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Gatekeeping Through Remote Family Physician Consultations in Tertiary University Hospital During the COVID-19 Pandemic: A Cross-Sectional Study

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Abstract

Objective: To explore the potential of gatekeeping for specialized consultations and patient care via remote interactions with family physicians.

Methods: This cross-sectional study was conducted at a tertiary hospital between November 2020 and December 2021, when specialized consultations were canceled due to the COVID-19 pandemic. Patients who were evaluated for remote consultation with family physicians were included. Remote consultations were done by a family physician team facilitated through the TelessaúdeRS-UFRGS service. The primary outcome was potential patients eligible for discharge from specialty ambulatory to primary care.

Data Sources and Analytic Sample: Data were collected from hospital records. Candidates for remote consult included stable health conditions, indicating the absence of acute or decompensated symptoms as reported in the consult request via the

online platform, absence of necessity for any medical procedures or scheduled surgeries, and absence of time-sensitive situations. The prevalence of the outcome was estimated at a corresponding 95% confidence interval. The chi-square test compared the outcome according to COVID-19 mortality waves and specialty groups.

Results: At the outset, 2,429 consultations were assessed against the study's eligibility criteria. Among these, 2,160 consultations were included, of whom 776 were candidates for family physician team consultation. Subsequently, the remote family physicians team conducted 557 (23% of the original sample) consultations. Overall, 10% (95% CI: 9–11) had the potential to be discharged from specialty care. Patients' age was linked to discharged likelihood. Prevalence rates varied across specialty groups (highest in surgical patients) and COVID-19 waves (highest in the second wave).

Conclusions: This study, conducted within a tertiary hospital's specialty outpatient clinic, highlights the potential of remote consultations with a family physician team in identifying cases suitable for management in primary care settings. Our findings demonstrate that 10% of cases assessed through remote consultations exhibited potential for primary care management.

Keywords: gatekeeper, public health, primary health care, telehealth, transitional care, tertiary health care

Introduction

Secondary and tertiary care facilities within most health systems often face overwhelming demands, exacerbated partly by unnecessary consultations.¹ Strengthening primary health care (PHC) represents a viable strategy to alleviate the strain on health care

networks. Professionals in secondary and tertiary care settings may inherently adopt a more specialized view of health, leading to excessive investigations. By contrast, PHC practitioners are equipped with a broader approach to health care, enabling them to effectively serve as gatekeepers and mitigate the need for unnecessary escalations in care.^{2,3}

Ensuring adequate transitional care between different levels of health care during the transfer process remains a persistent challenge.⁴ As patients navigate various stages of the health care system, they often find themselves in vulnerable positions.⁵ Providing specialty care without clear justification can lead to an unnecessary proliferation of procedures and examinations, ultimately resulting in poorer health outcomes for patients.⁶ Moreover, a health care system centered on specialty care exacerbates societal costs and health inequities.^{7,8}

An increasing body of evidence underscores the effectiveness of telemedicine services in patient care and appointment regulation, significantly reducing waiting times for specialist appointments, improving patients' health, minimizing unnecessary referrals from primary care to specialized facilities, and enhancing the quality of referrals. These services are pivotal in reducing waiting times for essential care by streamlining the referral process. Despite the extensive evidence supporting the efficacy of telemedicine services in primary care settings, there remains a notable research gap concerning the potential of remote care and regulation services led by family doctors for appointments with specialists scheduled in tertiary hospitals.

The challenges posed by in-person care within tertiary hospital settings were accentuated amid the COVID-19 pandemic. This unprecedented situation allowed this article to explore the potential of gatekeeping for specialized consultations and patient care via remote interactions with family physicians.

Methods

This cross-sectional study adheres to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline for its conduct and reporting.⁹

The study was conducted at the Hospital de Clínicas de Porto Alegre (HCPA) in southern Brazil, renowned as one of the country's premier teaching hospitals. HCPA administers over 500,000 outpatient consultations annually across various medical specialties. TelessaúdeRS-UFRGS is a telehealth nucleus affiliated with the Postgraduation in Epidemiology of the local federal university. It was founded in 2007 and has

provided 350,000 primary care provider-to-provider remote consults.^{10,11}

Due to the COVID-19 pandemic, HCPA was compelled to cancel several elective consults and move some professionals to support inpatient care. HCPA partnered with TelessaúdeRS-UFRGS to minimize the impact of the canceled consults and manage requests for a replacement for a missed consult due to missed COVID-19 schedules. The scheduling request was facilitated through a patient-directed platform developed by the hospital.

The replacement of consults service was provided between November 2020 and December 2021. Patients were contacted by HCPA administration through SMS and advised to use an online platform to request a replacement for a missed consult. Some medical services managed this request internally, but they could transfer this process to the remote outpatient clinic managed by family physicians. During the initiative, it became clear to the team that some patients were stable and did not have a reason to maintain their care in specialized care; as such, a decision tree for the replacement consults was constructed (as detailed below and in Fig. 1).

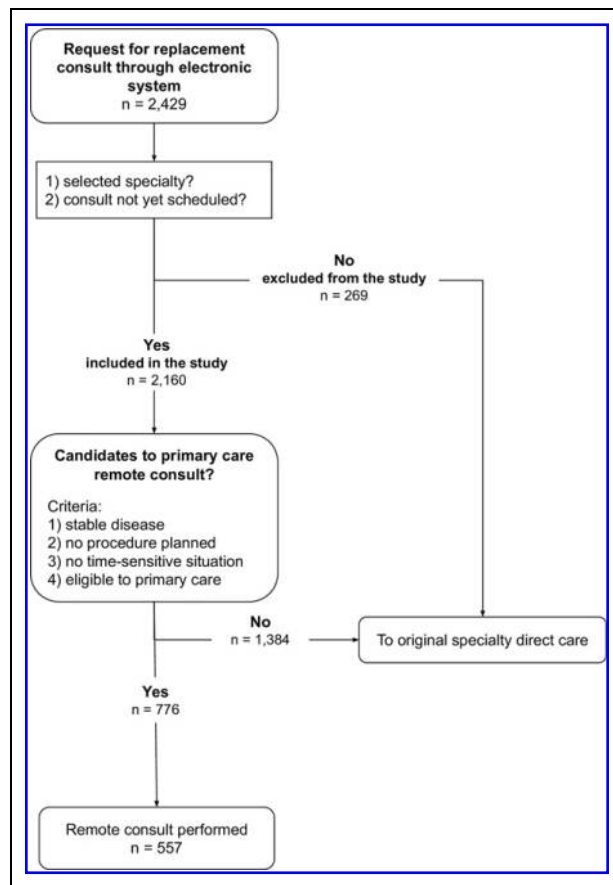


Fig. 1. Decision-making process for consult replacement and remote consultation with family physicians.

As shown in *Fig. 1*, after requesting a replacement consult, the team reviewed the electronic health records to guarantee that an in-person consult was not already performed or scheduled. After that, the family medicine service evaluated whether a remote consult with the team could address the issue. For this step, the following criteria were used: (a) the health condition was stable (i.e., no acute or decompensated symptoms reported in the consult request in the online platform); (b) no medical procedure or surgery was needed or planned; (c) there was no time-sensitive situation, such as suspected or diagnosed cancer; and (d) it was a health condition candidate to primary care. Ineligible patients were directed to specialty care (remote or in-person). If considered candidates, patients were scheduled for a remote consult with the family medicine team.

For the remote consultations, we employed synchronous, telephone-based calls. From the patient's perspective, contact was made using the telephone number in their medical record. From the service perspective, we built (joining hospital and TelessaúdeRS expertise) a teleconsult central with computers and Voice over Internet Protocol phones.

Medical students and family medicine residents conducted remote consultations directly under the supervision of family physicians. Each consultation was meticulously recorded and documented in the patient's electronic health record for comprehensive tracking and continuity of care. Supervision occurred in every call, putting the call on hold and discussing the case with the supervisor.

The consults did not involve formal facilitators, though patients often included available family members. However, this was not a predefined requirement. Consults were planned to last 30 min, as per the hospital standard. Most contacts generally lasted 50 min, including the supervision time.

We included patients who requested a replacement consultation through the HCPA electronic system, which was lost due to automatic cancellations in the first months of the pandemic. We excluded consults scheduled directly with the specialty before the request was sent to the remote outpatient clinic and those specialties that managed these requests internally.

The following characteristics were extracted from HCPA electronic health records: age (years), sex (male and female), self-reported race (White, Black, multiracial, and others), education level (incomplete elementary school, elementary school, high school, and complete university degree), place of residency (Capital, Metropolitan Area, and Outside Metropolitan Area), specialties, and their respective subspecialties were aggregated into three groups: clinical, surgical, and clinical-surgical. The Supplementary Table S1 details this division.

The primary outcome was potential patients were eligible for discharge from HCPA ambulatory specialty to primary care services. As a secondary outcome, we explored the association between medical specialties and the likelihood of patient discharge.

Primary care was defined by combining the state's criteria for referring patients from primary care to specialized care (<https://www.ufrgs.br/telessauders/regulasus/#sobre>) with a stability criterion. A patient was deemed eligible for discharge if they did not fulfill the state's criteria or if it was stable without planned procedures or surgeries. Stability was defined as no treatment changes with only follow-up consults in the previous 2 years (twice a year in the clinical specialties and once a year in surgery specialties). Two researchers accessed the outcome independently. If disagreement occurred, consensus through discussion was reached. The proportion of patients that could be discharged from specialty care was aggregated as the "discharge capacity" of the specialty. As an additional retrospective evaluation, the consults of the five specialties with the highest discharge capacity were further reviewed to identify the main health care problems eligible for discharge.

STATISTICAL METHODS AND SAMPLE SIZE

Descriptive analysis was conducted using the mean and standard deviation or median and interquartile range 25–75% (IQR 25–75%) for continuous variables, while absolute and relative.

The prevalence of patients eligible for discharge was calculated with its respective confidence interval. We also analyzed the association between specialty groups (clinical, surgical, clinical-surgical) and COVID-19 mortality waves and the study outcome throughout the study period through the chi-square test. As outlined by Moura et al.¹², Brazil experienced significant waves of COVID-19 mortality during the study period: the first wave occurred before our study, the second wave included the initial period of the study to March 2021, followed by the third wave extending until the end of the study.

The analysis was executed using the R software package in version 4.2.2. We employed a convenience sampling method, selecting all consultations that met the predetermined inclusion criteria.

Results

At the outset, 2,429 consultations were assessed against the study for inclusion. Among these, 269 consultations did not meet the criteria, and 2,160 were included. Subsequently, 1,384 out of the 2,160 included patients were not candidates

for remote family physician consultation and were directed to their original specialty. From the remainder of 776 requests, the remote family physicians team reached 557 (23% of the original sample) patients after multiple contacts. The mean age of the patients was 58.0 ± 18.4. Most of our sample comprised females (65%), self-reported as White (91%), with incomplete or complete elementary school education (59%), and residing in the state capital, Porto Alegre (52%). Most specialty consultations were clinical, 498 (64%) (Table 1). Medical specialty was not associated with the potential to be discharged from specialty care. Supplemental Data (Supplementary Table S1) details the distribution of the specialties from patients excluded, included, and candidates for remote consult.

The overall prevalence of cases with discharge potential was 10.5% (ranging from 9.2% to 11.8%). The prevalence rates varied significantly across different specialty groups. The surgical specialty exhibited the highest prevalence (14.1% [95% CI: 11.2–17.5]), followed by the clinical specialty group at 13.3% (95% CI: 11.30–15.6), and then the clinical–surgical group at 2.9% (95% CI: 1.6–4.8). The chi-

square test showed that all groups differed significantly ($p < 0.001$).

Our findings also reveal a notable difference in the prevalence of the study outcome across COVID-19 waves. Specifically, 197 cases deemed to have the potential for discharge occurred during the second wave (prevalence 12.7% [95%CI: 11.1–14.4]), whereas 30 cases (prevalence 4.9% [95%CI: 3.3–6.9]) were observed during the third wave. This difference was also statistically significant, with a p -value of 0.001.

Discussion

This study, conducted within a tertiary hospital’s medical specialty outpatient clinics, underscores the potential of remote consultations with a family physician team in identifying cases that could be managed in primary care settings. Our findings reveal that over 10% of cases evaluated through remote consultations demonstrated the potential for primary care management. These findings underscore the impact of telemedicine in enhancing health care delivery, particularly in optimizing the gate-keeping function of primary care providers in a tertiary hospital.

The evidence consistently demonstrates the potential of telehealth services involving general practitioners in effectively regulating consultations referred from primary care to specialists. A retrospective cohort study with contemporaneous controls involving 50,185 Brazilian patients revealed significant outcomes.^{13,14} This and our study used a telemedicine program (RegulaSUS) to implement referral protocols, audit waitlisted cases, authorize/prioritize risk-based referrals, and facilitate discussions on deferred cases with primary care physicians. Results showed that the mean referral-to-consultation time was significantly reduced in the intervention group (IG) (584.8 days) compared with controls (607.0 days) ($p < 0.001$). In addition, at the end of the observation period, the number of waitlisted patients was reduced, with 53.5% in the control group (CG) and 61.9% in the IG ($p < 0.001$).¹³ This telemedicine support for primary care not only decreased the time to specialty consultation but also reduced the number of waitlisted patients, enabling faster access to specialists for sicker patients.

Despite limited research on discharges from specialty care in tertiary hospitals to PHC settings, one study addressed this gap through a randomized noninferiority clinical trial.¹⁵ The study focused on patients with stable coronary artery disease, enrolling 271 individuals with functional angina class 1 or 2 who met discharge criteria. Participants were randomly assigned to remain in the cardiology outpatient clinic for

Table 1. Characteristics of Sample Eligible for Remote Consultation with the Team of Family Doctors

VARIABLE	TOTAL
Age (years), mean (SD)	58.0 (18.4)
Sex, n (%)	
Male	270 (34.8)
Female	506 (65.2)
Self-reported race, n (%)	
White	704 (90.7)
Black, Multiracial, and Others	72 (9.3)
Scholarship, n (%)	
Elementary School	455 (58.6)
High School and University Degree	286 (38.6)
Place of Residence, n (%)	
Metropolitan Area	407 (52.4)
Capital (Porto Alegre)	260 (33.5)
Specialty Group, n (%)	
Clinical	498 (64.2)
Surgical	218 (28.1)
Surgical–clinic	60 (7.7)

Values are given as frequency (%) or the mean and standard deviation (SD).

12 months (CG) or transition to follow-up in a primary care unit with clinical support via telemedicine (IG). The primary outcome measure was the maintenance of functional angina class after 12 months. Importantly, they found that differences in patients' functional angina class did not lead to an increased rate of emergency care seeking. This finding supports the safety of discharging patients from the outpatient clinic with telemedicine support, particularly for those with stable coronary artery disease managed at the tertiary level. Furthermore, we observed that control of risk factors in these patients was noninferior to those followed up in primary care. Another study corroborates these findings in people living with chronic kidney disease at stages 2, 3, and 4.¹⁶

In our study, we observed a significant variation in prevalence rates across different specialty groups, underscoring the diverse impact of discharge potential within these domains. These differences suggest that tailored strategies may be required to optimize discharge processes across specialty groups. Understanding these nuances can inform policy adjustments and resource allocation, ultimately enhancing patient care and operational efficiency within health care settings.

The observed variation in the prevalence of the study outcome across COVID-19 waves suggests that the pandemic's progression significantly influenced health care dynamics. These results highlight the distinct impact of each wave on the study outcome, providing valuable insights into the temporal dynamics of COVID-19 in Brazil and contributing to the planning of future public health responses.

The present study is not free of limitations. The sample was derived from patients whose care was disrupted by the COVID-19 pandemic, introducing a potential selection bias. The requirement for internet access to make requests may be associated with a higher socioeconomic status. However, it is worth noting that in the south of Brazil, approximately 80% of the population has internet access, mitigating this concern to some extent.^{17,18} The remote consultation eligibility criteria, particularly related to clinical stability, excluded many patients, limiting the study's applicability to unstable patients. However, the study was conducted in a highly complex hospital, with the primary objective of ensuring the safety of the patients' clinical conditions. Despite this imperative, findings reveal that the proportion of patients eligible for discharge from specialized outpatient clinics to primary care mirrors those delineated in regulations governing referrals to specialized services from primary care providers.^{13,19}

Due to the distribution of participants within each clinical specialty, making direct prevalence comparisons across specific specialties was not feasible.

Nevertheless, we could compare broader categories, namely clinical, surgical, and clinical-surgical groups. Our study lacks an assessment of the residents' decision-making patterns during the study period. Future research should incorporate a detailed analysis of decision-making patterns to enhance our comprehension of the clinical dynamics and inform targeted educational interventions for residents. Furthermore, it was not possible to contact some patients, a limitation that may be associated with the pandemic period.

HCPA conducts an average of 30,000 face-to-face specialist consultations annually. Remarkably, if 10% of these cases are identified as eligible for discharge to primary care within this tertiary health care setting alone, over 3,000 individuals could potentially vacate specialized service slots. The evidence consistently shows that reducing patient numbers in specialized consultations leads to tangible benefits, including shorter waiting lists and improved health outcomes for patients who receive prompt attention.^{13,20} This reduction in patient load not only cuts down on direct costs related to consultations and diagnostic tests but also minimizes travel to specialized centers, thereby lowering associated travel expenses and environmental footprint.²¹

Future perspectives emphasize the importance of continuing to evaluate these patients to understand the outcomes of their discharges. For instance, designing a randomized controlled trial could determine how discharges can be effectively implemented and assess the capacity of PHC systems to evaluate these patients. This step may be crucial to understanding the outcomes of discharges and minimizing the patient's risk in this process.

Finally, the novelty of this study lies in its demonstration that incorporating family physicians' perspectives through telemedicine can enhance the transition of care from specialized services to primary care, even within a highly specialized university hospital setting.

Conclusions

In conclusion, this study conducted within a tertiary hospital's specialty outpatient clinic highlights the potential of remote consultations with a family physician team in identifying cases suitable for management in primary care settings. Our findings demonstrate that 10% of cases assessed through remote consultations exhibited potential

for primary care management. This underscores the pivotal role of telemedicine technologies, particularly remote consultations, in extending the capabilities of primary care providers. By leveraging virtual assessments and remote management of common health issues, primary care providers can efficiently triage patients, optimize resource allocation, and facilitate timely specialist referrals when necessary.

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Authors' Contributions

R.P.T.: Conceptualization, Methodology, Software, Investigation, Writing–Original Draft, Writing–Review & Editing, Visualization, Project administration, Funding acquisition. F.C.: Conceptualization, Methodology, Writing–Original Draft, Writing–Review & Editing. D.V.R.: Methodology, Writing–Original Draft, Writing–Review & Editing. R.M.: Methodology, Writing–Original Draft, Writing–Review & Editing, Formal analysis. G.H.A.M.: Conceptualization, Investigation, Writing–Review & Editing. R.N.U.: Methodology, Resources, Writing–Review & Editing, Funding acquisition. R.S.S.: Conceptualization, Methodology, Investigation, Writing–Review & Editing, Funding acquisition. S.S.M.: Conceptualization, Writing–Original Draft, Writing–Review & Editing. N.K.: Methodology, Resources, Writing–Review & Editing, Funding acquisition. M.R.G.: Conceptualization, Methodology, Validation, Resources, Writing–Review & Editing, Supervision, Funding acquisition.

Ethical Approval

The HCPA Ethics Research Committee approved this study under reference number 46128621200005327 and project number 2021-0165. All gathered data were confidential and anonymized, per Brazilian data protection laws.

Disclosure Statement

The authors declare that they have no conflicts of interest to disclose.

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Supplementary Material

Supplementary Table S1

REFERENCES

- Rao M, Pilot E. The missing link—the role of primary care in global health. *Glob Health Action* 2014;7(1):23693; doi: 10.3402/gha.v7.23693
- Kaneko M, Higuchi T, Ohta R. Primary care physicians working in rural areas provide a broader scope of practice: A cross-sectional study. *BMC Prim Care* 2024;25(1):9; doi: 10.1186/s12875-023-02250-y
- Stralen ACV, Carvalho CL, Girardi SN, et al. The scope of practice of primary health care physicians in rural and urban areas in Brazil. *Cad Saude Publica* 2021;37(9):e00211520; doi: 10.1590/0102-311x00211520
- Ackerman SL, Gleason N. Transitioning patients from specialty care to primary care: What we know and what we can do. *J Ambul Care Manage* 2018;41(4):314–322; doi: 10.1097/JAC.0000000000000253
- Brez S, Rowan M, Malcolm J, et al. Transition from specialist to primary diabetes care: A qualitative study of perspectives of primary care physicians. *BMC Fam Pract* 2009;10(1):39; doi: 10.1186/1471-2296-10-39
- Starfield B. Comprehensiveness versus special interests: Family medicine should encourage its clinicians to subspecialize: Negative. In: *Ideological Debates in Family Medicine*. Nova Publishers: New York; 2007.
- Gkiouleka A, Wong G, Sowden S, et al. Reducing health inequalities through general practice. *Lancet Public Health* 2023;8(6):e463–e472; doi: 10.1016/S2468-2667(23)00093-2
- Gkiouleka A, Wong G, Sowden S, et al. Reducing health inequalities through general practice: A realist review and action framework. *Health Soc Care Deliv Res* 2024;12(7):1–104; doi: 10.3310/YTWW7032
- Von Elm E, Altman DG, Egger M, et al. STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *J Clin Epidemiol* 2008;61(4):344–349; doi: 10.1016/j.jclinepi.2007.11.008
- Harzheim E, Gonçalves MR, Umpierre RN, et al. Telehealth in Rio Grande do Sul, Brazil: Bridging the gaps. *Telemed J E Health* 2016;22(11):938–944; doi: 10.1089/tmj.2015.0210
- Dos Santos LF, Carvalho F, Rados DV, et al. Reasons for provider-to-provider synchronous teleconsultations between nurses in primary care: A cross-sectional study of TelessaúdeRS-UFRGS service. *Telemed J E Health* 2024;30(1):77–84; doi: 10.1089/tmj.2023.0003
- Moura EC, Cortez-Escalante J, Cavalcante FV, et al. Covid-19: Evolução temporal e imunização nas três ondas epidemiológicas, Brasil, 2020–2022. *Rev Saúde Pública* 2022;56:105; doi: 10.11606/s1518-8787.2022056004907
- Pfeil JN, Rados DV, Roman R, et al. A telemedicine strategy to reduce waiting lists and time to specialist care: A retrospective cohort study. *J Telemed Telecare* 2023;29(1):10–17; doi: 10.1177/1357633X20963935
- Caffery LJ, Farjian M, Smith AC. Telehealth interventions for reducing waiting lists and waiting times for specialist outpatient services: A scoping review. *J Telemed Telecare* 2016;22(8):504–512; doi: 10.1177/1357633X16670495
- Ruschel KB, Rados DR, Furtado MV, et al. Transition of care of stable ischaemic heart disease patients from tertiary to primary care with telemedicine support: Randomized noninferiority clinical trial. *J Telemed Telecare* 2022;28(1):52–57; doi: 10.1177/1357633X20906648
- Meran S, Don K, Shah N, et al. Impact of chronic kidney disease management in primary care. *QJM* 2011;104(1):27–34; doi: 10.1093/qjmed/hcq151

17. Silva VH, Otavio M. Acesso à internet cresce no brasil e chega a 84% Da População Em 2023, Diz Pesquisa. 2023. Available from: <https://g1.globo.com/tecnologia/noticia/2023/11/16/acesso-a-internet-cresce-no-brasil-e-chega-a-84percent-da-populacao-em-2023-diz-pesquisa.ghtml>
18. Nakayama LF, Binotti WW, Link Woite N, et al. The digital divide in Brazil and barriers to telehealth and equal digital health care: Analysis of internet access using publicly available data. *J Med Internet Res* 2023;25:e42483; doi: 10.2196/42483
19. Katz N, Roman R, Rados DV, et al. Acesso e regulação ao cuidado especializado no Rio Grande do Sul: A estratégia RegulaSUS do TelessaúdeRS-UFRGS. *Ciênc Saúde Coletiva* 2020;25(4):1389–1400; doi: 10.1590/1413-81232020254.28942019
20. Naiker U, FitzGerald G, Dulhunty JM, et al. Time to wait: A systematic review of strategies that affect out-patient waiting times. *Aust Health Rev* 2018;42(3): 286–293; doi: 10.1071/AH16275
21. Rodler S, Ramacciotti LS, Maas M, et al. The impact of telemedicine in reducing the carbon footprint in health care: A systematic review and cumulative analysis of 68 Million clinical consultations. *Eur Urol Focus* 2023;9(6):873–887; doi: 10.1016/j.euf.2023.11.013

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