Teleconsultations by doctors and nurses from Primary Care in Florianópolis during the Covid-19 pandemic: a retrospective study

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ABSTRACT

Introduction: Teleconsultations were only allowed by class councils in Brazil after the start of the Covid-19 pandemic. The Primary Care (PC) of Florianópolis met the conditions to make teleconsultations and was the first capital to adopt this model of assistance on a large scale. **Objective:** Compare the conditions of care and the characteristics of health professionals in consultations held at the Florianópolis PC by doctors and nurses between teleconsultations and face-to-face consultations. **Methodology:** Retrospective study with all consultations carried out by doctors and nurses of the PC from 04/15/2020 to 07/27/2020. **Results:** We analyzed 225,507 consultations performed by 436 doctors and nurses. Professionals, doctors and nurses, who performed at least one teleconsultation had a higher number of consultations, a slightly longer average consultation time, as well as a slightly higher average number of referrals and tests requested per consultation. Teleconsultations were faster, had fewer tests requested, medications prescribed and referrals made. The conditions least evaluated by teleconsultation were: cervical cancer screening, impacted cerumen, tonsillitis and childcare. The conditions most evaluated by doctors and nurses in teleconsultations were: hypothyroidism, dyspepsia, contraception and unclassified pain. **Conclusions:** Teleconsultation is a useful tool for providing care in the PC and allows the care of a wide range of conditions. It is important to carry out studies of this technology in this period of exception to support future decisions when maintaining it after the pandemic.

Keywords: Primary Health Care, Remote consultation, Telemedicine, Covid-19.

INTRODUCTION

The Covid-19 pandemic, caused by the SARS-CoV-2 virus, reached Brazil in February 2020. In this scenario, medical and nursing teleconsultations, previously forbidden by their respective class councils, became an immediate alternative to face-to-face assistance in possible situations (1, 2) mainly due to Resolution No. 2314/2022, which regulated them with extensions since there were already regulations with limitations since 2002, and Law No. 13.989/2020, which released the practice of telemedicine in an emergency basis.

The Primary Care of Florianópolis, already accustomed to using telephone and digital tools for orientation and scheduling appointments, incorporated teleconsultations and became the first Brazilian capital to use teleconsultations systematically (3, 4).

For this, the study is based on the following guiding question: what differences can be perceived in the data of medical and nursing care from the comparison between teleconsultations and face-to-face consultations? Based on this pioneering experience, we analyzed data from physicians' and nurses' consultations, comparing them between teleconsultations and face-to-face consultations from 04/15/2020 to 07/27/2020.

METHODOLOGY

We designed a cross-sectional study. We retrospectively obtained data from all medical and nursing consultations performed in primary care in Florianópolis from April 15 (the date the electronic medical record started to have a specific record for teleconsultations) to July 27, 2020. The data were extracted from the electronic medical record database by the Information Management, after authorization by the Municipal Health Secretary, via the Health Research Projects Monitoring Committee with the letter OE 50/SMS/GAB/ESP/2020.

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We used the following variables: identification of the attending professional, age of the professional, gender of the professional, professional category, duration of the consultation, number of referrals in the consultation, number of tests requested in the consultation, number of medications prescribed in the consultation, modality in which the consultation was performed, ICD-10 filled out at the end of the consultation. Data were imported to RStudio, and we performed the student's t-test and chi-square test, considering p < 0.05 as significance (with Bonferroni adjustment when indicated) (5-7).

RESULTS

We grouped the International Statistical Classification of Diseases and Health-Related Problems version 10 (ICD-10) codes completed at the end of consultations based on the correspondence of the respective ICD-10 used by the International Classification of Primary Care version 2 (ICPC-2). We selected the 50 most frequent ICD-10 and grouped them into 30 conditions, as shown in the table below (Table 1).

We did not obtain individualized data by the patient, only by consultations and health professionals.

We considered 225,507 consultations performed by 436 physicians and nurses, of which 365 recorded at least one teleconsultation (Table 2).

When we compared the professionals who made some teleconsultations with those who did not make any teleconsultations, we found that the former made, on average, 298 more consultations, had slightly longer average consultation time, as well as the slightly higher average number of referrals and tests requested per consultation (Figure 1). There were no differences between genders (Figure 2).

Teleconsultations were faster, had fewer tests and medications prescribed, and had slightly fewer referrals than face-to-face consultations (Figure 3).

Table 1
The 50 most frequent ICDs grouped by condition.

Conditions	CID-10							
Other diseases	Z760	Z719	Z768	Z76	Z039	Z769	Z71	Z718
No disease	Z000	Z00	Z008	Z027	Z02	Z029	Z006	Z017
Coronavirus	B972	U079	U078					
Hypertension	I10							
Prenatal and puerperium	Z34	Z321	Z349	Z392	Z35	Z340	Z348	Z320
Childcare	Z001	Z761	Z762					
Anxiety	F411	F41	F410	F412	F413	F418	F419	
Low back pain	M545	M54	M543	M544	M548	M549		
Cough	R05							
Headache	R51							
Urinary infection	N390	N30	N301	N302	N303	N304	N308	N309
Anticonception	Z30	Z300	Z304	Z308	Z309			
Depression	F329	F32	F320	F321	F322	F323	F328	
Upper Airway Infection	J00	J069	J06	J068				
Asthma	J45	J450	J458	J459				
Diabetes Mellitus	E10	E11	E100	E109	E119			
Scabies	B86							
Joint pain	M255	M258	M259					
Tonsillitis	J03	J030	J038	J039				

Conditions	CID-10		
Diarrhea	A09		
Dyspepsia	K30		
Unclassified pain	R520	R52	R529
Candidiasis	B37	B373	B379
Abdominal and pelvic pain	R10	R104	
Skin/subcutaneous conditions	L989	L98	
Hypothyroidism	E039	E03	E038
Impacted cerumen	H612		
Oncotic cytology	Z124		
HIV	B24	Z21	
Allergy	T784		

Table 2
General characteristics of health professionals

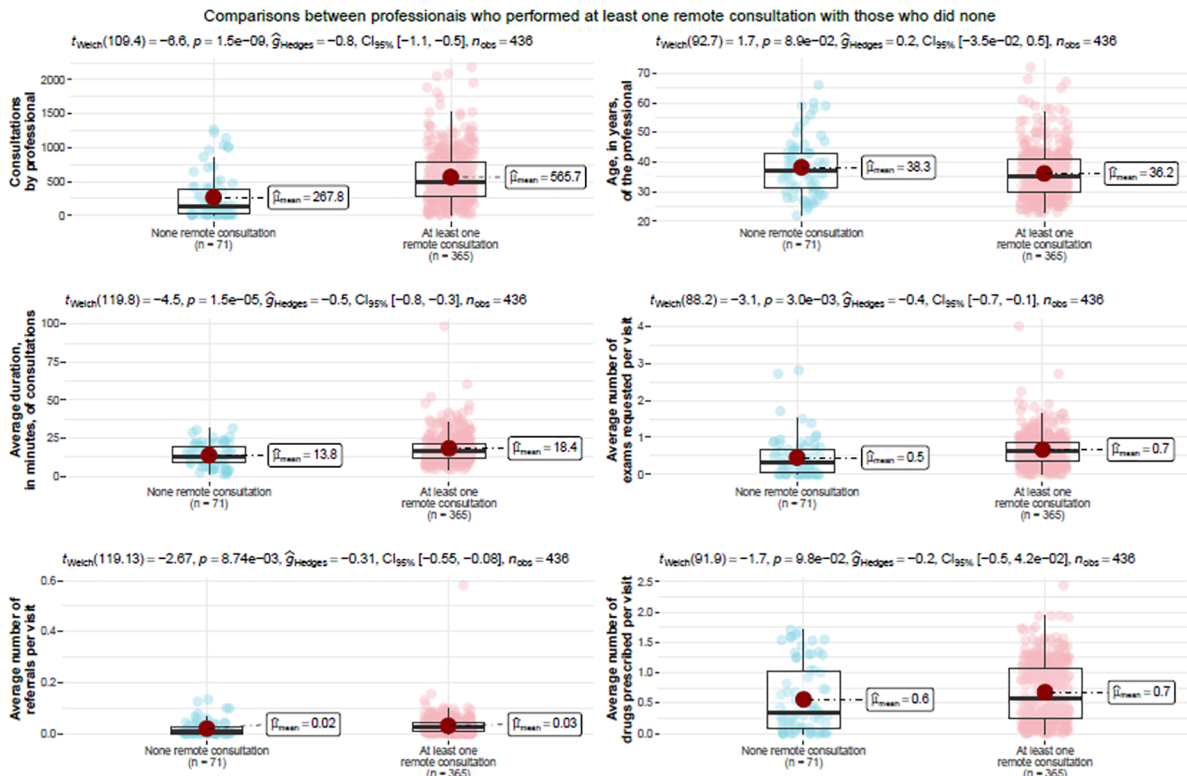| Professionals (n)	Gender		Average age (DP)	All the consultations	Teleconsultations n (%)
	Male	Female			
Physicians (216)	95	121	36,5 (9,8)	154.682	43.949 (28,4)
Nurses (220)	19	201	36,2 (7,5)	70.825	19.275 (27,2)

Figure 1. Comparisons between professionals who had some teleconsultations and those who had no teleconsultations.

We compared the proportions of conditions assessed by teleconsultation or in-person consultation. The least evaluated conditions by teleconsultation were cervical cancer screening (4.4%), impacted cerumen (6.9%), tonsillitis (11%), and childcare (12.8%).

The most frequently evaluated conditions (also by both classes of professionals) were hypothyroidism (42.8%), dyspepsia (35.8%), contraception (32%) and unclassified pain (31.2%) (Figure 4).
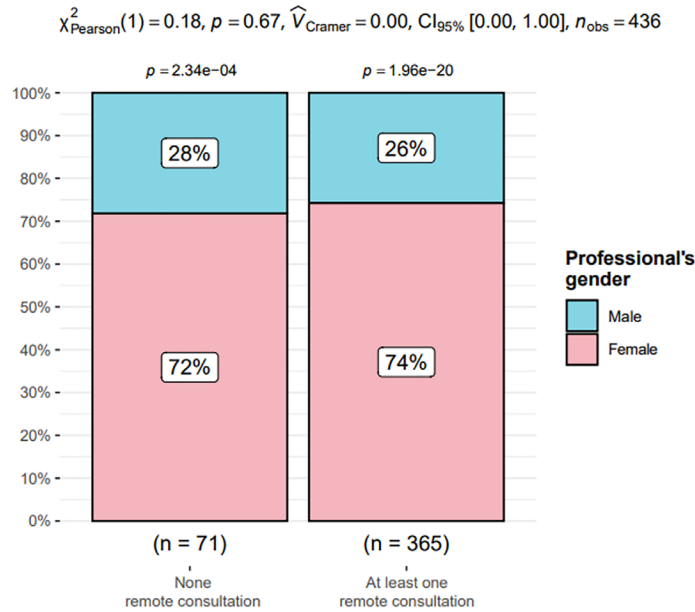
$$\chi^2_{Pearson}(1) = 0.18, p = 0.67, \widehat{V}_{Cramer} = 0.00, CI_{95\%}\ [0.00, 1.00], n_{obs} = 436$$

Figure 2. Gender of the professionals who made some teleconsultations with those who made no teleconsultations
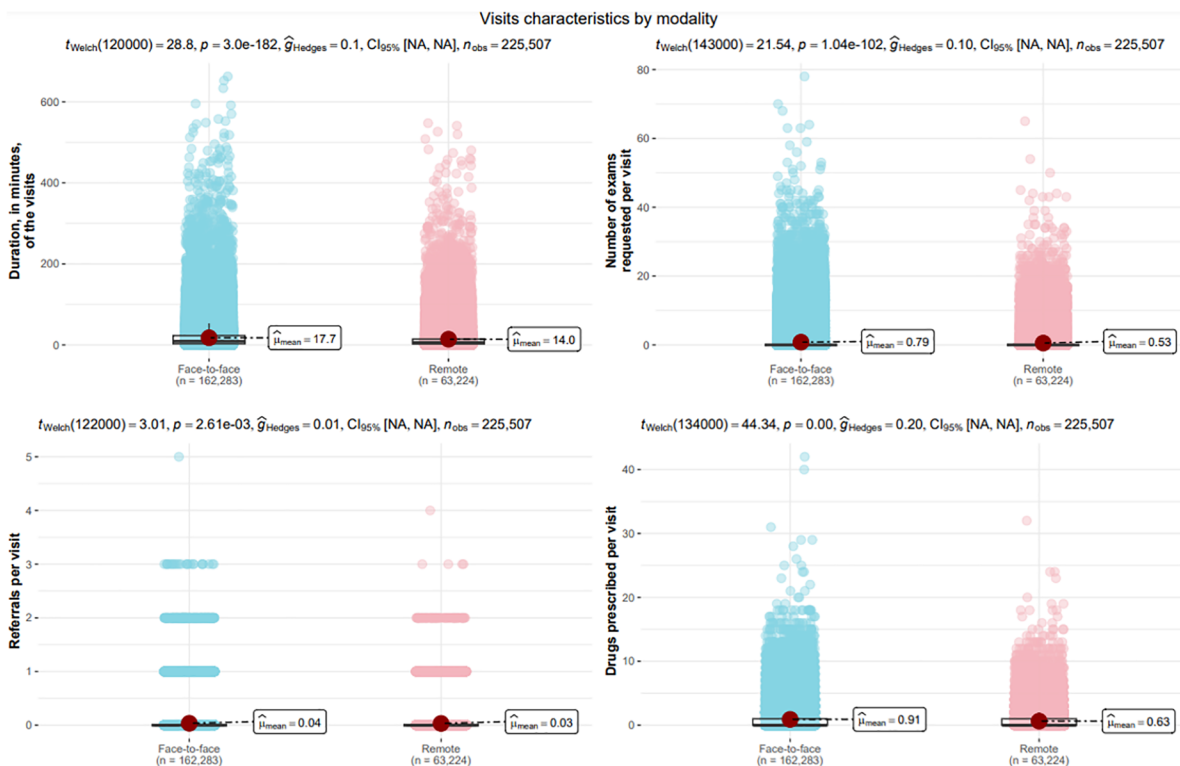

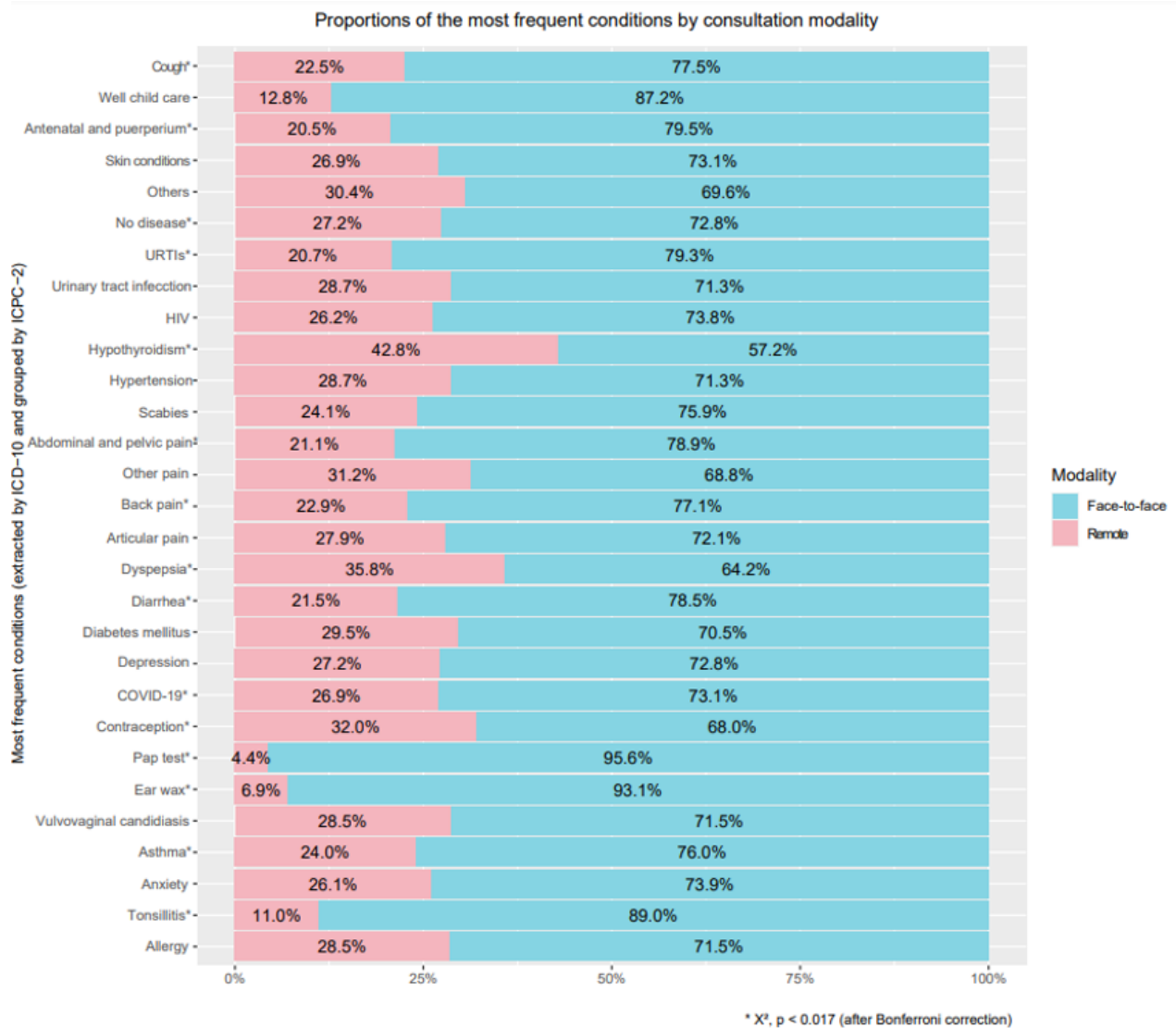**Figure 3.** Comparisons between face-to-face consultations and teleconsultations

Figure 4. Proportion of the most frequent grouped conditions by consultation modality (physicians and nurses)

CONCLUSIONS

The study aimed at analyzing the data of medical and nursing care, comparing them between teleconsultations and face-to-face consultations, from 04/15/2020 to 07/27/2020. The research stands out for being a pioneer in Brazil and evaluate data from more than 200 thousand consultations extracted from electronic medical records. The main limitations are in the reliability of the data, because there is no way to guarantee that all professionals fill out the modality of the consultations correctly and there was no training for filling out the ICDs at the end of the consultation. Although it is possible to fill out the ICD-2 at the end of the consultation, it is optional, and the electronic medical record requires the ICD-10 to be filled out.

As teleconsultation was only regulated in Brazil in March of this year, most Brazilian studies deal with telemedicine and not remote consultations (3, 8-12). The proportion of teleconsultations we observed, 28%, is relatively high, probably due to the pandemic state by Covid-19 (13).

As for the characteristics of the consultations, the study findings are in line with the international literature, showing a shorter consultation time for teleconsultations, and fewer tests requested, medications prescribed, and referrals made (13-15). Such findings are biased by the coronavirus pandemic, as Primary Care is responsible for monitoring

suspected or confirmed cases of Covid-19 and most of this monitoring is by teleconsultation.

The conditions with the highest proportion of face-to-face visits reflect the greatest need for a physical exam (childcare, prenatal care, tonsillitis) or the performance of some procedure (preventive medicine collection, ear washing). The conditions with a higher proportion of teleconsultation appointments have less need for physical exam and, the most important information can be collected through anamnesis and analysis of test results (hypothyroidism, dyspepsia, contraception).

However, it is noteworthy the paradox that doctors and nurses who had at least one teleconsultation had more consultation time and more referrals, despite the fact that in the teleconsultation itself, the consultation time and the number of referrals were shorter. This issue calls for further studies.

Therefore, it is importance to conduct further research on the subject in this period of exception in which the tool is being widely used to inform future decisions about its use in the post-pandemic period. In this sense, it would be relevant to evaluate the satisfaction of patients and professionals with the use of teleconsultation in our context, as well as the cost-effectiveness and safety of the method.

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