

USE OF THE INTERNET AND SOCIAL NETWORKS IN ORTHOPEDICS AND TRAUMATOLOGY AND PERSPECTIVE OF POST COVID TELEMEDICINE

USO DA INTERNET E REDES SOCIAIS NA ORTOPEDIA E TRAUMATOLOGIA E PERSPECTIVA DA TELEMEDICINA PÓS-COVID

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ABSTRACT

The internet has been changing the doctor-patient relationship in the orthopedic area, especially in recent months, due to the COVID-19 pandemic. Objective: To gather information on the use of social networks regarding orthopedics and traumatology, as well as patient opinions on telemedicine. Methods: Cross-sectional study with 237 patients discharged from the orthopedics outpatient clinic of the Odilon Behrens Metropolitan Hospital, in service exclusively for the SUS, answered a questionnaire containing questions related to the use of the internet, social networks, and telemedicine in the current context. Results: Most participants never or rarely look for information on the internet before or after the medical appointment; but when they do, the search results are rarely enlightening. There was a lower demand for information among men when compared with women. There were no significant differences regarding the age of the participants who agreed that most appointments will be carried out over the internet in the future. Conclusion: The search for medical information on social networks is a global reality, but it still generates disagreements regarding its effectiveness and scope. More studies are needed in different orthopedic services for further analysis on the use of social networks within this field. **Level of Evidence IV, Case Series.**

Keywords: Orthopedics. Internet. Telemedicine. Trauma. COVID-19. Health.

RESUMO

A internet vem alterando a relação médico-paciente na área ortopédica, principalmente nos últimos meses, em função da pandemia da COVID-19. Objetivo: Reunir informações sobre o uso de redes sociais na ortopedia e traumatologia, assim como opiniões de pacientes sobre telemedicina. Métodos: Estudo do tipo transversal. 237 pacientes egressos do ambulatório de ortopedia do Hospital Odilon Behrens, de uso exclusivo do SUS, responderam a um questionário contendo questões relacionadas ao uso da internet, das redes sociais e da telemedicina no contexto atual. Resultados: A maioria dos participantes nunca ou raramente buscam informações na internet antes ou depois da consulta; mas, quando o fazem, os resultados da pesquisa raramente são esclarecedores. Houve uma menor procura de informações entre os homens quando comparados às mulheres. Não houve diferenças significativas quanto à idade dos participantes que concordaram que grande parte das consultas serão realizadas pela internet no futuro. Conclusão: A busca por informações médicas nas redes sociais é uma realidade mundial, mas ainda gera divergências referentes à sua eficácia e abrangência. São necessários mais estudos em serviços ortopédicos distintos para maior análise sobre o uso das redes sociais nesse segmento. **Nível de Evidência IV, Série de Casos.**

Descritores: Ortopedia. Internet. Telemedicina. Trauma. COVID-19. Saúde.

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INTRODUCTION

The Internet's influence on the doctor-patient relationship has intensified in recent years and months due to the great

dissemination of knowledge in the health area through digital means combined with the change in routine care and appointments as a consequence of the current COVID-19 pandemic.

All authors declare no potential conflict of interest related to this article.

The study was conducted at Hospital Metropolitano Odilon Behrens.

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Patients and physicians seek to increase the amount of information in various areas of medicine in the field of diagnosis and treatment of diseases, and one of the most practical and accessible forms to do so is with the use of social networks and the Internet. Regarding the orthopedic and traumatological field, both the Internet access and the use of various search medias have increased considerably in the last two decades within the orthopedic area.¹

In 2012, 1,828 individuals were interviewed in several states of Brazil; about 90% conducted searches on health issues on various digital information media.² Despite this advance, several issues remain; patients do not receive adequate information about their condition, and most websites do not employ any quality criteria for the dissemination of information.³

A study conducted in Maryland in the United States, in 2018, showed that, of 213 patients undergoing follow-up at a medical orthopedic sports clinic, 54% used the internet as a way to acquire information about their condition even before consulting with the specialist.⁴

To estimate the real usefulness of the Internet and social networks as a beneficial source of information, especially in a troubled period, such as that experienced by the pandemic of the COVID-19, it is essential to determine the ease of access, reliability of the sources, and quality of the results obtained by patients. The main objective of this study is to gather information about the patient's research method, the sources used, and their opinion on the reliability of the results obtained by these online searches, before and after their medical appointment. Consequently, we aim to stimulate reflection on the use of telemedicine in orthopedics and traumatology.

METHODS

This is a cross-sectional study with the application of a questionnaire (see Annex 1) in the outpatient orthopedics and traumatology service of the Odilon Behrens Metropolitan Hospital in Belo Horizonte, in the State of Minas Gerais, from September 2020 to March 2021. The research was duly submitted to and approved by the Ethics and Research Committee (CAAE: 38877820.0.0000.5129; opinion No.: 4.502.501). The study adopted the following inclusion criteria: Patients who required a scheduled follow-up appointment after receiving care in the SUS emergency room of the Odilon Behrens Metropolitan Hospital and who agreed to and signed the terms of the Informed Consent Form (Annex 1). On the other hand, the exclusion criteria were: Patients under 18 years of age and patients over 80 years of age.

A total of 237 patients answered a questionnaire containing 8 questions related to the availability of internet access and social networks, reliability of the sources and information obtained according to the patient's perspective, and on the use of telemedicine in the current situation.

RESULTS

Descriptive statistics were used to explore and summarize the collected data. The quantitative variables were presented in mean, standard deviation (SD), minimum and maximum. For qualitative variables, absolute and relative frequencies were used. The normality of data was assessed using the Kolmogorov-Smirnov test. The comparison of frequencies between qualitative variables was performed with the Chi-Square test. To compare the ages of the participants according to the answers in each question, the Kruskal-Wallis test was used with Dunn's post-hoc. When the age comparison was performed for the yes or no answer on question 6, the Mann-Whitney test was used. A significance level

of 0.05 was adopted. All analyses were performed in the IBM SPSS Statistics 20.0 program.

Characterization of participants

The results of this study are based on the responses of 237 individuals: 130 (55%) women and 105 (44%) men. Only 2 (1%) participants did not report their gender.

Figure 1 shows the age groups of the study participants.

Search for information on the internet

Figure 2 shows the search for information on the Internet, before and after the medical appointment. We observed that most participants never or rarely seek information on the Internet, before or after their medical appointment.

Table 1 shows the relevance of the information obtained on the Internet. Most study participants (48%) say that internet search results are never or rarely enlightening. Similarly, 27% of participants say that internet search results are rarely in accordance with the medical explanation.

Table 2 shows the most used sources for searching information on the Internet. Notably, Google is the most commonly used platform, followed by YouTube. Few participants use Instagram or Facebook to search for information.

Regarding most appointment being conducted over the Internet in the future, 171 (72%) of the participants agree with this statement and 66 (28%) disagree.

Table 3 and Figure 3 show the participants' perception on attending a medical appointment or follow-up by video, via the Internet. We found a very diverse opinion among the participants. However, a small part of the participants points out that attending appointments and follow-ups via the Internet would be their first option.

Analysis by gender

Table 4 and Figures 4 to 8 show a comparison between the opinion of men and women. The two people who did not indicate their gender were excluded from these analyses. We found significant differences between the sexes in relation to the search for information after the appointment, revealing a lower demand for information by men when compared with women ($p < 0.001$). On the other hand, men are more optimistic about most appointment being conducted via the Internet in the future in relation to women ($p < 0.001$).

Analysis of ages

Table 5 and Figures 9 and 10 show a comparison of the participants' ages according to the search for information before or after the appointments. We found that those who never search for information before and after the appointments have a mean age significantly higher than those who rarely, frequently, or always search for information ($p < 0.001$).

Data presented in mean (standard deviation). p -value for the Kruskal-Wallis test. *Statistically significant difference in relation to the age of those who responded rare, frequently, or always ($p < 0.001$). No significant differences were found between the ages of those who answered yes ($M = 48.1$, $SD = 17.9$) and no ($M = 50.9$, $SD = 17.8$) in relation to most appointments being conducted via the Internet in the future (p -value = 0.194).

Table 6 shows the comparison between the ages of the participants according to whether they feel comfortable or not to attend a medical appointment and follow-up by video via the Internet. We found that the age of those who say they "would never" and "would be my first option" is significantly higher than those who responded "rarely" and "could be useful in many cases" both for appointment and for follow-up ($p < 0.001$).

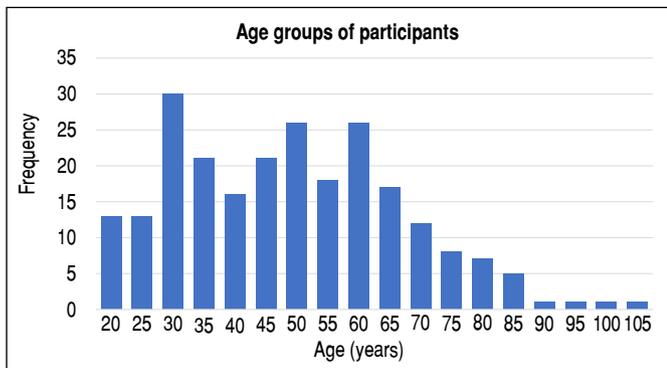


Figure 1. Age of study participants.

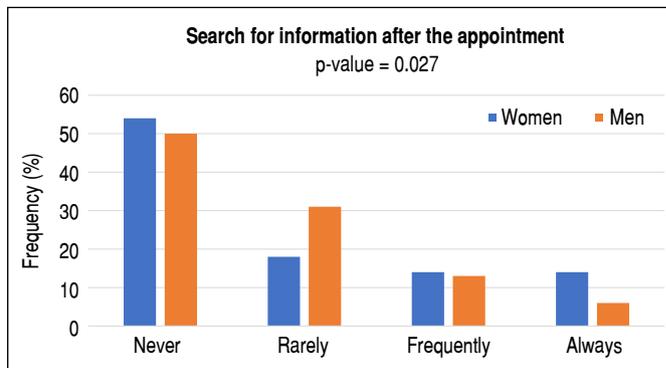


Figure 5. Search for information on the internet after the appointment.

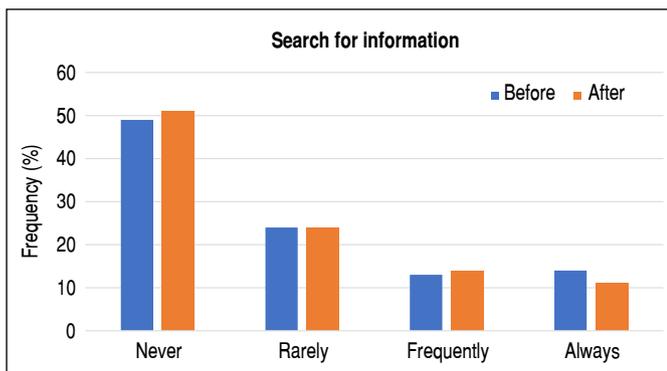


Figure 2. Search for information on the internet before and after the consultation.

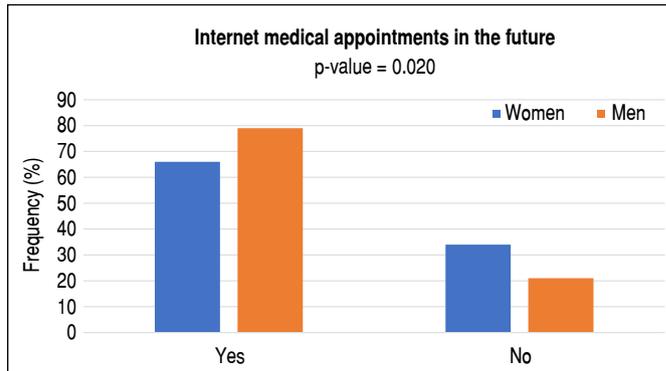


Figure 6. Appointment via the Internet in the future.

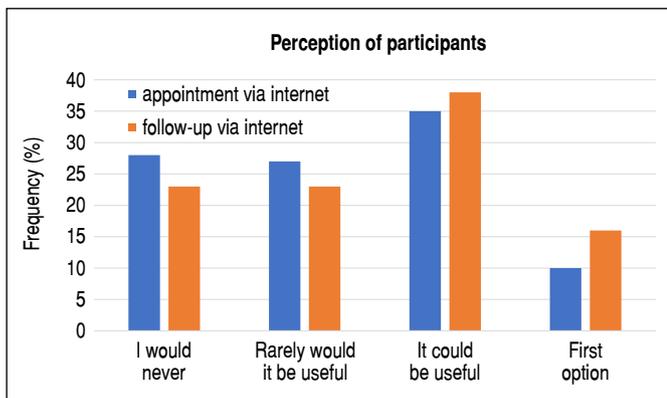


Figure 3. Participants' perception of attending a medical appointment or follow-up via video, over the Internet.

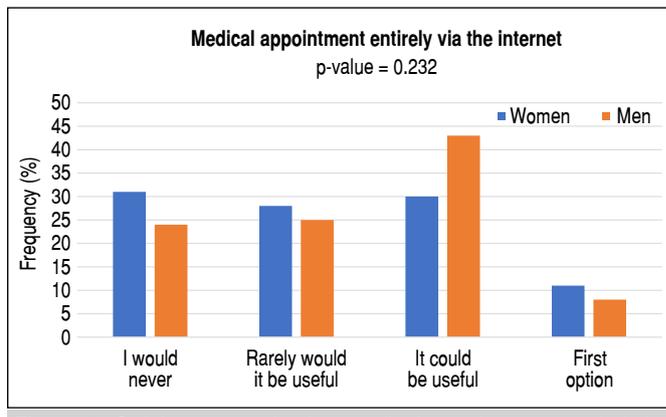


Figure 7. Opinion on conducting medical appointments entirely by video via the Internet.

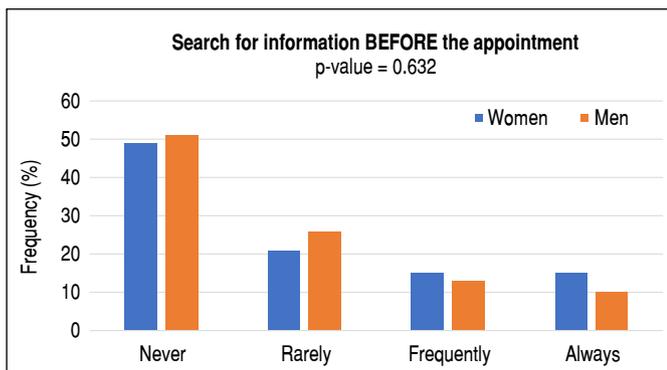


Figure 4. Search for information on the internet before the appointment.

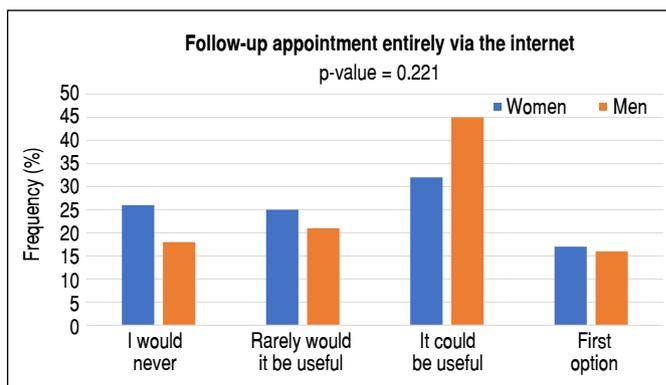


Figure 8. Opinion about performing the follow-up by video via the Internet.

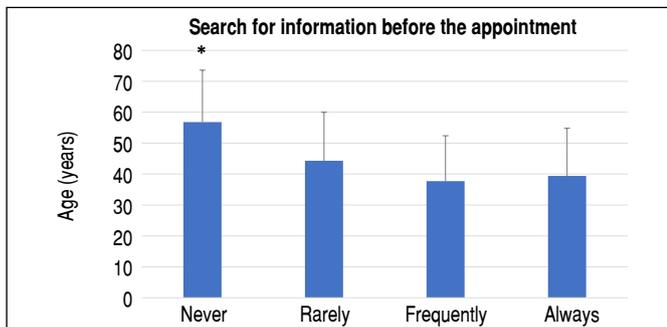


Figure 9. Comparison of the ages of the participants according to the search for information before the appointment.

*Statistically significant difference in relation to the age of those who responded rare, frequently, or always ($p < 0.001$).

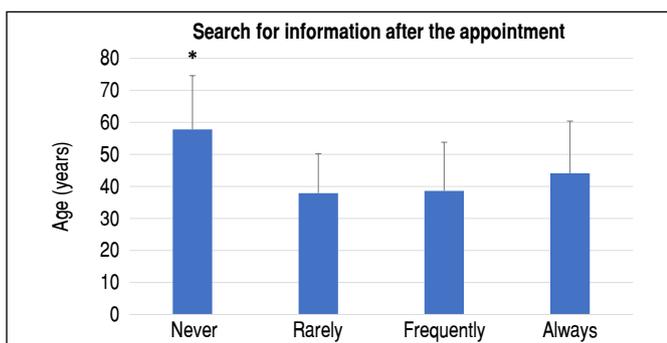


Figure 10. Comparison between the ages of the participants according to the search for information after the appointment.

*Statistically significant difference in relation to the age of those who responded rare, frequently, or always ($p < 0.001$).

Table 1. Relevance of information obtained on the Internet.

Question	Never	Rarely	Frequently	Always	Absent	Total
Enlightening internet search results	29 (12%)	86 (36%)	24 (10%)	5 (2%)	93 (40%)	237 (100%)
Search results according to medical explanation	20 (8%)	64 (27%)	39 (16%)	16 (7%)	98 (42%)	237 (100%)

Table 2. Most commonly used sources for searching for information.

Search source	Almost never	Frequently	Always	Absent	Total
Google	23 (10%)	47 (20%)	74 (31%)	93 (39%)	237 (100%)
YouTube	37 (16%)	38 (16%)	27 (11%)	135 (57%)	237 (100%)
Instagram	66 (28%)	6 (2%)	7 (3%)	158 (67%)	237 (100%)
Facebook	69 (29%)	3 (1%)	5 (2%)	160 (68%)	237 (100%)

Table 3. Participants' perception of performing a medical appointment or follow-up by video, via the Internet.

Question	I would never	Rarely would it be useful	It could be useful in many cases	It would be my first option
Medical appointment conducted entirely by video via the Internet	67 (28%)	63 (27%)	84 (35%)	23 (10%)
Follow-up appointment conducted by video via the Internet	55 (23%)	54 (23%)	89 (38%)	39 (16%)

Table 4. Frequency of characteristics among men and women.

		Women (n = 130)	Men (n = 105)	Chi-squared test
Search for information BEFORE the appointment	Never	64 (49%)	53 (51%)	p-value = 0.632
	Rarely	29 (21%)	27 (26%)	
	Frequently	16 (15%)	14 (13%)	
	Always	21 (15%)	11 (10%)	
Search for information AFTER the appointment	Never	70 (54%)	52 (50%)	p-value = 0.027
	Rarely	23 (18%)	33 (31%)	
	Frequently	18 (14%)	14 (13%)	
	Always	19 (14%)	6 (6%)	
In the future, most of the appointments will be conducted via the Internet	Yes	86 (66%)	83 (79%)	p-value = 0.020
	No	44 (34%)	21 (21%)	
Medical appointment conducted entirely by video via the Internet	I would never	40 (31%)	25 (24%)	p-value = 0.232
	Rarely would it be useful	37 (28%)	26 (25%)	
	It could be useful in many cases	39 (30%)	45 (43%)	
	It would be my first option	14 (11%)	9 (8%)	
Follow-up appointment conducted by video via the Internet	I would never	34 (26%)	19 (18%)	p-value = 0.221
	Rarely would it be useful	32 (25%)	22 (21%)	
	It could be useful in many cases	42 (32%)	47 (45%)	
	It would be my first option	22 (17%)	17 (16%)	

Table 5. Frequency of patients in age groups.

Question	Never	Rarely	Frequently	Always	p-value
Search for information BEFORE the appointment	56.8 (16.8)*	44.3 (15.7)	37.7 (14.7)	39.4 (15.4)	< 0.001
Search for information AFTER the appointment	57.8 (16.4)*	37.9 (12.3)	38.6 (15.2)	44.1 (16.3)	< 0.001

Table 6. Age of participants in relation to feeling comfortable or not to attend medical appointment and follow-up by video via the Internet.

Question	I would never	Rarely would it be useful	It could be useful in many cases	It would be my first option	p-value
Medical appointment conducted entirely by video via the Internet	55.4 (15.5)#	45.8 (17.9)	44.0 (18.4)	56.1 (15.0)#	< 0.001
Follow-up conducted by video via the Internet	56.1 (16.1)#	45.3 (18.4)	42.6 (15.2)	58.0 (18.5)#	< 0.001

Data presented in mean (standard deviation). p-value for the Kruskal-Wallis test. # Statistically significant difference between the groups of "would rarely be useful" and "could be useful in many cases."

DISCUSSION

The evolution of the media in current times makes the Internet a powerful tool for the dissemination and learning within the field of health. Due to the ease of introducing new content, as well as the unlimited searching possibilities, people search for the meaning of diseases, their treatment, prevention, promotion of well-being, and several other factors that intertwine with the health and disease process.^{5,6}

A survey conducted by Google Brazil showed that, of 603 adults, 60% conducted online research, in the last three months, involving information about a specific medical treatment; 52% searched for general information on diseases; 48% searched for symptoms and causes; 40% searched for the use of certain medications; 39% searched on the consequences of treatment; 39% also searched for specialists; and 28% searched for diagnoses of various diseases.² Patients who use this powerful tool, however, are exposed to many dubious and possibly erroneous information, since the multitude of data hinders the reliability of the sources accessed, making it necessary to better understand the pattern of searches performed by these users.² In the area of Orthopedics and Traumatology, this type of online search is growing more and more, and it has become a relevant issue in the daily life of professionals in this field.¹

Our study showed that the vast majority, about 75% of our patients, never or rarely seek medical information on the internet, before or after their appointment. This data contradicts Krempec, Hall, and Biermann,¹ who observed that, in 2002, about half (45%) of the patients of a follow-up orthopedic outpatient clinic in Indiana, USA, used the internet to acquire information about their condition. We believe that this difference is due to the social profile inherent to the patients, considering that our questionnaire was applied in an outpatient service from the Unified Health System with trauma profile.

Another point that makes relevant our questioning about the credibility of the information obtained by patients through their search methods was that about half of the patients (48%) who sought information did not consider the results to be enlightening. This suggests that the search method or even much of the information found online on the health-disease process is difficult for our patients to understand or access. The main search sources used were Google and YouTube.

Despite the above, we see that even if most patients do not seek information on the Internet about their conditions, about 72% understand that medical appointments in the future may be conducted via the Internet, with only 28% disagreeing. Most believe that a video appointment via the Internet could be

useful in many cases. This demonstrates, despite the difficulty in obtaining data about their diseases, trust and acknowledgment on the importance of the Internet and digital media in the doctor-patient relationship of the future.

With statistically relevance, we observed that there is a lower demand for information by men when compared with women. On the other hand, men are more optimistic about internet appointments in the future.

Regarding age, we found that the older the individual, the less they research on the Internet for information regarding their condition. We believe these finding to be consistent with other social and human aspects, in which younger generations relate and adapt better with technological means of connection, with a tendency to increase, over time, the use of these tools in various areas, including in the medical environment.

CONCLUSION

Online search for medical information on the Internet and social networks is a reality in Brazil and in the world, but it still generates numerous divergences regarding its effectiveness and scope within the population. This study was conducted in a trauma department at a hospital exclusive to the SUS services, which suggests a lower adherence to the use of social media and the Internet, both before and after medical appointment. Further studies are needed in orthopedic services with different profiles for further analysis of the use of social medias, especially among patients with a non-trauma profile and in hospital of private or insurance-covered services. Telemedicine, in turn, has shown to be a promising strategy for health care, especially for populations in vulnerable conditions, for those who are geographically distant with difficulty in accessing health care, and for circumstances such as in the current COVID-19 pandemic. We emphasize, however, that in-person appointments, as well as orthopedic physical examination, is not only essential for diagnosis and the development of a doctor-patient bond, but also indispensable for the proper practice of medicine, especially in the area of Orthopedics and Traumatology.

AUTHORS' CONTRIBUTIONS: Each author contributed individually and significantly to the development of this article. ARE, FDNN: writing and data analysis; DMN: elaboration of data study and preparation of tables and graphs; TSVB: review of the article and intellectual concept of the article; LFMS, PCLP: application of questionnaires and data analysis.

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(ANNEX 1)
INFORMED CONSENT FORM

We invite you to participate in the survey The Use of the Internet and Social Network in Orthopedics and Teleconsultation, under the responsibility of the researcher Tomás Santos Vasconcelos Barros, who intends the perception of patients in relation to Teleconsultation and information on health in social networks.

Your participation is voluntary and will take place through the completion of a questionnaire.

If after consenting to your participation you would like to withdraw your participation, you have the right and freedom to do so at any stage of the research, either before or after the collection of the data, regardless of the reason and without any detriment to you. You will have no expense and will also receive no remuneration.

If you agree to participate, you will be contributing indirectly to understanding and improving the patient relationship with digital media in society.

If you want to participate, we advise that the questionnaire contains questions regarding your use of the Internet and Social Networks, which we carefully prepared so as not to contain intimate or embarrassing questions.

You can choose to withdraw at any time of completion, without justification. And we guarantee compensation in case of any damage that may occur as a result of the research.

The refusal to participate will not influence the continuity of your treatment.

The results of the research will be analyzed and published, but your identity will not be disclosed, being kept confidential.

For any other information, you may contact the researcher by phone:

- Researcher Responsible: Tomás Santos Vasconcelos Barros

Address: Rua São Paulo, nº 1091 – 908. Bairro Centro - Belo Horizonte - MG Zip Code: 30170-131 – Phone number: 31 (99572-3713)

Email: ortopediahob@gmail.com

-Ethics and Research Committee of The Odilon Behrens Metropolitan Hospital (CEP-HOB)

Address: Rua Formiga 50, Sala 108 Bairro: São Cristóvão - Belo Horizonte - MG

Phone number: (31)3277-6120. Email: cephob@gmail.com

Post-Information Consent.

I, _____, was informed on the intentions of the researcher and why they need my collaboration, and I understood the explanation. Therefore, I agree to participate in the project, knowing that I will not gain anything and that I can leave whenever I want.

This document is issued in two copies that will be both signed and initialed by the participant and the researcher, leaving one copy with each.

_____ Date: ___/___/_____

Participant's signature

Researcher's signature

QUESTIONNAIRE - Use of the Internet and Social Networks in Orthopedics and Teleconsultation

1. How often do you search for health information on the internet BEFORE the medical appointment?

- Never
- Rarely
- Frequently
- Always

2. And AFTER the appointment?

- Never
- Rarely
- Frequently
- Always

3. Do you consider that the results of your internet search were enlightening?

- Quite, I was able to learn a lot about the disease and the treatment
- Sufficiently, I understood a little about it
- Not at all, I could not find information, or it did not clarify my doubts
- It interfered, the research left me with more doubts or fears

4. Were your research results in line with what the doctor explained during the appointment?

- Fully in accordance with
- Mostly
- Only a small part
- No, it was completely different.

5. Which of these you use or have used for health information searches:

Almost Never Frequently Always

Google () () ()

Youtube () () ()

Instagram () () ()

Facebook () () ()

6. Do you believe that in the future most of the medical appointments will be conducted via the Internet?

- Yes
- No

7. What is your opinion on a medical appointment with an orthopedist being conducted entirely by video via the Internet?

- I Would Never
- Rarely would it be useful
- Could be useful in many cases
- It would be my first option

8. What is your opinion on a follow-up medical appointment being conducted via the Internet? *

- I Would Never
- Rarely would it be useful
- Could be useful in many cases
- It would be my first option

Age = _____

Gender = _____

Occupation = _____