

Patterns of direct-to-consumer geriatric urgent care by telemedicine during the Covid-19 pandemic

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INTRODUCTION

Telemedicine can provide safe and convenient health care during social isolation measures adopted to tackle the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic.^{1,2} These digital approaches have arisen out of a need to shield vulnerable patients from being exposed to the risks of coming into hospital, promoting social distances and protecting staff.² The older adults represent a specific cluster of patients at high risk of developing Covid-19 with rapidly progressive clinical deterioration³ and discontinuity of chronic treatment. However, despite multiple conceptual advantages of remote older adult care, this population's interaction with telemedicine technology and limitations, such as hearing loss,⁴ cognitive impairment, or visual loss, may compromise this mode's effectiveness.

We analyzed the usage pattern of telemedicine consultations in the older adult population 6 months before and after the start of the coronavirus disease 2019 (Covid-19) pandemic and the differences in teleconsultation characteristics between the elderly and adult population.

METHODS

An observational, single-center, retrospective study was conducted at the Telemedicine Center of the Hospital Israelita Albert Einstein, São Paulo (SP), Brazil. From September 2019 to August 2020, 1,684 patients aged 65 years or more and 78,836 patients aged between 20 to 64 years were enrolled. Data were extracted from electronic health records generated during the telemedicine encounters. This study was approved by the ethics committee of Hospital Israelita Albert Einstein (REC number: 33706820.2.0000.0071)

The consultations were divided into two groups: 6 months before the pandemic (September 1st, 2019 to February 29th, 2020) and after the pandemic (March 1st, 2020 to August 31st, 2020). The diagnosis of Covid-19 suspect cases was defined according to World Health Organization (WHO) criteria. We analyzed overall

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performance and compared the following clinical characteristics: age, gender, encounter duration, unplanned return rate, antibiotic prescription rate, and final recommendation from the teleconsultant (discharge, non-urgent referral, Emergency Department [ED] urgent referral, terminated due to technical problems, or other). For numeric variables, Kolmogorov-Smirnov tests were applied. For non-normal distributions, log(n) was performed. A student *t* test was conducted for mean comparison between groups. Cramér's *V* was performed to compare categorical variables. When table cells count were under five, Fischer's exact test was performed. A *p*-value of <0.001 was considered significant. The database was analyzed by IBM Statistical Package for the Social Sciences (SPSS) version 22 software.

RESULTS

At the beginning of the pandemic, we observed a significant increase in older adult patients utilizing the service. Among all clinical characteristics analyzed, only the final recommendation changed after pandemics: a significant decrease in ED referrals and an increase in discharges. Telemedicine performance in the older adult population could be evaluated as being satisfactory, with a 27.5% ED urgent referral rate, low unplanned return rate (8.5%), and an adequate antibiotic prescription rate (6.2%) (Table 1).

Antibiotics were used in 6,2% of the cases due to treatment of acute diarrhea (0,8%), dermatologic infection (0,7%), acute sinusitis (0,8%), urinary tract infections (0,8%), upper respiratory infection (0,1%) and others causes (3,0%).

Among Covid-19 suspects, the consultation duration was significantly higher in the older adults (19 minutes and 5 seconds *versus* 16 minutes and 58 seconds; *p* < 0.001) as well as ED urgent referrals rate (33.3% *versus* 20.6%; *p* < 0.001). Unplanned return and discharge rates were lower in the older adult group – 9.8% *versus* 16.4%, *p* < 0.001 and 62.7% *versus* 75.0%, *p* < 0.001, respectively. There were no differences in sex, nonurgent referrals rates, termination due to technical problems, and antibiotic prescription rates (Table 2).

DISCUSSION

Video-based consultations had a high satisfaction rate among patients and physicians, with no differences in disease progression and lower costs when compared with face-to-face appointments.⁵ The use of technology among older adults is increasing substantially with confidence in technology and positive attitudes towards online contact.^{6,7} This new healthcare model, however, has brought the challenge of accelerating digital inclusion and standardization of care of these population.

Table 1. Demographic characteristics of older adults population (>65 years) before and after the Covid-19 pandemic

Variable	Before	After	p-value
Patients	42	1,642	
Age, years	71.52±5.8	72.65±7.2	0.667
Sex			
Female	21 (50.0)	796 (48.5)	0.979
Male	19 (45.2)	769 (46.8)	
Undefined	2 (4.8)	77 (4.7)	
Duration, minutes	00:18:49	00:20:54	0.332
Unplanned return rate	1 (2.4)	142 (8.6)	0.255
Antibiotic prescription	2 (4.8)	103 (6.3)	0.689
Final recommendation			<0.001
Discharge	17 (40.5)	929 (56.6)	
Non-urgent referral	5 (11.9)	228 (13.9)	
Technical problems	0	38 (2.3)	
ED urgent referral	17 (40.5)	446 (27.2)	
Other	3 (7.0)	1 (0.1)	

Results expressed as n, mean ± standard deviation or n (%).

ED: Emergency Department.

Table 2. Demographic characteristics of suspected Covid-19 patients

Variable	Adults	Older adults	p-value
Patients	27,832 (67.2)	327 (19.9)	
Age, years	34.3±9.3	71.5±6.7	<0.001
Sex			0.003
Female	14,860 (53.4)	148 (45.3)	
Male	12,070 (43.4)	161 (49.2)	
Undefined	902 (3.2)	18 (5.5)	
Duration, minutes	00:16:58	00:19:05	<0.001
Unplanned return rate	4,556 (16.4)	32 (9.8)	<0.001
Antibiotic prescription	262 (0.9)	3 (0.8)	0.999
Final recommendation			<0.001
Discharge	20,866 (75.0)	205 (62.7)	
Non-urgent referral	958 (3.4)	8 (2.4)	
Technical problems	270 (1.0)	4 (1.2)	
ED urgent referral	5,727 (20.6)	110 (33.3)	
Other	11 (0,1)	0	

Results expressed as n (%) or mean ± standard deviation.

ED: Emergency Department.

The longer consultation duration observed was probably due to the need for greater attention to procedures and routines to verify the existence of any hearing or comprehension difficulties, technological issues, or the need for the company of a family member, associated with the fact that these patients have multiple comorbidities.

Use of antibiotics in older adults were higher than in general population attended by telemedicine, inferring greater pattern of clinical severity and medical concern with possible worse prognosis.⁸ Others causes than upper respiratory infections are related like dermatologic infections, acute diarrhea, acute sinusitis and urinary tract infections. Upper respiratory infections are among the most common acute illnesses leading to urgent consultations in emergency department at developed countries and account for a substantial economic burden. Its etiology is related by viruses and course being mostly self-limited. Meta-analyses and systematic reviews have found no role for prescribing antibiotics for its treatment, and such prescription may significantly increase the adverse event rates and potential harm.⁹ In suspected Covid-19 patients the use of antibiotics were only 0.8% in older adults.

Evidence-based protocols for direct-to-patient urgent care by telemedicine consider higher age as a red flag for various conditions, leading to lower efficacy of this care model in the older adults. In fact, this study found a higher referral rate and lower

efficacy of on-demand urgent care telemedicine encounters compared to that of young adults. The lower unplanned return rate cannot be explained by this tendency and could be due to a preference for face-to-face consultations. Notwithstanding, more than half teleconsultations were enough and helped avoid face-to-face appointments, which is highly desirable, potentially saving lives and minimizing contagion.

Thus, this study shows that, in a large older adults population living in a developing country, telemedicine consultation is a satisfactory solution to low-acuity health issues and can be enough for more than half Covid-19 suspect cases, though their resolution rates may be lower than that of young adults.

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