081        | .177 | 4.219 | .000 |

R = 0.741 and R² = 0.549; F = 149.890 at p = 0.0001

dependent variable. Residents’ access to, where they access, and what they use the internet to do most are among the independent variables. The other two independent variables include the amount of time they spend online weekly and the restrictions they face while using the internet.

The model summary indicates that residents’ online participation impacts their contribution to the achievement of the SDG goal on health. The R of .741 residents’ online participation is linked to the achievement of the SDG goal on health. This means that 74.1% of their contribution to achieving sustainable e-health is hinged on their online participation. The ANOVA summary shows F = 149.890 at p = 0.0001. This shows that online participation significantly explains residents’ contribution to the achievement of sustainable goal on health. The independent variable indicators are what they use online facilities to do most, the number of hours they spend online weekly, where they usually access online facilities, how they access these facilities and the restrictions they face using them. All these factors influence their online participation. In other words, if they do not engage in online participation, they cannot be beneficiaries of e-health benefits nor contribute to the achievement of sustainable e-health.

The coefficient table for the model indicates the coefficients of each of the indicators. These coefficients are how respondents access online databases, including e-health vaults, where they predominantly use online facilities and what they mostly use them to do. Also included are the number of hours they spend online per week and their online facility restrictions. How these respondents access online facilities has a coefficient of (0.138; p < 0.01); where they use online facilities the most (0.417; p < 0.01); and what they use online facilities to do the most, (0.113; p < 0.01). Other variables include how many hours they spend online weekly (0.172 p < 0.01); and the restrictions they face using online facilities (0.342; p < 0.01). The significant levels of all these coefficients are less than 0.05. In fact, all of them are .0001.

The decision rule rejects the null hypothesis and accepts the alternative hypothesis if the significance level is below .05. The significance level of .0001 is below .05. Therefore, Hypothesis 2 is accepted because it can be drawn that Ota residents’ contribution to achieving the SDG goal on health is more significantly influenced by their online participation. The more they engage in e-health, the more they will contribute substantially to sustainable health achievement.

4. Discussion
While many residents in different countries of the world practically appear to be clicking their mouses to connect to the magic of the internet, it is sad to note that some residents in some rural communities in Ota are still very far from this reality. About a third of the respondents are ignorant of internet technology and do not use it at all. Those who are most aware of the internet are in the
age bracket of 21–30. Those who are aged 51 and above know the least. In other words, younger residents are more aware of the internet. The older citizens are the least aware of this communication technology. This confirms the title of lagards that Rogers (1983) gave them. It is more likely that these elderly persons may need more health care. Additionally, they also make decisions on the type of health care to use for themselves and their families. The respondents that do not have opportunities to use the internet and do not have easy access to computers are computer illiterates. Therefore, it is not unexpected that some of the respondents suffer much awkwardness in using online facilities. The implication of respondents’ inability to access online health information or any other useful information placed on any online platform may mean their inability to make any meaningful contribution to achieving the United Nations goal of sustainable health.

These dampen Ossebaard and Van Gemert-Pijnen’s (2016) optimism that e-health will strengthen self-care opportunities, self-management and patient participation, and Gaddi et al.’s (2014) idea of global health innovation. The behaviour of these residents will continue to make the cost of health care high. They also disprove (Landers, 2010; 2013) claims that “health care is going home” and “connected health” can be at home.

Most of the respondents access the internet through their mobile phones. This may suggest online health service providers package their messages as short text messages and pass them through mobile telephone service providers to send to their subscribers. With high levels of unemployment in these areas, some may not even meet the payments to their service providers. This may further hinder their online access. It can be deduced that Ota rural residents’ low access to computers and lack of open opportunities to use the internet multiplies their helplessness in using online facilities. All these negatively impact their adoption of sustainable e-health. Respondents who experience difficulties accessing online messages may be discouraged from accessing health information and services through the internet. If respondents become computer literate, they will find it easier to cope with navigating online facilities and consequently accessing messages on sustainable health. It is essential to point out that the less time spent online by the respondents, the less they are likely to engage in activities concerning e-health. Their online participation will positively influence their contributions to achieving the SDG goal on health. Considering the great potential of ICTs to improve health service delivery, the respondents are at risk of missing out on benefits. These respondents would also not access readily available information on the internet to prevent and treat diseases. This points to the need to integrate ICTs in facilitating access to health information that is needful for patient self-management (National Academies of Sciences, Engineering and Medicine, 2015).

Everett admits that it takes time before every member of the society adopts innovations as they behave differently. Innovations are expected to cause behavioural changes and hopefully move the society forward. e-Health practice is an innovation in different parts of the world. Gaddi et al. (2014) write that it drives the much-needed global health-care innovation because of its affordability, quality and accessibility. However, it appears that it has not gained the required momentum to spread among residents in rural Ota areas. This seems to confirm Ogundile et al.’s (2019) claim of an uneven distribution of ICT adoption and implementation across Nigeria, especially in rural areas. If the people that may communicate the innovation of e-health to others are ignorant of internet technology, find it difficult to use or do not even have access to using it, they may also find it challenging to share this innovation with those in their interpersonal networks. Thus, the spread and adoption of e-health practice are almost non-existent. e-Health, so far, has failed to be diffused among rural Ota residents.

5. Conclusion and recommendations
This study provides evidence that some of the people living in the rural areas of Ota in southwestern Nigeria may not be contributing to the achievement of sustainable health because they can neither access the internet nor participate online. Therefore, it is recommended that the government and non-governmental organizations take urgent steps to increase Ota residents
access to the internet. The government can also facilitate the adoption of e-health by making and enforcing policies that enhance citizens’ online participation.

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