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Effect of the covid-19 lockdown on patients valuation of usability of telemedicine

Paula Otero, MD, MsC

Health Informatics Department

Hospital Italiano de Buenos Aires

Team

[a] *Department of Health Informatics, Hospital Italiano de Buenos Aires, Argentina.*
[b] *Department of Dermatology, Hospital Italiano de Buenos Aires, Argentina.*
[c] *Department of Family Medicine and Community, Hospital Italiano de Buenos Aires, Argentina.*
[d] *University of Hospital Italiano de Buenos Aires , Argentina.*

Paula OTERO

Lucila BRUCHANSKI[a],

Ana Clara TORRE[b] ,

Nuria BIBILONI[b] ;

Janine SOMMER[a],

Bruno BOIETTI[d],

María Florencia GRANDE RATTI[c]

Romina RAPISARDA[a],

Daniel LUNA[a];

Luis MAZZUOCCOLO[b],

Fernando PLAZZOTTA[a]

Introduction

Telemedicine services widely adopted as an alternative to deliver health care

Usability measures effectiveness, efficiency, and satisfaction of a system or service for a specific goal in a specified context of use

March 11, 2020
COVID-19 declared an outbreak by WHO
Lockdown

Rapid adoption

Challenging context

Detection of ongoing problems

measurement of **telemedicine system usability** as a screening tool to detect ongoing problems, evaluate and improve the effectiveness of the technology and service delivery

Objective

Report patients valuation of usability with our telemedicine system, explore the effect of pandemic in its behavior and describe the potential value of these results as a decision making tool in this adaptive and complex context.

Methods

Context

- **Hospital Italiano de Buenos Aires, Argentina**
  - Electronic Healthcare Records (EHRs)
  - HIMSS Level 7+ organization
  - Integrated PHR
- **The teleconsultation service implemented designed in-house and embedded in the EHR and the PHR.**
  - After lockdown (March 2020 in Argentina), to ensure the continuity of care, the telemedicine system was generalized to all patients as the only attention modality. This change in processes bring changes in the system in order to face the abrupt increase in the volume of teleconsultations (infrastructure, connectivity)

Methods

Cross-sectional study based on the prospective recollection of the results of the Spanish abbreviated version of the Telehealth Usability Questionnaire questionnaire (TUQ), from October 2019 to July 2020.

TUQ 21 item questionnaire, developed and validated in english by Parmanto and col.

We used a validated version tool in spanish (after translation and transcultural adaptation) with only 12 items

Endpoints

- ❏ Reply date
- ❏ Answer of these questions using a numeric likert scale from 1 to 7 (1 being the worst and 7 the best result).

The questionnaire was sent by email automatically to all patients right after the end of every teleconsultation.

Statistical Analysis Descriptive analysis of the usability over time, within the study period: pre- pandemic era (October 2019 to March 2020) and pandemic era (April-July 2020).

Each question and domain of the questionnaire was summarized using the median with its interquartile range (IQR) or mean and standard deviation (SD).

Results

Total **43,056** answers

inflection point of growth during the pandemic era

analysis **by periods** lowest average in March 2020, mainly due to the interaction quality.

Number of questionnaires. Average monthly values grouped by domains

Date (m/y)	Number of TUQs	Satisfaction and Future use	Utility and access to healthcare	Usability of the system	Quality of the interaction with the physician
10-2019	45	5.81	6.04	5.90	5.67
11-2019	34	5.97	6.22	6.06	5.52
12-2019	49	5.64	6.15	5.53	5.31
01-2020	47	5.78	6.14	5.79	5.42
02-2020	46	5.16	5.63	5.29	4.88
03-2020	430	4.90	5.72	4.74	4.20
04-2020	6432	5.31	5.71	5.20	5.06
05-2020	9747	5.32	5.64	5.27	5.17
06-2020	12887	5.41	5.72	5.43	5.30
07-2020	13339	5.56	5.87	5.60	5.46

In the following months there was an increase in these total values and in the different domains

Total mean **5.48**

Utility and access to healthcare
5.88

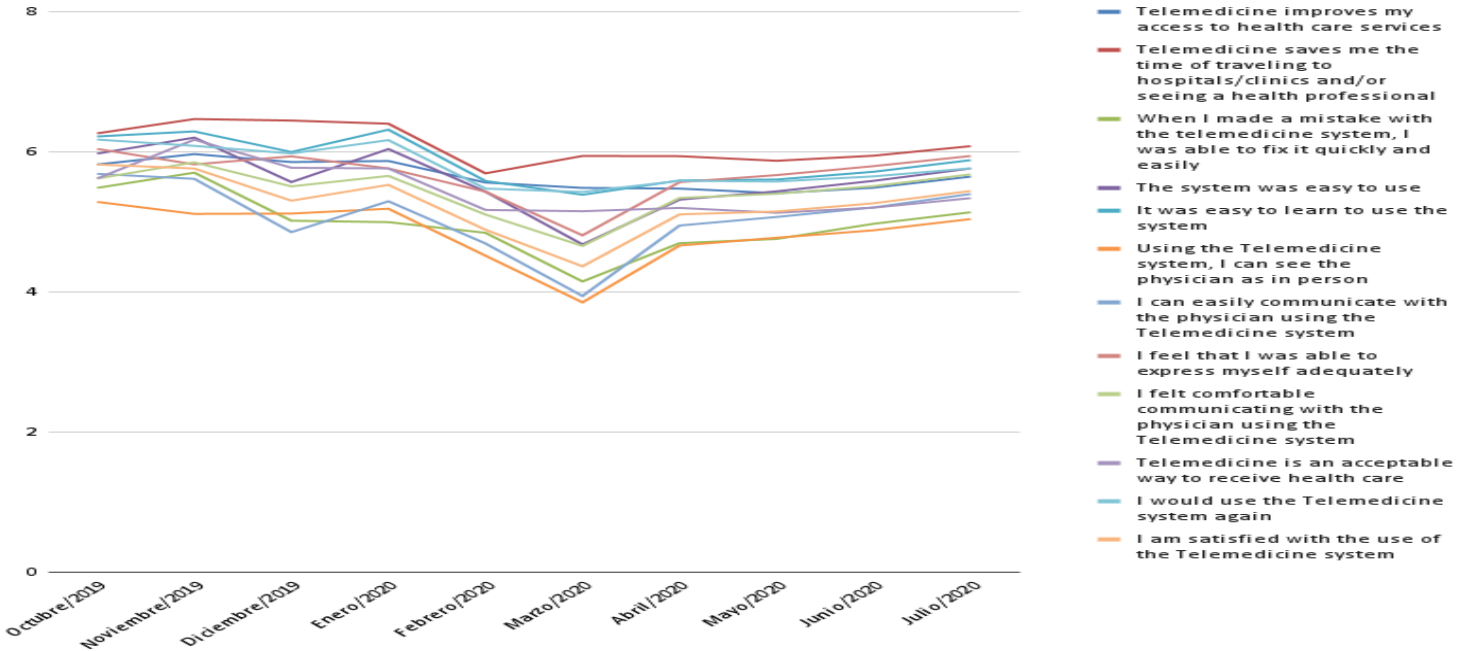
satisfaction/future use
5.49

usability of the system
5.48

interaction quality with physicians (capability to communicate, hear and see the physician as in person)
5.20

Results

Average values for each of the 12 items of questionnaire, per month.



Discussion

- In this research, patients reported a total mean of 5.48, using a validated survey on the usability of telemedicine.
- We observed a **decreased trend**, coinciding with the massive and forced implementation after COVID-19 lockdown. This effect was **transitory**, evidencing an **improvement over time**.
- These results (transitory decrease in satisfaction) might be explained by several factors that can be explained applying a socio-technical approach.
  - Carrying out an **organizational change**, adapting **infrastructure**, **processes**, **training** and **support** to the high demand of teleconsultations usually takes time and a planification process that was catalyzed by the context, probably with unintended consequences.
  - **Resistance to change.** We might assume that at the beginning, teleconsultations were unknown for many patients (and also professionals) that needed training on the process. This learning curve may in part explain the improvement of the values of the TUQ questionnaires during April and its stabilization during May, June and July.
  - The higher values obtained in pre pre-pandemic era could be attributed to different profiles of users, who probably chose teleconsultations. Besides, the system was prepared for a fixed and predictable volume of teleconsultations that suddenly changed.

Discussion

- The results obtained also suggest the importance of having a **telemedicine usability tool for continuous monitoring and evaluation of the system and taking its results to guide decision-making in complex adaptive systems such as health systems.**

- **Patients was an important element to promote a cycle of continuous improvement.** These results were utilized in order to prompt changes and improvements in our system such as redesign processes of the platform.

Limitations

1. Differences in the sample size before and after the lockdown period. However, it was a forced implementation due to the context, and they reflect the real volume of use.

1. Single center study and results may not be extrapolated to other contexts and populations.

1. There may be information bias, and we did not calculate the survey response rate. It would have been interesting to have demographic characteristics of respondents, variables which were recently added. As an important strength, we used a valid tool as a measurement instrument.

In conclusion, tools to assess telemedicine services allow us to identify facilitators and barriers to its use in a highly changing social and technological context.