

Knowledge of telemedicine in users of the civil hospital “Dr. Antonio González Guevara” of the city of Tepic Mexico, in the context of social confinement due to COVID-19

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Abstract

Objective: To know the perception of the users of the Civil Hospital, about the use of information and communication technologies as a tool for the use of Telemedicine. Method: A descriptive, quantitative analysis study was improved during the months of August and September of the year 2021. It is worth mentioning that the COVID-19 pandemic period was taking place during this study. See application 102 surveys of perception of the use of Telemedicine to users (patients and family members) of the Civil Hospital. Results: Of the people surveyed, 71% of people were obtained willing to use some electronic media for the use of Telemedicine. Conclusions: The users of the Hospital Civil Tepic, know and use Information and Communications Technology (ICTs), to communicate on a daily basis; Thus, Telemedicine is a decisive option regarding health situations, but the main limitation is the technological infrastructure. Keywords: Telemedicine; ICTs; Public Health.

Resumen

Conocimiento de la telemedicina en usuarios del Hospital Civil “Dr. Antonio González Guevara” de la ciudad de Tepic México, en el contexto de confinamiento social por COVID-19

Objetivo: Conocer la percepción de usuarios del Hospital Civil, sobre el uso de las tecnologías de información y comunicación como herramienta para el uso de la Telemedicina. Método: Se diseñó un estudio descriptivo, de análisis cuantitativo, durante los meses de agosto y septiembre del año 2021. Cabe mencionar que durante este estudio transcurría el periodo pandémico por COVID-19. Se aplicó 102 encuestas de percepción del uso de la Telemedicina a usuarios (pacientes y familiares) del Hospital Civil. Resultados: De los encuestados, se obtuvo un 71% de personas con disposición para usar algún medio electrónico para el uso de la Telemedicina. Conclusiones: Los usuarios del Hospital Civil Tepic, conocen y utilizan las Tecnologías de la Información y Comunicación (TIC's), para comunicarse cotidianamente; siendo entonces la Telemedicina una opción resolutive respecto a situaciones de salud, siendo su principal limitante la infraestructura tecnológica.

Palabras clave: Telemedicina; TIC's; Salud Pública.

Resumo

Conhecimento da telemedicina por usuários do Hospital Civil "Dr. Antonio González Guevara" na cidade de Tepic México, no contexto de isolamento social por COVID-19

Objetivo: Conhecer a percepção dos usuários do Hospital Civil, sobre o uso das tecnologias de informação e comunicação como ferramenta para o uso da Telemedicina. Método: Estudo descritivo, de análise quantitativa, desenvolvido durante os meses de agosto e setembro do ano de 2021. Vale ressaltar que o período de pandemia da COVID-19 estava ocorrendo durante este estudo. Foram aplicados 102 questionários de percepção do uso da Telemedicina aos usuários (pacientes e familiares) do Hospital Civil. Resultados: Dos pesquisados, obteve-se 71% das pessoas dispostas a utilizar algum meio eletrônico para o uso da Telemedicina. Conclusões: Os utentes do Hospital Civil Tepic, conhecem e utilizam as Tecnologias de Informação e Comunicação (TIC), para comunicarem diariamente; Assim, a Telemedicina é uma opção decisiva em relação às situações de saúde, sendo sua principal limitação a infraestrutura tecnológica.

Palavras-chave: Telemedicina; TICs; Saúde Pública.

Introduction

The COVID-19 pandemic situation in the world from 2020 to date has marked important changes in all areas and not only in the health area. Due to the need to carry out confinement, the need was seen to

implement technological forms of communication (some already existing) that were adapted to a protection procedure. Thus, the use of communication technologies (ICTs) has played an important role in the development of daily activities. Telemedicine was one of the health technologies implemented in some places.

At the end of this century, due to the possibility of remote transmission of various forms of communication in health, a technological revolution originated¹ and in a more advanced scenario, there were surgical operations through remote commands (Telesurgery).

The World Health Organization defined Telemedicine as “The use of information technology to bring medical services and information from one place to another”². It is also defined as the transmission of information and services related to health through telecommunications technology³. Telemedicine can be used from two health professionals discussing a case by phone to the use of advanced technology to carry out consultations, diagnoses, and even remote surgeries in real-time⁴.

Currently, thanks to various applications (Apps), complementary devices, and increased internet broadband speeds, they have become a fundamental medical tool, especially when combined with care practice and self-training. All the health systems of the world evaluate the possibilities of incorporating Telemedicine in favor of health, giving greater coverage to the morbidities of the planet⁵.

Overview of Internet use in Mexico

In Mexico, according to the INEGI (National Institute of Statistics, Geography, and Information- Instituto Nacional de Estadística, Geografía e Información) in 2019, users in urban areas were about 76.6% and in rural areas were 47.7%⁶. According to data from the National Survey on Availability and Use of Information Technologies in Households (ENDUTIH- Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares) in 2019, 20.1 million households (56.4% of the national total) have an Internet connection⁷. The three main means for connecting users to the Internet in 2020 were: smartphones with 96.0%, laptops (33.7%), and television with Internet access (22.2%)⁸.

Despite the limitations faced by indigenous populations in terms of technology, the use of ICTs (especially cell phones and the Internet) has increased due to their global massification and the presence of new socialization scenarios for adults and young people. Despite the digital and cognitive gap that exists in rural and indigenous contexts, indigenous communities could appropriate ICTs, depending on their possibilities and local conditions⁹.

Overview of the Internet in Nayarit

Nayarit, is located in the northwest of the territory of Mexico. It borders the states of Sinaloa, Durango and Zacatecas to the north, and the state of Jalisco to the east and south. It is divided into 20 municipalities. Its capital is Tepic. Its population is 1 million 235 thousand, 456 inhabitants¹⁰.

In Nayarit, only 53.3% of the population has Internet access, placing it below the average for all the states in the country⁶. According to the Diagnosis of mobile service coverage in indigenous peoples of 2018, the Cora indigenous peoples (Nayarit), have at least 50% of the population with mobile service coverage in at least one technology (2G, 3G, or 4G)¹¹.

Telemedicine at Tepic Civil Hospital

The Civil Hospital is a second-level concentration unit, with an installed capacity of 133 registered beds and 75 non-registered beds. It has basic specialties, subspecialties, and cabinet services¹². On March 27, 2006, in Tepic, Nayarit, the Telemedicine service was incorporated, being a pioneer at the national level, bringing health benefits to the most vulnerable population. Currently, the operation of Telemedicine in the Civil Hospital is through interconsultations, in which the decision to use Telemedicine is under the decision of health workers, and generally, it is between doctor-doctor. Only on special occasions, there is the presence of the patient. Due to the lack of defined processes, patient-doctor consultation is not carried out.

The Civil Hospital Telemedicine Work Plan aims to “bring specialists closer to the most vulnerable population that requests interconsultation, to contribute to the achievement of Nayaritas' health and reduction of out-of-pocket expenses. According to its objectives which are “to provide communication services and link technology to all first-level care units that are in marginalized areas and with the highest population growth in the state of Nayarit, having contact, benefiting the service”, it was intended to know the knowledge of users about the use of Information and Communication Technologies (ICTs) and the possible use of Telemedicine through the aforementioned questionnaire.

Method

This is a descriptive study, with a quantitative approach presenting the perception of the users of the

Civil Hospital of Tepic “Antonio González Guevara”, regarding the use of some ICTs for their daily use and their probable use in Telemedicine from their preferences and possibilities from their context. A semi-structured questionnaire oriented to a quantitative analysis was created. The sample included 102 hospital users. This questionnaire was applied in August and September of 2021. The inclusion criterion was being a user of the hospital. The questionnaire was divided into two parts, the first to know the state of the population regarding the use of ICTs and the second to know the preference and the possibility of using Telemedicine.

Process:

1. The measurement instrument is made consisting of a questionnaire with 11 questions.
2. The survey was applied as a pilot test to relatives of patients and patients who attended the consultation, for two weeks.
3. The preliminary results of the pilot test are analyzed.
4. The number of questions was increased to have

more complete information.

5. Questionnaire is applied again.

6. Results are analyzed through frequency measures.

Results

After applying the data collection instruments, we obtained the following results.

Sociodemographic data: We interviewed 102 people, 48 men (47.05%) and 54 women (52.9%). The average age of the interviewees was 36 years old.

The age was composed of 31 people under 30 years old, 62 people who were 30 years old but under 60 years old, and 9 people who were 60 years old or older.

We found that 50 of the users claimed to belong to the municipality of Tepic, (47 to the city of Tepic and 3 communities belonging to the municipality) and 50 to be foreigners within the same state, and 2 were from outside the state [Table 1].

Table 1. Place where the participants belong

Place where they belong			Total
Municipality of Tepic	City of Tepic	47	50
	Tepic Community	3	-
	Municipalities of Nayarit	50	50
Out of State		2	2
Total			102

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

In 99.02% (101 people) of those surveyed, they know how to read and write.

Internet access: Among the participants, 65% claimed

to have good internet, 19.6% mentioned that “sometimes” and 14.7% mentioned not having good internet [Table 2].

Table 2. Internet access

	Frequency	%
Yes	67	65.6
No	15	14.7
Sometimes	20	19.6
Total	102	100

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Original people: Of the total number of respondents, 27 people (25%) stated that they belonged to some original ethnic group, 24 people to the Cora/Naayeri, and 3 mentioned being Huichol/Wixárika.

Seventeen people belonging to some native people mentioned living outside the municipality of Tepic and 10 people mentioned living in the municipality of Tepic. Seven people belonging to some native people mentioned “NOT having good access to the Internet”,

8 people mentioned that “Sometimes” have good access to the Internet and 12 mentioned that “YES they have good access to the Internet”. Of the people belonging to some natives who mentioned having “Good Internet access”, 7 (58.33%) live in the city of Tepic, and 5 (41.6%) live in a community in the state.

Telemedicine Term: Regarding the question of knowing the meaning of what Telemedicine is, 86 people (84.31%) mentioned not knowing it and only 15 people

(14.70%) mentioned knowing it. Regarding the question about what is thought, believed, or imagined about the meaning of Telemedicine, 34 people (33.3%) mentioned not knowing anything or not having an idea of the concept, 28 people (27.4%) mentioned something related to television, and 63 (61.7%) mentioned successful topics related to Telemedicine, although they did not know the definition of Telemedicine as such.

Use of video calls: Seventy-nine people (77.45%) have used video calls at some time and 23 people (22.54%) mentioned that they do not use this tool. Within the frequencies, most of the interviewees (40 people, 39.2%) mentioned using video calls a little, 26 people (25.4%) mentioned using video calls "OCCASIONALLY", 23 people (22.5%) mentioned, "NEVER" using video calls and only 13 (12.7%) people mentioned using "A LOT" of video calls [Table 3].

Table 3. Use of video calls

	Frequency	%
Never	23	22.54
Little	40	39.21
Occasionally	26	25.49
A lot	13	12.74
Total	102	100

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Of the total number of people under 30 years old, we found that 28 (27.45%) had used video calls at some time in their lives. Of people over 29 and under 60 years old, we found that 45 (44.1%) have used video calls at some time in their lives

Regarding older adults (people aged 60 and over), 6 of the total number of respondents have ever used video calls. This figure would represent 66.6% of the total number of older adults aged 60 and over [Table 4].

Table 4. Use of video calls by age group.

	Frequency	%
Under 30 years old	28	27.4
30 years old or older, but younger than 60	45	44.1
60 years old or more	6	5.8
They have not used video call	23	22.5
Total	102	100

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

According to the results, people under 30 years old are the age group that uses video calls most frequently, the group of people from 30 to 60 years old are the people who are characterized by making video calls

occasionally and people between 60 years old and older are the groups that are characterized by making video calls less frequently [Table 5].

Table 5. Frequencies of use of video calls by age group

	Never	Little	Occasionally	A lot	Total
Under 30 years old	3	9	11	8	31
30 years old or older, but younger than 60	17	26	15	4	62
60 years old or more	3	5	0	1	9
Total	23	40	26	13	102

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Use of Telemedicine: We found only 3 people who had previously received an interconsultation through Telemedicine. One case was due to COVID, and the other two were related to pediatrics; both received instructions on the treatment of patients.

the question Would you use any means of personal communication, for consultation, advice, or health information? 73 people (71.5%) stated that "Yes" they would use Telemedicine, 6 said "Maybe" and 23 people (22.5%) stated, "No" (See Table 6).

Availability/Openings of the Use of Telemedicine: In

The most popular positive reasons were speed and

protection against acquiring the Covid-19 disease (pandemic protection) [Table 6]. For others, their comments were “it is more practical” and “it saves time to commute”.

Table 6. Availability to use Telemedicine

Answer	Frequency	%
Yes	73	71.5
No	23	22.5
Maybe	6	5.88
Total	102	100%

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

The main negative comments (I would not use Telemedicine) were not knowing how to use digital means of communication (they would need help to carry it out) (8 people), to a lesser extent (3 people) they answered that face-to-face is more formal (avoiding bias in medical review) and 3 people mentioned insecurity and handling of the use of confidential data. The reason of the people who answered "MAYBE" were: “As long as it is not something serious”, “Maybe I would use it, but the internet fails a lot”, “If there is someone who supports me to use the service, I would use it”. After briefly explaining the concept of Telemedicine, they were asked which means of communication they would prefer to use, resulting mainly in a frequency of 30 (55.6%) the traditional call, and 22 (40.7%) the video call [Table 7].

Table 7. What means of communication would you use for the use of Telemedicine?

Means of communication	Frequency	%
Traditional call	57	55.8
Video call	39	38.2
Text messaging	3	2.9
Some platform	1	0.9
None	2	1.9
Total	102	100

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Of the total number of people belonging to an ethnic group, 85.1% would prefer to use traditional calls and 14.8% would prefer to use video calls [Table 8].

Table 8. Preference of means of communication to carry out Telemedicine by people belonging to an ethnic group.

Means of communication	Frequency	%*
Traditional call	23	85.1
Video call	4	14.8
Total	27	100

* Of the total number of people of some ethnic group

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Opening/Availability to Use Telemedicine: The main causes of the total number of people who stated “YES” to using Telemedicine were saving time and shortening distances, and in second place for protection from the pandemic [Table 9].

Table 9. Reasons why you would use Telemedicine

Reason	Frequency	%
Save time/Shorten distances	39	53.4
Pandemic protection (do not go out)	13	17.8
Have more contact with the doctor	12	16.4
Emergency	5	6.84
Other reasons (convenience, avoiding expenses)	4	5.47
Total	73*	100

* Of the total number of people who answered that they would use Telemedicine

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Of the total number of people belonging to an indigenous group who stated "YES" to use Telemedicine, the main causes were saving time and shortening distances, and in second place in case of emergency [Table 10].

Table 10. Reasons why YES, they would use Telemedicine (People belonging to some ethnic group/native people)

Reason	Frequency	%
Save time/Shorten distances	6	40
Emergency	3	20
Have more contact with the doctor	3	20
Pandemic Protection	2	13.3
Avoid expenses	1	6.6
Total	15*	100

* People who answered Yes to using Telemedicine and who belong to some ethnic group.

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

The main reason for the total number of respondents not using Telemedicine was not having a broad command of ICTs, this was 35% (8 people) [Table 11].

Table 11. Reasons why you would not use Telemedicine

Reason	Frequency	%
I don't know how to use it, I need support	8	35
I prefer face-to-face consultation or advice	6	26
I don't have good internet	5	22
Insecurity (Handling Confidential Data)	4	17
Total	23*	100

* Of the total number of people who answered that they would use Telemedicine

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

The main reason the people surveyed belonging to an indigenous group would not use Telemedicine was that they did not know how to use it and secondly because they did not have the technological infrastructure that provides coverage [Table 12].

Table 12. Reasons why they would not use Telemedicine (People belonging to an ethnic group/original peoples)

Reason	Frequency	%
I don't know how to use it/I need support	5	55.5
I do not have a good signal	3	33.3
Insecurity (Handling confidential data)	1	11.1
Total	9	100

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Use of instant messaging to send data: Within the question of the use of instant virtual messaging, such as the use of WhatsApp, or Facebook Messenger, for sending data (such as X-rays, analysis results, photos, or video) for advice or medical consultation, most of

the interviewees (79 people, 77.4%) said YES, they would send some information by these electronic means, 13 people (12.7%) answered “No” and 10 (9.8%) answered “Maybe” [Table 13].

Table 13. Use of instant messaging to send data related to medical consultation.

	Frequency	%
Yes	79	77.4
No	13	12.7
Maybe	10	9.8
Total	102	100

Source: Questionnaire use and availability of telemedicine in users of the Civil Hospital of Tepic

Regarding whether instant messaging would be used to send data (x-rays, prescriptions, or some study), for medical follow-up, the main positive reasons (if it would send data), were that data would be sent because of its speed, and to speed up time. Less frequently, they mentioned “Not being assisted” (not going to the hospital and returning without being treated) and the speed of interpreting results and establishing a diagnosis.

Among the negative answers, they also mentioned ignorance of the use of technologies and, to a lesser extent, not having a good internet signal. This response was mostly referred to by foreigners or people belonging to some indigenous group.

Among the people who belong to some native people, 15 people mentioned that “Yes” they would use some electronic means to receive consultation or medical advice and only 9 people belonging to some native people mentioned that “NO” they would use some electronic means to receive consultation or advice medical. This was due to the limitation of not having good internet access.

Among the people belonging to some ethnic groups and who “YES” would use Telemedicine, they mentioned not going to the city as an advantage.

Discussion and Conclusion

According to the results, we found that most of the people who responded favorably to using some means of communication to receive Telemedicine belong to the state capital. This may be due to the facilities that are presented in the city, to exercise Telemedicine. On the contrary, most of the people who answered negatively were foreigners (within the state of Nayarit) inhabitants of a town or community that does not have various communication services. Their only option was

the use of internet data, which is also limited in some communities due to the little signal that it represents at different times of the day. This agrees with the INEGI, regarding the existence of areas of difficult access to telecommunications (internet) in the country, especially mountainous areas such as those in the state of Nayarit, where several people surveyed belong.

Regarding the interviewees belonging some native people, we found that most of the participants showed an interest in using Telemedicine. Their limitation was not having good access to the internet and secondly not knowing how to use electronic means of communication such as the cell phone. The people who answered that they would NOT use Telemedicine belonging to some native people were female. Most of the people belonging to an original town preferred the use of the traditional call. This can be seen in the IFT and INPI data, in which they mentioned that in Nayarit only 50% of the indigenous population has access to 2G, 3G, or 4G networks. However, in the comments of the respondents they mentioned that only a stable way in some of the most remote locations they have a 2G network, this is the one used to make traditional calls. It is important to point out that not only is telecommunications access and infrastructure necessary in remote communities but also training in the use of ICTs in vulnerable communities for true digital inclusion.

A small percentage of those who would not use Telemedicine mentioned feeling insecure about how their sensitive data will be used. The Telemedicine service of the Civil Hospital covers this aspect but the relevance has not been given as it should.

Regarding the group of older adults (60 years and over), more data is needed to have a broader picture of the subject, because in this sample the participants were from a non-significant sample.

This study shows that the population surveyed, including the most vulnerable people, knows and uses ICTs, with Telemedicine being a decisive option regarding medical care, its main limitation being not having optimal access to carry it out.

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