


# Knowledge and Attitude of Salesmen in Nigeria towards Telemedicine

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## Abstract

Need for prompt access to healthcare led to this cross-sectional study aimed to determine the knowledge and attitude of Sales men in Nigeria. It involved 362 Salesmen from some selected big companies in three states (Taraba, Benue and Adamawa) and Abuja. An electronic survey prepared using Google Form was used to collect information through social media such as WhatsApp. The research tool was validated by three experts in public health and the reliability test was done using Cronbach Alpha and a 0.7 co-efficient was obtained. The findings from the study revealed that 98.1% respondents have heard about telemedicine while 98.1% agreed that mobile health can help especially during emergency. However, 97.2% knew telemedicine involves Live consultation and interactive sessions from a distance. Nevertheless, 95.9% knew telemedicine makes it possible for one to access clinical services from a distance while 93.4% were aware that telemedicine has provision for storage and forwarding, 82.9% knew telemedicine makes it possible for one to easily reach medical specialists. On their attitudes towards telemedicine, 49.7% and 49.4% of the respondents strongly agreed and agreed respectively that telemedicine makes it easier for one to reach his doctor while 42% and 49.4% agreed and strongly agreed that telemedicine helps to curb the spread of infection. However, 47% and 49.7% respectively agreed and strongly agreed that telemedicine enables one to receive medical attention even at odd hours or while in remote villages. Meanwhile, 42% and 49.4% respectively agreed and strongly agreed that telemedicine reduces cost. Also, 44.2% and 51.9% of the respondents respectively agreed and strongly agreed that telemedicine offers appropriate medical follow-up. Nevertheless, 43.6% of the respondents agreed while 52.8% strongly agreed that telemedicine offers medical attention while one is in the comfort of his home. Finally, 45% and 47% of the participants respectively agreed and strongly agreed that with telemedicine one does not need to waste a whole day of work just to receive medical attention. In

conclusion, the knowledge of telemedicine was high (82.9%) among the Salesmen while the attitude reflected high (93.6%) acceptance. Therefore, there is a need to introduce the use of telemedicine Apps to the Salesmen and also subsidize the applications.

## Keywords

Attitude, Companies, Healthcare, Knowledge, Salesmen, Telemedicine

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## 1. Introduction

Man is always searching for that which will help to guarantee good health. To ensure prompt clinical service regardless of where and when, telemedicine is the answer. Telemedicine, according to Haleem *et al.*, (2021) [1] is a medical practitioner and is capable of offering clinical services to patients in remote areas. Telemedicine has been there for a long time, it is almost as old as the telephone but its benefits came to limelight during the COVID-19 pandemic [1]. It was originally developed to provide basic care to rural and underserved patients [2]. However, continuous advances in technology and healthcare new innovation have greatly increased its scope. Telemedicine can also be seen as a branch of health information technology that gives room for online treatment of patients. Improved technology has made telemedicine easier, even for those who are not computer savvy [3]. Telemedicine can be provided through video chat, computer, smartphones, video conferencing, e-mail and phone messaging [4].

As a branch of health information technology, telemedicine makes provision for online treatment of patients. It is of utmost benefit especially when one needs medical attention at odd hours especially during the middle-of-the-night care for babies and children [1]. Also, people experiencing mental health emergencies, including those who are at risk for self-harm, can quickly connect with a therapist or psychiatrist at any time of the day or night [5].

Haleem *et al.*, (2021) [1] proposes that telemedicine enables the development of applications to increase the benefits derived from telemedicine and ensures that patients receive the best of clinical care possible. Telemedicine through the telehealth initiative shows that it has the capacity to improve health of even the remote communities around the world defying all odds to bridge the physical, geopolitical, economic and social distances [6]. It is also a tool for provision of healthcare remotely as well as a tool for tackling global health challenges.

Telemedicine bridges the gaps in medical practice and utility between the geographical areas with high medical standard/expertise and the areas where medical services are inadequate [7].

Telemedicine is of utmost importance to all and sundry, patients, physicians and caregivers. [2] In Nigeria, telemedicine has the following benefits: increases access to care, reduces cost, improves delivery of care, reduces infection spread and convenience. Also, Hasselfield [3] states that telemedicine offers many ad-

vantages such as comfort and convenience, control of infectious illness. He goes on to say that telemedicine can give some specialty practitioners an advantage because they can see you in your home environment. For example, allergists may be able to identify clues in your surroundings that cause allergies. Though telemedicine has a lot of advantages, it also has some limitations such as the inability of a doctor to provide life saving care or laboratory tests digitally, Hackers and other criminals may be able to access a patient's medical data, especially if the patient accesses telemedicine on a public network or via an unencrypted channel [4]. A weak telecommunication network can make it difficult to offer quality care, providers must rely on patient self-reports during telemedicine sessions and if a patient leaves out an important symptom that might have been noticeable during in-person care, this can compromise treatment [4].

Since after COVID 19, a lot of people have carried out researches on the knowledge of Health workers or various people in medical profession on telemedicine. Researchers are yet to study the knowledge of Lay people (non medical personnels/health workers) on telemedicine.

On a weighing scale the benefits of telemedicine is far below the challenges. Now, how well do people in Nigeria know about telemedicine aside health workers? This is the aim of this study: to determine the knowledge and attitude of Salemen in Nigeria towards telemedicine.

## 2. Methodology

### 2.1. Study Design

This cross sectional study was carried out among salesmen of some selected big companies in Nigeria between January 2021 and December, 2021. Three states (namely: Taraba, Benue, Adamawa) and Abuja were selected using convenience sampling. An electronic survey prepared using Google forms was distributed using online platforms including Facebook close pages, Whatsapp group. Three hundred and sixty two questionnaires were distributed and once a respondent fills the responses on the Google form and submits, the researcher got an immediate update on the response. The research instrument was validated by three experts in public health while the reliability test was done using Cronbach Alpha and a co-efficient of 0.7 was obtained. The questionnaire was divided into three sections which comprised the demographic characteristics, the knowledge of the respondents on telemedicine and the attitude towards telemedicine. The demographic characteristics contained information on the respondents' age, level of education, area of residence, while the second section contained information that helped to assess the respondents' level of knowledge on telemedicine. It contained six items whereby each respondent ticked "yes" or "No" to indicate that he knew or did not know respectively the information on the item. The question was measured by a 2 scale rating where "yes was rated 2" and "No rated 1". Total score higher or equal to 67% was regarded high otherwise low.

The third section assessed the attitude of the Salesmen towards telemedicine.

This section contained eight items and beside each item, the respondent ticked either SA, A, SD or D to indicate that he strongly agreed, agreed, strongly disagreed, and disagreed respectively. The items were assessed using a Likert scale. A total score of 77% or above in this section was regarded as high otherwise low.

## 2.2. Data Analysis

Data analyses were performed using Statistical Package for Social Science (SPSS) 20.0 for Windows (SPSS Inc., Chicago, IL, USA). Data were transferred to an Excel data sheet. The results were presented as frequencies and percentages in tables and figures.

## 3. Results

A total of three hundred and sixty two respondents aged 18 to 45 years were recruited for this study. One hundred and sixty seven (46.7%) of the respondents were within the age range of 25 - 30 years. One hundred and one (27.9%) respondents were in the age group 18 - 24 years while 115 (31.8%) were in the age group 31 - 35 years. Thirteen (3.6%) respondents were in the age range 36 - 40 years while 11 (3%) were in the age range 41 - 45. Their educational level was as follows: primary school-289 (79.8%), secondary school-52 (14.4%) and tertiary education-21 (5.8%). Two hundred and one (55.5%) and 161 (44.5%) lived in urban and rural areas respectively as presented in **Table 1** below.

Three hundred and fifty five (98.1%) of the salesmen “Have heard of telemedicine” while 348 (96.1%) were aware that “one can fall back on mobile health especially during emergency”. However, 352 (97.2%) of the respondents knew that “telemedicine involves Live consultation and/interactive sessions from a

**Table 1.** Socio-demographic characteristic of the respondents.

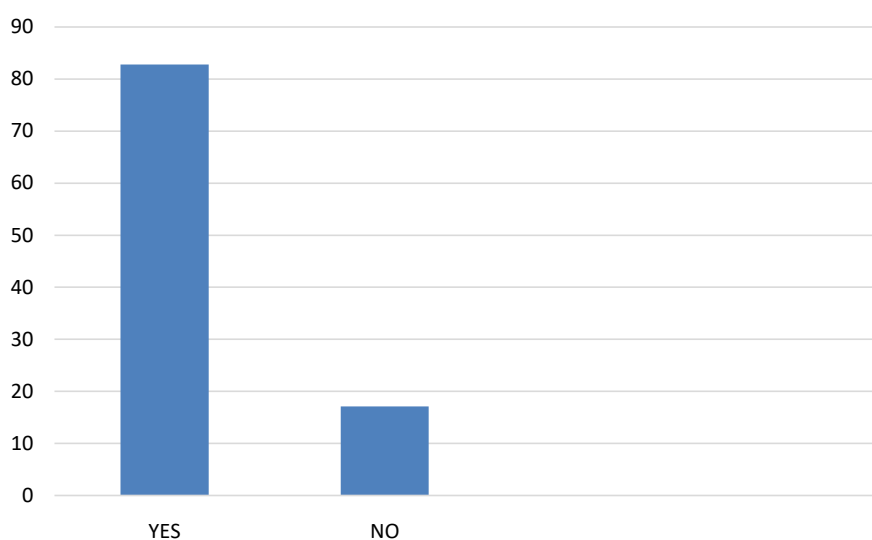
Variable	Parameter	Frequency	Percentage
Age	18 - 24 yrs	101	27.9
	25 - 30 yrs	167	46.1
	31 - 35 yrs	70	31.8
	36 - 40 yrs	13	3.6
	41 - 45 yrs	11	3
	Total	362	100
Education	Primary	289	79.8
	Secondary	52	14.4
	Tertiary	21	5.8
	Total	362	100
Residence	Urban	201	55.4
	Rural	161	45.5
	Total	362	100

distance while 347 (95.9%) were aware that “telemedicine makes it possible for one to access clinical services from a distance”. Meanwhile, 338 (93.4%) respondents were aware that “telemedicine has provision for keeping patients’ medical records and making it available when necessary” while 300 (82.9%) salesmen knew that “Telemedicine makes it possible for one to easily reach medical specialists no matter where the expert might be”. Meanwhile the level of Knowledge of telemedicine among the Salesmen of some selected big companies was 82.9% as presented in **Table 2** and **Figure 1** below.

One hundred and fifty eight (43.6%) and 181 (50%) respondents respectively agreed and disagreed to the benefits of telemedicine while 16 (4.4%) and 7 (1.9%) disagreed and strongly disagreed to the benefits of telemedicine. Meanwhile, one hundred and forty nine (49.7%) and 179 (49.4%) respondents respectively

**Table 2.** Knowledge of salesmen in Nigeria on telemedicine.

S/N	ITEMS	YES (%)	NO (%)
1	Have you ever heard of telemedicine?	355 (98.1%)	7 (1.9%)
2	One can fall back on mobile health especially during emergency.	348 (96.1%)	12 (3.3%)
3	Telemedicine involves Live consultation and/interactive sessions from a distant.	352 (97.2%)	10 (2.7%)
4	Telemedicine makes it possible for clinical services to be provided from a distance.	347 (95.9%)	15 (4.1%)
5	Telemedicine has provision for keeping patients’ medical records and making it available when necessary.	338 (93.4%)	24 (6.6%)
6	Telemedicine, makes it possible for one to easily Reach medical specialists no matter where the person is.	300 (82.9%)	62 (17.1%)

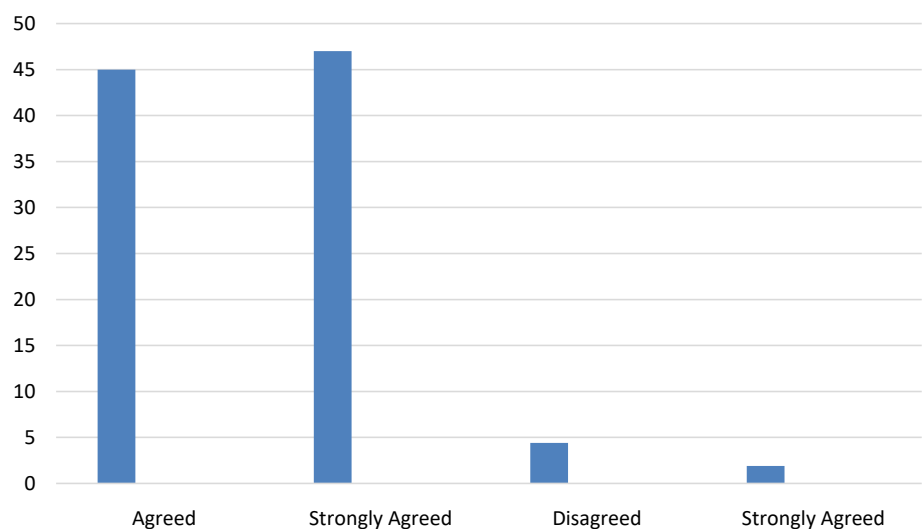


**Figure 1.** The level of knowledge of telemedicine among salesmen in Nigeria.

agreed and strongly agreed that “Telemedicine makes it easier for one to reach his doctor” while 152 (42%) and 179 (49.4%) respondents respectively agreed and strongly agreed that telemedicine helps to curb the spread of infection. Also, 170 (47%) and 180 (49.7%) participants agreed and strongly agreed that “Telemedicine enables one to receive medical attention even at odd hours or while in a remote village”. Meanwhile, 152 (42%) and 179 (49.4%) participants agreed and strongly agreed that telemedicine reduces cost. Also, 160 (44.2%) and 188 (51.9%) participants agreed and strongly agreed that they enjoyed appropriate medical follow up while 158 (43.6%) and 191 (52.8%) Salesmen respectively agreed and strongly agreed that they received medical attention while in the comfort of their homes. Meanwhile, 163 (45%) and 170 (47.0%) respondents respectively agreed and strongly agreed that with telemedicine one does not need to waste a whole day of work just to receive medical attention. This is presented in **Table 3** and **Figure 2** below.

**Table 3.** The attitude of salesmen in Nigeria towards telemedicine.

S/N	ITEMS	SA	A	D	SD
1	Telemedicine makes it easier for one to reach his doctor.	149 (49.7)	179 (49.4%)	16 (4.4%)	18 (6.0%)
2	Telemedicine helps to curb the spread of infection.	152 (42%)	179 (49.4%)	23 (6.4%)	8 (2.2%)
3	Telemedicine enables one to receive medical attention even at odd hours or while in a remote village.	170 (47.0%)	180 (49.7%)	9 (2.5%)	3 (0.8%)
4	Telemedicine reduces cost.	152 (42.0%)	179 (49.4%)	25 (6.9%)	6 (1.7%)
5	Telemedicine offers appropriate medical follow up.	160 (44.2%)	188 (51.9%)	10 (2.8%)	4 (1.1%)
6	Telemedicine makes it possible for one to receive medical attention even while in the comfort of his home.	158 (43.6%)	191 (52.8%)	8 (2.2%)	5 (1.4%)
7	With Telemedicine one does not need to waste a whole day of work Just to receive medical attention.	163 (45%)	170 (47.0%)	21 (5.8%)	8 (2.2%)



**Figure 2.** The level of the attitude of the salesmen in Nigeria towards telemedicine.

## 4. Discussions

This study showed that 167 (46.7%) participants were within the age range of 25 - 30 years while 3.6 % (13) and 3% (11) respectively were within the age range of 36 - 40 years and 41 - 45 years. However, 289 (79.8%), sales men were primary school leavers while 21 (5.8%) were university graduates. This observation showed that the university graduates were most likely the ones between the age range of 36 - 45 and most of them were managers. Most of the primary school leavers were within the age range of 25 - 30 years and most likely were the field salesmen.

The knowledge of the respondents on telemedicine were as follows: Three hundred and fifty five (98.1%) of the salesmen “Have heard of telemedicine”. This was because of the awareness and the need for telemedicine created by COVID 19 pandemics in addition to the nature of the job of the salesmen which involves constant movement from one area to another. The observation made in this study agrees with Alajwari *et al.*, (2021) [8]. Meanwhile, Elhadi M *et al.* [9] reported 56% awareness among their respondents. Also, [10] Abodunrin, LO *et al.* reported that about 72.7% of the respondents have heard about e-health. The lower knowledge obtained in the other studies could be because the respondents were health workers and might not have had the need for telemedicine. Three hundred and forty eight (96.1%) of the respondents were aware that one can fall back on mobile health especially during emergency. During emergency, time is a key factor that can help to salvage the situation and telemedicine makes this provision. The large percentage of the participants that were aware of this could have been because of personal experience. The finding of this study buttresses the report by Elhadi M *et al.* [9] that 92.4% of the participants thought that telemedicine could be used to save time. In this same vein, Albarraka AI *et al.* [11] reported that more than 90% of specialties professional were aware that telemedicine can save time. However, 352 (97.2%) of the respondents knew that telemedicine involves Live consultation and/interactive sessions from a distance. One would have expected a low percentage here but for the privilege of exposure and learning enjoyed by these Salesmen as a result of their interaction with their managers and foreigners in the companies. Meanwhile, Assaye BT *et al.* [12] reported a very low (15.33%) knowledge of live consultation among their participants. The difference in the knowledge in the two studies could be attributed to the privilege of social interaction with foreigners enjoyed by the participants in this study. However, 347 (95.9%) respondents were aware that telemedicine makes it possible for one to access clinical services from a distance. This is because of the nature of their job as well as interaction with superior officers. The finding made in this study agrees with the report by Alajwari HA *et al.* [8] that 85.9% of the participants believed that telemedicine reduces clinic visits. In addition, Elhadi M *et al.* [9] reported that 93.6% participants thought that telemedicine could help reduce hospital visits. Meanwhile, 338 (93.4%) respondents were aware that telemedicine makes provision for keeping patients’

medical records and making it available when necessary (storage and forwarding). This finding made in this study supports the report by Elhadi M [9] where 85.1% respondents believed same concept. Also Elhadi M *et al.* [9] reported that 91.5% respondents thought telemedicine could enhance patient-physician communication and cooperation. On the contrary, Ashfaq A *et al.* Assaye BT *et al.* [13] reported that a total of 42.9% of the respondents believed that telemedicine disrupts the doctor-patient relationship and causes a breach of patient privacy. However, Assaye BT *et al.* [12] reported that the majority (65.2%) of the respondents knew Store-and-forward telemedicine, and communication via telephone. Meanwhile, 300 (82.9%) of the salesmen knew that “Telemedicine, makes it possible for one to easily reach medical specialists no matter where the expert might be”. This could have been because most of them had enjoyed the privilege and this provision. However, according to Elhadi M *et al.* [9] 85.1% participants knew that telemedicine could help bridge the gap between primary and secondary care.

Meanwhile, the level of knowledge of telemedicine among sales men in Nigeria was high (82.9%). This is because the study was carried out after the lockdown was lifted in most of the states in the country. During the COVID 19, many people, including the salesmen found it difficult to leave their homes. Therefore in their quest for alternative way of attending to their needs which included healthcare, most of them found telemedicine. In line with the observation made in this study, Elhadi M *et al.* [9] reported high knowledge of telemedicine among physicians.

Concerning the attitude of the Salesmen towards telemedicine, 328 (90.6) respondents believed that telemedicine makes it easier for one to reach his doctor. This is because most of the respondents had enjoyed this privilege. Most of the doctors perceived this technology to be efficient in providing healthcare to underprivileged and remote areas [13]. However, 331 (91.4%) respondents believed that telemedicine helps to curb the spread of infection. The lockdown that forced people to stay at home during COVID 19 made a lot of people to resort to telemedicine which helped to control the spread of the infection. Elhadi *et al.* [9] reported that 94.8% of the respondents were of the opinion that telemedicine could help to control the spread of the disease, COVID 19 while Elhadi *et al.* [9] reported that 90% respondents thought telemedicine could help physicians control the spread of diseases. Meanwhile, 350 (96.7%) agreed or strongly agreed that telemedicine enables one to receive medical attention even at odd hours or while in remote villages. This indicates that tasks are done quickly with telemedicine because one does not have to wait till day break or to travel to where the doctor is. Most of the respondents knew that one can make a WhatsApp call or text or even make phone calls to reach a doctor late in the night to attend to their health issues. In addition, some of the managers utilize telemedicine App such as Tremendoc. The finding in this study backs the report by Alajwari *et al.* [8] that majority of the respondents agreed or strongly agreed that telemedicine per-



forms tasks quickly. It also agrees with the report by Elhadi *et al.* [9] that 92.4% of the participants thought that telemedicine could be used to save time. In the same vein 331 (91.4%) respondents believed that telemedicine reduces cost. Personal experience made them believe this. Most of the respondents who fell sick where they went to make supplies did not have to go back to their permanent residence to receive medical attention. Thus, transport cost was saved. This finding agrees with the report by Alajwari *et al.* [8] that telemedicine (92.1%) could reduce transportation costs. Also Ashfaq A *et al.* [13] reported that doctors perceived telemedicine as being capable of reducing preventable costs like transport cost. In addition, more than 90% of specialties professional agreed that telemedicine can save money Albarraka AI *et al.* [11]. However, 348 (96.1%) participants believed that telemedicine offers appropriate medical follow up. This could have been because they never had to cancel a journey to keep an appointment. All they need was to pick up their phone and make a call or text a message or connect through zoom or video conferencing and the appointment is kept. According to Elhadi *et al.* [9] 12% of their respondents posits that telemedicine could be used for follow-up and treatment response. Though this is low compared to the observation made in this study which could be because the respondents in this study most likely did not know the challenges experienced by health workers in trying to follow-up their patients cases through telemedicine. Meanwhile, 349 (96.4%) respondents believed that telemedicine offers medical attention while one is in the comfort of his home. The respondents enjoyed this service a lot during the COVID 19 pandemic. This finding supports the report of a previous study by Alajwari *et al.* [8] that 85.9% of the respondents believed that telemedicine reduces clinic visits. In addition, Elhadi *et al.* [9] reported that 93.6% participants thought that telemedicine could help reduce hospital visits. However, 333 (92%) believed that with telemedicine one does not need to waste a whole day of work just to receive medical attention. Even while at work, the respondents could connect to their doctors to receive medical attention and this facilitates medical diagnosis. The observation made in this study agrees with the report by Alajwari *et al.* [8] that more than half (58.8%) of the participants agreed or strongly agreed that telemedicine facilitates the diagnosis of people.

The attitude of the salesmen towards telemedicine was high (93.6%), 158 (43.6%) respondent agreed to the benefits of telemedicine while half (50%) of the respondents strongly agreed. Meanwhile, 16 (4.4%) and 7 (1.9%) participants respectively disagreed and strongly disagreed to the benefits of telemedicine. A high acceptance was given to telemedicine by the salesmen probably because most of them were not staying in one place. They always move away from their permanent residence to make supplies to customers or for “meetings”. That means that they were often not close to their personal doctors. Therefore, most of them almost always communicate with their doctors through phone calls, text messages, Whatsapp calls and videos. The high acceptance obtained in this study agrees with the report of the study by Alajwari *et al.* while Zayapruga S Sara Zan

*et al.* [14] reported having observed 39% high attitude, 31% moderate and 30% low attitude on his studies on “Awareness, knowledge, attitude and skills of telemedicine among health professional faculty workers in teaching hospitals”. Also Elhadi *et al.* [9] reported high attitude scores (82.6%) towards telemedicine among health care workers in a low resource country.

## 5. Limitation of the Study

To the best of the knowledge of the researchers there was no known study on the knowledge of telemedicine among non health workers to compare the data obtained in this study to.

## 6. Conclusion

The salesmen in Nigeria had high knowledge on telemedicine. They were aware that telemedicine can be utilized during emergency and that it involves live consultation and interactive sessions from a distance. They were equally aware that telemedicine makes it possible for one to reach medical specialists regardless of where the person is. The attitude of the Salesmen toured the same line as the knowledge; it was high/positive. Most of the Salesmen believed that telemedicine helps to curb the spread of infections and that it reduces the cost of treatment and saves time.

## Recommendation

It is therefore recommended that the Salesmen be encouraged further by exposing them to different telemedicine technologies and subsidizing the cost of the usage of the telemedicine Apps like Tremendoc.

## Conflicts of Interest

The authors declare no conflicts of interest.

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