

Telemedicine implementation on a bariatric outpatient clinic during COVID-19 pandemic in Italy: an unexpected hill-start.

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Short Report

Keywords: Telemedicine, COVID-19, bariatric surgery, outpatient, digital divide

Posted Date: May 29th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-31832/v1>

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Abstract

Background

SARS-CoV2 outbreak has challenged NHS of many countries. Generalized restriction of movement, together with the unprecedented pressure on the Health System, disrupted routine care for non-COVID-19 patients. Telemedicine has been promoted to reduce the risk of infections and to offer medical assistance to the restricted population. This paper is aimed to evaluate the impact of tele-consulting technology in a single bariatric surgical center.

Study Design

Our outpatient clinic reorganized the service from on-site to long-distance video-consultations. All patients received a multiple-choice satisfaction questionnaire. The main goals were to evaluate patient compliance to the video consultations and to assess patient satisfaction.

Results

The preliminary results show a drop-out rate of 42.4%. No significant differences were found between participants and non-participants in terms of age and gender ratio. Urban area residents were 57.9% in Participants group versus 42.8% in Non-participants group. Slightly more than half of participants (52.6%) completed the survey reporting levels of satisfaction between high and very high.

Conclusion

Telemedicine has been advocated as a useful tool to relieve pressure on the overwhelmed Health Systems during the COVID-19 pandemic. However, e-health technologies are not yet widely adopted. Our initial experience, also compared with national data relating to the digital divide, suggests that the absence of basic computer skills and the lack of confidence with video-call systems may be patient-specific barriers for the implementation of telemedicine. In this context, telemedicine implementation can run up against various patient-related barriers and several challenges remain for e-health to be integrated into outpatient practice

Introduction

Since January 2020, the outbreak of a new coronavirus originated in China (SARS-CoV-2) imposed a great deal of stress on a growing number of National Health Systems and progressively became a global crisis, to such an extent that On March 11th 2020, the World Health Organization characterized the COVID-19 outbreak as a pandemic.

The Italian Government acted quickly and measures to contain the spread of the infections escalated up to the decision to drastically restrict freedom of movement of the entire Italian population and to close all

non-essential businesses and industries on March the 21st. On that date 183,957 total cases and 24,648 deaths were counted throughout the country showing an exponential growth of new diagnoses.

Generalized restriction of movement together with the unprecedented pressure on the Health System disrupted routine care for non-COVID-19 patients.

Indini et al. described the need for reorganization of clinical services for non-COVID-19 cancer patients and how this has been addressed in Italy and Di Saverio et al. showed the same for surgical patients with colonic disease.

In this context, telemedicine, and in particularly video consultations, has been widely promoted and implemented according to the possibilities of each institution to reduce the risk of infections and to offer medical assistance to the restricted population.

The provision of bariatric surgery was equally affected by the above-mentioned restrictions policies and Bariatric Surgery Centers were challenged with the difficulties to continue to offer their outpatient consultations despite the above-mentioned difficulties.

This brief communication is aimed to evaluate the impact of tele-consulting technology in a single bariatric surgical center.

Methods

Preliminary implementation of the telemedicine service

At our Institution in Cagliari, the largest city of the Sardinia island, surgical practice has been limited to emergent/urgent cases since March the 9th and, at the same time, outpatient services have been drastically reduced to minimize the risk of transmission.

Our Bariatric Surgery Center performs approximately 4800 outpatients' consultations per year, with more than 400 patients being evaluated for the first time as surgical candidates.

Since the beginning of the crisis, our outpatient clinic reorganized the service from on-site to long-distance video consultations for those patients who had previously booked a first appointment to the Bariatric Surgery service for the months of March and April.

Our service was already offering remote consultations by phone, email or WhatsApp messenger both in the early post-operative stage (ERAS protocol for Bariatric Surgery) and for long-term follow-up. For this reason, the new mobility restrictions had minor impact to those patients who had already underwent surgery. This study will therefore consider the initial experience in telemedicine only for first-time patients addressed.

Patients

All patients who booked a first clinic appointment were briefly contacted by phone few days before the scheduled appointment and offered to either keep the date as video call consultation, or to postpone it to a later time, to attend in person to the clinic. The Skype by Microsoft® “Voice over Internet Protocol” (VoIP) software was chosen for video calls because of its simplicity and widespread use.

On the scheduled day of the visit, patients could contact the bariatric surgeon of our Center through a dedicated Skype account. During the video-consultation, a complete medical history was collected and anthropometrical data, measured by patients at home were, recorded.

Patients deemed surgical candidate, in accordance to IFSO guidelines (Table 1), received preliminary information about the pre-operative screening (nutritional and psychological assessment, blood test, instrumental investigations, etc.) during the video call. More details were then provided by email. Patients who did not meet surgical criteria were referred to a nutritionist.

Satisfaction questionnaire

Following the video-consultation, all patients received a multiple-choice satisfaction questionnaire (SurveyMonkey®) to rate technical and relational aspects and the perceived usefulness of the video call. The answers were articulated in a 5-level scale from “completely negative” to “completely positive” (Table 3)

Endpoints

The two main goals of the study were to evaluate patient compliance to the video consultations (drop-out rate before the video call) and to assess patient satisfaction (questionnaire after the video call).

Secondary endpoints were the ability to proper select patients with probable indication for bariatric surgery and to identify those with clinical problems requiring urgent on-site appointment.

Conflict of Interest disclosure

All Authors declare no conflict of interest.

Ethical statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the Helsinki declaration

and its later amendments or comparable ethical standards.

Consent statement

Informed consent was obtained from all individual participants to the video calls included into the study.

Statistical analysis

Data are presented as count and percentage for categorical variable and median and interquartile range [IQR] for continuous variables. Categorical data were compared by the Chi-Square test (χ^2). Continuous variables were compared by the Student's T test.

Results

In the period from March the 9th to April the 22th, 43 first visits had been booked at our clinic. Ten patients couldn't be contacted by phone for several reasons (wrong or missing phone number, lack of response, etc.) and were therefore not included in the study; thus, the video consultation was proposed to 33 patients. Eight patients (24.2%) declared from the beginning that they were not interested in the video consultation. The main reasons to refuse to participate were: "I don't have Skype", "I don't have an email address", "I don't feel comfortable".

The remaining 25 patients received an email with technical instructions; of these, 19 patients (76%) participate to the video consultation while 14 did not (drop-out rate: 42.4%) (Figure 1).

No significant differences were found between participants and non-participants in terms of age and gender ratio (Table 2). Urban area residents were 57.9% in Participants group versus 42.8% in Non-participants group. The median length of the consultations was 19 minutes and 40 seconds. The satisfaction questionnaire was sent by email to all the 19 participating patients but only 10 (52.6%) completed the survey.

The results of the satisfaction survey are summarized in Table 3.

Seventeen patients (89.5%) were proposed for bariatric surgery and none required an in-person urgent visit.

Discussion

Telemedicine has been strongly advocated as a useful tool to relieve pressure on the overwhelmed Health Systems during the COVID-19 pandemic. The urge to implement e-health systems in this critical phase can turn into an opportunity to reduce structural barriers, especially in disadvantaged areas. The Sardinia

island, with its 1,6 million of citizens spread on a 24,100 km², is the second Mediterranean island and the third Italian Region for extension and ranks third last in terms of regional population density.

In this context, we felt that a rapid implementation of a telemedicine service would represent a valid answer to the service disruption that the COVID-19 pandemic has imposed to our Bariatric Surgery Center activity. Nevertheless, preliminary results of this approach showed that patients could find difficult to adapt to such a system.

Telemedicine offers clear opportunities to abolish barriers of distance and to save time and direct costs. Also, in the field of bariatric surgery there is a growing interest in the application of e-health systems in the pre- and post-operative period. In the context of the COVID-19 pandemic, facilitating healthcare access maintaining the strict individual protection provisions became a priority to ensure safety for patients and healthcare professionals, and to allow the continuation of specialist medical services.

However, e-health technologies are not yet widely adopted and many centers had to implement telemedicine services without the appropriate technical knowledge and without the time to train their own staff and to properly educate the users.

The results of the initial phase of telemedicine in our Bariatric Surgery Center reflect these difficulties. Several patients didn't consider video-counseling a useful opportunity and preferred to wait until the end of the mobility restrictions to attend in person to the clinic. Unfortunately, it is not possible at present to predict when this is possible and is likely that the use of digital technologies will be a necessity, more than a choice, for a long period.

Moreover, Italian National Health Service don't recognize telemedicine as an essential level of care and there is a lack of a regulatory framework that may allow integration of e-health platforms into existing electronic medical record system.

Free video-communication solutions (for example, WhatsApp, Skype, or Facetime) raise questions about privacy and security requirements.

Technological improvements and cost reduction of video communication solutions combined with both the high-speed internet and mass spread of smartphones make possible to offer e-health services to a large audience but high-speed Internet is not equally available to everybody (digital divide).

The annual report on Internet availability drafted by the Italian National Institute of Statistics (ISTAT) showed that in 2019, 76.1% of households had Internet access and 74.7% had a broadband connection, but only 67,9% used the Internet in the past 3 months prior to the interview. Moreover, only 29.1% of the internet users between the ages of 16 to 74 years have high digital skills. Most Internet users, on the other hand, have low (41.6%) or basic (25.8%) digital skills. Furthermore, there is a minority of Internet users (3.4%) who have no digital skills which equals, however, to a large number of people (1,135 million). Most households without home Internet access indicate the lack of computer skills as the main reason (56.4%)

and 25.5% do not consider the Internet a useful and interesting tool; economic reasons follow. Another discriminating factor is the educational qualification; 94.1% of families with at least one graduate component has a broadband connection against 46.1% of those families whose members had attended only high school. Disparities are also evident between municipalities of different demographic amplitudes: in metropolitan areas, broadband access rates reach 78.1% while in municipalities up to 2,000 inhabitants this share drops to 68.0%.

Data from Sardinia (only available until the year 2018), do not differ significantly to the national ones.

This initial experience, although anecdotic, suggests that the absence of basic computer skills and the lack of confidence with video call systems may be important patient-specific barriers for the implementation of telemedicine between the most vulnerable social groups of the Italian population.

Although it is not statistically significant, in consideration of the small sample size, we found a greater presence of residents in urban areas in the group of participants, compared to the group of non-participants (57.9% vs 42.8% respectively).

Regarding structural barriers, it must be noted the lack of an electronic system able to integrate telemedicine software with hospital medical records which may resolve privacy and security issues and of a dedicated Internet portal where patients may obtain operative instructions. In fact, our satisfaction survey reported lowest result at the questions regarding clarity and usefulness of the instructions received (Table 3).

Messiah et al in a recent review of eHealth strategies for metabolic and bariatric surgery patients, analyzed 38 published articles between 2011 and 2019 that varied widely in terms of study design and presented several limitations. Despite this, the authors reported overall positive results in terms of feasibility, acceptability and preliminary efficacy of eHealth delivery of pre- and post-operative educational materials, knowledge exchange and social support.

In accordance with our preliminary experience, the Authors concluded stating the importance to take into account key constructs from the socioecological framework including not only intra/interpersonal and developmental factors, but also those of the system or setting that provides the eHealth strategy. In this setting, the relationship between care providers and rural areas is crucial because is right there that patients are more exposed to social, geographical and economical burdens and that they are less inclined to access to e-health services, as we observed in our preliminary experience.

Patient education is time- and resource-consuming and yet a critical key to implement telemedicine and one must consider that there is an initial investment of time and effort to effectively present the option of a telemedicine consultation and then train the patient to the use of the necessary software for the first time, as it is extensively elucidated by Smith et al in their interesting recent paper published on this Journal. The authors, suggesting an Implementation Guide for Rapid Integration of an Outpatient Telemedicine Program during the COVID-19 Pandemic, highlight 8 necessary elements: among these, an

electronic medical record system infrastructure, adequate and flexible audiovisual platforms, patient education, patient and caregiver participation are the same issues we faced up in our preliminary experience.

Conclusion

The COVID-19 emergency is an occasion to develop new protocols based on digital technologies that can offer lasting solutions to structural problems.

In this context, telemedicine implementation can run up against various patient-related barriers and several challenges remain for e-health to be routinely used and integrated into outpatient practice, such as definition of regulations frameworks, a strategy to implement technical support and a plan guiding health care providers to switch to the new paradigm.

Tables

Table 1. Principal selection criteria for bariatric surgery, according to International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) guidelines

BMI > 40 Kg/m ² by itself or >35 Kg/m ² if there is an associated obesity illness
Reasonable attempts at other weight loss techniques
Age 18-65
Obesity related health problems
No psychiatric or drug dependency problems
A capacity to understand the risks and commitment associated with the surgery
Pregnancy not anticipated in the first two years following surgery

Table 2. Demographics. Data are presented as count and percentage for categorical variable and median and interquartile range [IQR] for continuous variables

	Participants	Non Participants	P
N	19	14	
Median Age (IQR)	50 (16)	45 (18.8)	0.86
M/F ratio	5/14	4/11	0.95
Urban area residents (%)	10 (57.9%)	6 (42.8%)	0.58

Table 3. Satisfaction questionnaire. The answers are articulated in a 5-level scale from "completely negative" to "completely positive". 10 patients returned a 100% completed questionnaire

Questions	Completely negative		Completely positive		
	1	2	3	4	5
What was your first reaction towards the possibility of making the visit by video call?			4		6
How did the instructions for making the video call seem to you?		1		4	5
What was the technical level of the video call (did you hear and see well)?			7		3
How do you evaluate the duration of the conversation?			1	4	5
Did you feel comfortable asking questions during the call?			7		3
How cordial was the conversation?			3		7
How helpful was the information you received?			1	6	3
Did you find the information on the surgeries received by email helpful?			1	5	4
In general, how satisfied are you with the event?			7		3
How do you evaluate the possibility of making other visits through the video call in the future?			7		3

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Figures

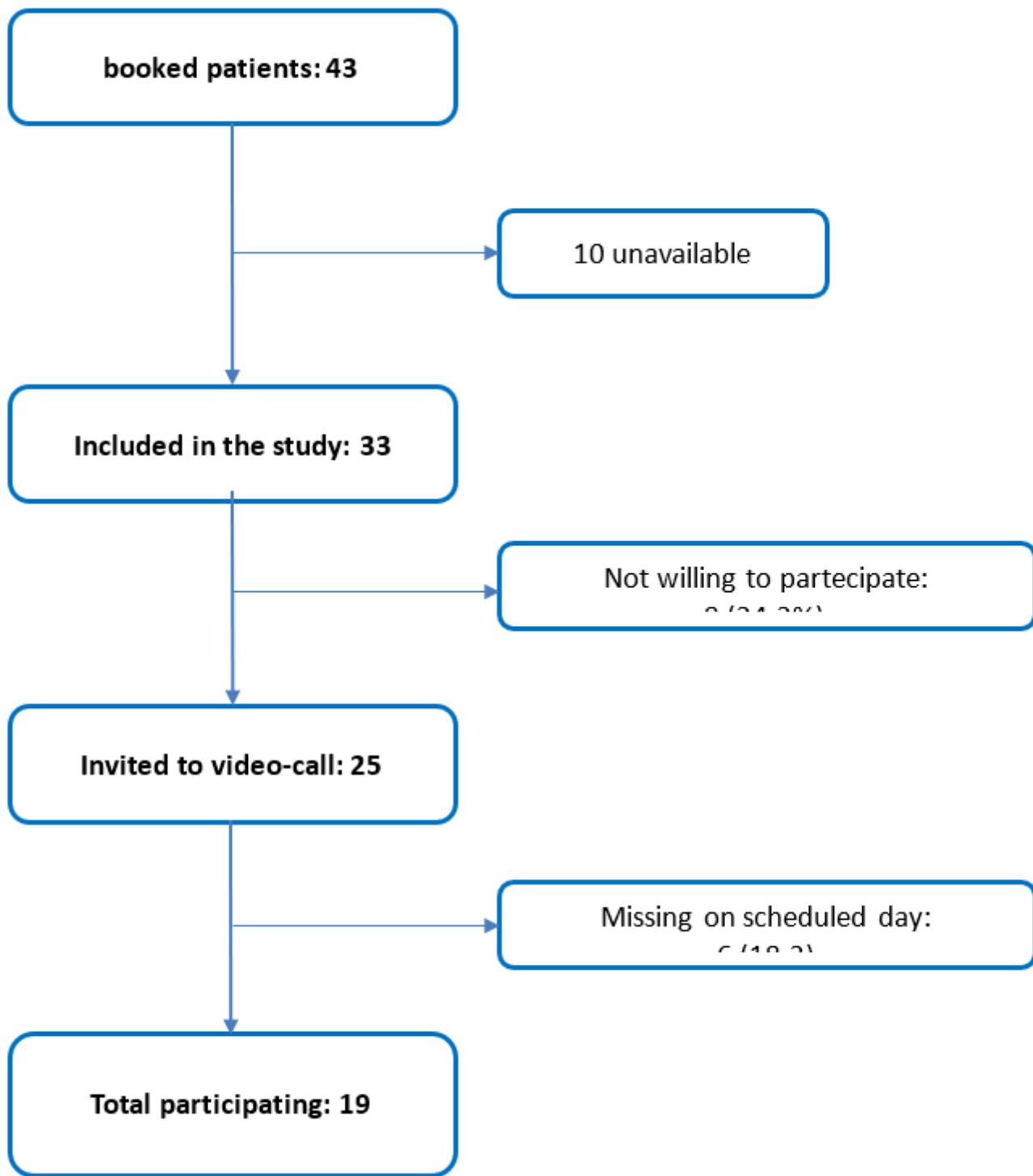


Figure 1

Participating patients flow diagram