Acceptance, Use and Barriers of Telemedicine in times of SARS-CoV-2 in Transgender Health Care: Results of a nationwide cross-sectional survey

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Submitted to: Journal of Medical Internet Research
on: May 08, 2021

Table of Contents

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Abstract

Background: The global incidence in the treatment of transident people is increasing. In the COVID-19 pandemic, many consultations had to be cancelled, postponed or converted to a virtual format. Telemedicine in Transgender Health Care management could support physicians.

Objective: This study analyses the Acceptance, Use and Barriers of Telemedicine in times of SARS-CoV-2 in Transgender Health Care in Germany.

Methods: This prospective cross-sectional study was based on a survey of gynecological endocrinologists and transident patients in Germany during the COVID-19 pandemic. Descriptive statistics were calculated and regression analyses were performed to show correlations.

Results: We analyzed the responses of 269 transident patients and 202 gynaecological endocrinologists treating transident patients. Most believed that telemedicine was useful. Physicians as well as patients rated their knowledge of telemedicine as unsatisfactory. The majority of respondents said they do not currently use telemedicine, although would like to do so. Patients and physicians reported that their attitude had changed positively towards telemedicine and that their usage had increased due to COVID-19. The majority in both groups agreed on implementing virtual visits in stable disease conditions. In the treatment phases, 74.4% (150/202) of the respondents would use telemedicine during follow-up. Half of the respondents would choose telecounseling as a specific approach to improving care (128/202, 63.2%). Obstacles to the introduction of telemedicine include the purchase of technical equipment (132/202, 65.3%), administration (124/202, 61.2%) and poor reimbursement (106/202, 52.4%).

Conclusions: Telemedicine in Transgender Health Care finds limited use but high acceptance among doctors and patients alike. The absence of a structured framework is an obstacle to effective implementation. Training courses should be introduced to improve the limited knowledge in the use of telemedicine. More research in teleendogynaecology is needed. These include large-scale randomized controlled trials, economic analyses and the exploration of user preferences.

(JMIR Preprints 08/05/2021:30278)
DOI: https://doi.org/10.2196/preprints.30278

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Conclusion: Telemedicine in Transgender Health Care finds limited use but high acceptance among doctors and patients alike. The absence of a structured framework is an obstacle to effective implementation. Training courses should be introduced to improve the limited knowledge in the use of telemedicine. More research in teleendogynaecology is needed. These include large-scale randomized controlled trials, economic analyses and the exploration of user preferences.

Keywords: eHealth, telemedicine, teleendogynaecology, health services research, COVID-19, transgender Health Care

Introduction

The global incidence of transient treatment is increasing. Approximately 15 000 to 25 000 persons in Germany are affected [1]. Transidentity refers to people in whom the perceived gender and the physical gender with which they were born do not match. The COVID-19 pandemic has fundamentally changed countless aspects of life around the world [2]. The processes of everyday life and work have changed. Keeping distance, adhering to hygiene regulations and restrictions on contact have been determining the lives of people around the world and in Europe for more than a year [3]. In Germany, the third wave of the Covid 19 pandemic has just begun. The number of infections is increasing every day. The health sector is affected enormously. In addition to the changes in the acute treatment of COVID-19 disease, many other changes have occurred in the day-to-day medical care since then. Planned operations have been postponed, non-life examinations and therapies have also been postponed. The aim was to create more free capacities for the treatment of SARS-CoV-2 patients [4]. Due to pandemic containment measurements, many patient appointments had to be cancelled or were switched to telephone or video counseling. However, the clinical care of the patients had to be continued. In particular, transient patients are dependent on regular medical consultations. Frequently, follow-up checks are carried out to monitor ongoing endocrine hormone therapy. Endocrine hormone therapy is essential for the transition and with its help sufferers have a normal life possible. New concepts and ideas were used. The topic of digitization was driven forward by the COVID-19 pandemic. The use of digital applications in everyday clinical practice is well established. While some medical disciplines have made further progress in the implementation and application of digital media, other disciplines remain largely untouched [5]. Digital media and applications can positively influence patient care and open up new treatment paths. Many practitioners believe that telemedicine has great potential for managing patient care. Digitalisation affects 90% of the healthcare system and has already brought many changes for both patients and doctors, which have decisively influenced the patient-doctor relationship [6]. Patients are willing to use mobile health technologies to improve their disease status and monitor symptoms and disease activity. The use of digital health applications has also increased in recent years [7]. The perspective of the patient and the gynecological endocrinologist is crucial for the successful development and implementation of telemedicine concepts for the management of transient patient care [8]. The central question is whether and how an adequate treatment can be performed digitally in the future. This study explored the Acceptance, Use and Barriers of Telemedicine in times of SARS-CoV-2 in Transgender Health Care in Germany. Changes in these aspects were observed particularly during the COVID-19 pandemic.

Methods

The survey was conducted among gynaecological endocrinologists (specialists and trainees) and transident patients on the situation of the use of digital health applications in the form of telemedicine in the times of Covid-19. The responsible ethics committee of the University in Jena was informed and did not object to the study (Reg. -No: 2019 -1456-Bef). The web-based survey was conducted by members of the Working Group on Young Gynaecology and Obstetrics of the German Society for Gynaecology and Obstetrics (Arbeitsgemeinschaft Junges Forum der Deutschen Gesellschaft für Gynäkologie und Geburtshilfe (DGGG). In order to investigate the identified areas of interest, a panel of experts has conducted a questionnaire in two separate online meetings based on individual literature searches, similar to the EULAR recommendation working group Standard operating procedures drafted [9]. Four areas were investigated: (1) sociodemographic data, (2) basic use of Digital Health Applications, (3) Telemedicine: Knowledge and Use, (4) Teleendogynaecology: Barriers and benefits. The study questionnaires were designed in a web-based design according to published guidelines for questionnaire research [10, 11, 12]. The choice of questions for the questionnaire was based on both comparable work and on the quality criteria for online questionnaires [13]. The surveys were created in SurveyMonkey TM (SurveyMonkey, San Mateo, CA). The web-based survey (SurveyMonkey Inc.) was conducted from November 1, 2020 to March 30, 2021. The data were collected anonymously. The methodology and results of the study were reported according to the checklist for reporting the results of Internet e-surveys [14]. Content of the questionnaires based on the published research results on digitalisation among patients, a 23-part, self-managed online questionnaire was developed. Members of the Working Group Young Forum of the German Society for Gynaecology and Obstetrics (DGGG) were asked to provide feedback on the format, completeness, clarity and procedure for the validation process [11]. Both surveys was pilot-tested. The survey for physicians was tested on 10 physicians and the patient survey on 10 transident patients to gauge the need to refine wording and format, and to check whether predefined response options were exhaustive. Minor revisions were made. Accordingly, the questionnaire was modified. It consisted of binominal questions, questions in categorical Likert scales (5 levels) and open questions and was entitled ‘Telemedicine in the era of COVID-19 in gynecological endocrinology for the treatment of transient patients.’

The main sections were:

1. Epidemiological data of respondents
2. Basic Use of Digital Health Applications
3. Telemedicine: Knowledge and Use

4. Teleendogyn: Barriers and benefits

The aim of the survey was to shorten the interview duration of a maximum of 15 minutes in order to keep the dropout rate as low as possible and to motivate the respondents to answer the questions as much as possible [15, 16]. The questionnaire was distributed via e-mail addresses of the physicians. The physicians survey was sent to 2287 gynaecological endocrinologists (specialists and trainees) Germany. The contact details of potential participants in Germany were provided by the Association of Statutory Health Insurance Physicians. In an information letter, participants were informed that their data will be treated strictly confidential and anonymously. Access to the study was granted with a survey link. Transident Patients who are undergoing gynaecological-oncological treatment in our facility have access to the online questionnaire via a QR code or survey link. In an information letter, participants were informed that their data will be treated strictly confidential and anonymously. All participants gave their consent. There were no exclusion criteria. Only fully completed questionnaires were included in the subsequent analysis. The results were analyzed using SurveyMonkeyTM and the Statistical Package for the Social Sciences, SPSS (Version 27.0, SPSS Inc., Chicago, IL, USA). Descriptive statistics included quantities, percentages, median scores, and ranges for ordinal variables. A p-value of less than 0.05 was considered significant.

Results

Overview

From November 2020 to March 2021, a cross-sectional, self-completed, web-based survey on Acceptance, Use and Barriers of Telemedicine in times of SARS-CoV-2 in Transgender Health Care in Germany was filled in by gynaecological endocrinologists in Germany and transident patients. Of the 2287 physicians-questionnaires that were sent out, 286 (12.5 %) were returned. Of the 286 responses, 84 were excluded from the analysis because fewer than half the questions were answered. The final response rate for physicians was 8.8 % (202/2287). In the period from November 2020 to March 2021, 333 transident patients were participated in the study. Of the 333 responses, 64 were excluded from the analysis because fewer than half the questions were answered. Definitive response rate for patients cannot be given as the survey was launched via social media. So that there is no limit to the number of patients. Of the 269 completely answered patient questionnaires, 24 come from our clinic. We treat around 120 transient patients per year. We have a faculty-based response rate of 24/120 (20%). Of the 24 in-house patient questionnaires, 22 were correctly completed, so that 22/120 (18.3%) in-house patient questionnaires could be included.

Epidemiological data of respondents

Two hundred and sixty-nine patients and two hundred and two gynaecological endocrinologists completed the survey. Most patients were between 21 and 30 years old. The majority of patients were female-to-male (n=148, 55%). The majority of the participating patients had been on endocrinological treatment for more than 24 months. 202 doctors took part in the survey. Almost 73% were women (n=148). 44% work in a private practice, 32% (n=65) were clinicians in a university hospital, 24% in a non-university hospital. Details of the participants are given in Table 1.

Basic Use of Digital Health Applications (DHAs)

A percentage of 82.6% (n=222) of patients reported to use apps several times a day on a smartphone, 9.5% (n=26) used apps once daily and 6.2% (n=17) once weekly. Only 1.7% (n=4) of the patients stated to never use apps. Ninety-one percent (n=245) of patients are able to use digital health applications. In addition, almost eighty percent (n=215) say that the use of digital health applications can have a positive impact on their disease treatment, while almost twenty percent (n=54) disagreed. The higher the age of patients, the lower the overall app usage ($p<0.001$) and the lower their confidence in using apps ($p<0.001$), adjusted for gender and time of treatment. All physicians are able to use digital health applications. Seventy-six per cent (n=135) of gynaecological endocrinologists described the use of DHAs for managing the patient's disease as useful, only 2.8% (n=6) disagreed. No significant difference in gender, age, degree of training and workplace was noted. Due to the COVID-19 pandemic, the attitude towards DHAs changed positively in 54.4 % of patients (n=146) and 40.3% of physicians (n=81). Eighty-nine per cent of patients (n=239) and 64.6% of gynaecological endocrinologists (n=130) reported using DHAs more regularly (table 2). At the time of the survey, patients were most likely to use video consultations (80 %, n=214), informative DHAs (77.9%, n=210) and symptom checkers (42.7%, n=115). Digital disease-related questionnaires and diary DHAs should be used more frequently in the future. Therapy DHAs and self-taken blood samples with digital access to the results showed different levels of acceptance: 58.6% of patients (n=158) said they had no interest and 41.4% (n=111) could imagine a future application of this technique. Physicians were most likely to use therapy DHAs (79.2 %, n=160), digital diary (66.3%, n=134) and video consultations (65.3 %, n=132). Digital information DHAs and digital-related questionnaires should be used more frequently in the future. Self-taken blood samples with digital access to the results showed different levels of acceptance: 57.4% of physicians

(n=116) said they had no interest and 42.6% (n=86) could imagine a future application of this technique. The majority of gynecological endocrinologists reject the use of symptom checker (30.20 %, n=61). Details of the participants are given in Figure 1. Patients were most likely to say that video consultations for aftercare (74.2%, n=200) and emergency appointments (54.9%, n=148) are possible. 63.8% (n=172) of patients said that time-synchronous digital consultation could complement physical appointments. In addition, 75.6% (n=203) of patients and 64.2% (n=130) of gynecological endocrinologists indicated that they should cancel an appointment on site if the patient's disease is stable and he can indicate his well-being by using a DHA (Figure 2).

Telemedicine from a medical point of view: Knowledge and Use

A total of 71.3% (n=144) of physicians rated their knowledge of telemedicine as 4 (unsatisfactory), 5 (bad) or 6 (very poor). The minority (58/202, 28.7%) rated their knowledge of telemedicine as 1 (very good), 2 (good) or 3 (satisfactory). the majority (175/202, 86.6%) currently does not use telemedicine, but 69.3% (140/202) said they would like to use it. A total of 89.3% (180/202) of the physicians surveyed pointed out that they do not use telemedicine due to barriers. The three main obstacles to the introduction of telemedicine According to the respondents, the purchase of technology equipment (132/202, 65.3%), administration (124/202, 61.2%) and poor reimbursement (106/202, 52.4%) (table 3).

Teleendogyn in transident patient care management: Barriers and benefits

A total of 74.8% (151/202) of the respondents considered telemedicine to be useful in gynecological endocrinology in transident patient care management. When asked who should interact with telemedicine, 82.3% (166/202) answered doctor-doctor, 66.7% (135/202) doctor-patient and 35.7% (72/202) physician-assistant (multiple answers were possible). The preferred therapeutic phases for the use of telemedicine in the treatment of transident patients were observed (150/202, 74.4%), first contact (68/202, 33.8%) and preventive examinations (39/202, 19.4%). Participants were asked to provide specific digital tools that could support endocrinological care for transident patients. The most frequently selected topics were teleconsulting (128/202, 63.2%), video consultations (90/202, 44.7%) and telediagnostics (75/202, 37.1%). This was followed by online appointments (64/202, 31.9%), e-learning (45/202, 22.4%), patient apps (37/202, 18.2%), digital screening (35/202, 17.2%), portable devices (22/202, 10.8%) and other instruments (9/202, 4.4%) (table 4).

Discussion

Principal Findings

This study was the largest nationwide survey on the use of telemedicine in Germany in the field of gynecological endocrinology for the promotion and implementation of teleendogynecology for the treatment of transident patients. For this purpose, transident patients and gynecological endocrinologies that treat transident people were interviewed. We report on the results of a joint survey that evaluated the perspectives of patients and gynecological endocrinologists during the COVID-19 pandemic. The survey contains the following main topics: 1. Epidemiological data of respondents, 2. Basic Use of Digital Health Applications, 3. Telemedicine: Knowledge and Use and 4. Teleendogyn: Barriers and benefits. In this survey study, patients and gynecological endocrinologists reported a positive attitude and increased usage of DHAs due to the COVID-19 pandemic in Germany. In line with previous patient surveys [18], the majority of the patients reported that they regularly used mobile apps on their smartphone and believe that they were able to use DHAs and the using of DHAs may be beneficial for one's own disease treatment. All physicians can use digital health applications. This is the basis for the use of telemedical applications in the field of gynecological endocrinology. Gynaecological endocrinologists see the overall use of telemedicine as acceptable and more than two thirds of respondents want to use telemedicine in their daily practice and welcome the wide range of approaches to telemedicine. However, only a minority of doctors have already used telemedicine at the time of the survey. Barriers to introduction telemedicine in endogynaecology, such limited knowledge, high costs for the purchase of technical equipment and insufficient financial refund, have been clearly identified by experts. The results shed light on how telemedicine can support endocrinological care for transident patients from a medical and patient's perspective. Familiar communication formats, such as the direct exchange of information with patients and medical colleagues, are leading in the field. Various telecounseling tools are development. Their development for gynaecological-endocrinological applications is not as developed as in other disciplines for example, in intensive care and cardiology. This is reflected in the small number who used telemedicine at the time of the survey.

Limitations

An online survey was deliberately used to increase the response rate and to achieve a reduced effort for data management. The aim was to obtain an increased return rate with the online questionnaire, to be able to complete the questionnaire within a short time, regardless of place and time, so that the

return rate is as high as possible. However, it can be assumed that this online survey will in the sense of a positive distortion vis-à-vis users of telemedicine. To answer the questionnaire, knowledge of the field of telemedicine is required, e. g. preferences for specific tools have been requested. Given the limited knowledge of doctors in the field of telemedicine, distortions are likely. In addition, we expect rapid technological developments in the field of telemedicine, so that the predefined response categories may not have been exhaustive enough. The survey was conducted in the time of COVID-19, and pre-pandemic data are pending in this area, so further research on the development of the acceptance of telemedicine applications in general and in relation to teleendogynaecology is urgently needed. The average age of our sample corresponds to that of German doctors as a whole [19]. Women were slightly over-represented compared to the average [19], which was also
show that female doctors are more interested in telemedicine. This survey reflects only the opinion of gynaecological endocrinologists. The survey was aimed at gynaecological endocrinologists from all over Germany, especially doctors from Thuringia and Bavaria, who, due to the participated in the recruitment strategy. We assume a self-selection bias and a nonresponse bias, because the survey was probably answered predominantly by doctors and patients interested in telemedicine.

Comparison with Prior Work

This work provides a first basic knowledge of the application of telemedicine in the treatment of transient patients and a first insight into the new field of teleendogynaecology by providing detailed user settings,needs and barriers. We therefore believe that the results of this
Study in the development of telemedicine solutions can help integrate them into the clinical routine of transident patients in gynecological-endocrinological treatment. In contrast to the results of a recent study, which revealed a negative attitude towards digitalization in the healthcare sector among doctors and patients in Germany [20], our results have shown that
physicians and patients have a positive attitude towards telemedicine. A survey by the American Medical Association among nearly 3,500 doctors in the United States found that less than 10% of endocrinologists used telemedicine, which is significantly fewer than doctors
from other medical disciplines, such as radiologists (43%) [21] and less than the proportion of gynaecological endocrinologists using telemedicine according to our study (34%). Although most respondents believe that tele-consultation can support the care of transient patients, tele-consultation is rarely or rarely used. In a nationwide survey on digitization in the outpatient sector, the most common answers using e-mail and no digital communication
at all [22]. The main obstacles from the point of view of physicians are security gaps in information

technology (IT), which significant costs and effort involved in the introduction of digital media Technologies and an unfavourable cost-benefit ratio [22]. Respondents of our survey relatively little importance on security vulnerabilities in IT. Television consultations with transident patients appear to have considerable potential in gynaecological endocrinology, especially in initial consultations [12]. However, only

A minority of respondents were in favour of the use of Telemedicine for initial consultations. This finding confirms the results of a comparable study from the United States of America [23]. In addition, the absolute majority would like to the respondents use telemedicine in direct patient contact. This is comparable to total telemedicine developments in the health sector [16,17]. Previous studies have shown that patients use telemedicine as a flexible solution that increases the independence of health authorities and personal knowledge [24]. Other studies suggest that: Health care created by TV sets is as effective as after personal visits [25,26]. A qualitative study also reports that patients would be willing to accept electronic recording and sharing of patient reports (PROs) between clinical encounters when it is necessary to communicate with healthcare providers and access to reliable information [27]. However, a recent study has shown that: Doctors hesitate to study electronic PROs because it would lead to a massive increase in their workload [28]. Mobile apps promise to speed up diagnostic examinations and improving monitoring [29]. The small number of gynaecological endocrinologists who use of apps to improve clinical routine contrasted with previous research from 2018, in which 49% said they were already use such apps [30]. One of the main reasons for dislikes to use apps may lack proof [31]. Our results show that both transient patients and gynecological endocrinologists accept telemedicine. We have also differences in the acceptance and preferences of telemedicine in relation to the age and gender of physicians; nature and region of their activities. No or only differences Small differences were found.

Perspectives for Teleendogyn

COVID-19 has the importance of contactless approaches to medical care. Already in 2018, when we conducted the survey, transident patient and gynecological endocrinologists were willing to use teleendogynaecology. It is assumed that these as a result of the pandemic, there has been an increase in the willingness to speed up the use of telemedicine as part of social action; new standards in health care [18]. However, the great potential of telemedicine lies not in fully achieved. However, the great potential of telemedicine is not fully achieved. Further research on implementation is urgently needed. These include: large-scale randomised controlled studies on the effects and health effects,

risks and incidents, specific interventions. Since our results show that there will be no “one-size-fits-all” solution in the field of telemedicine, perspectives and Preferences of Physicians, Patients and Others Telemedicine users in teleendogynaecology are indispensable. This can create the basis for individual patient and physician-adapted telemedicine options and triage mechanisms to select patients for digital or analogue consultation, appropriate [25,26]. As doctors reported on barriers to the use of telemedicine, it seems that the structural framework for the effective implementation of teleendogynaecology is not yet in place. A considerable administrative burden and inadequate reimbursement structures prevented the doctors interviewed the use of telemedicine. The biggest obstacle, however, was the limited knowledge of physicians about the use of telemedicine, which is why it is necessary to provide early information on telemedicine in introduction of low-threshold training courses.

Conclusions

Our study showed that gynecological endocrinologists and transient patients
support the implementation of teleendogynaecology, and two thirds
of those surveyed want telemedicine in their clinical routine. The medical profession expressed an even greater willingness to use telemedicine. Respondents welcome a variety of telemedicine approaches. However, at present only a minority of the doctors interviewed are
Use of telemedicine. In addition, most doctors consider their knowledge of telemedicine is rather poor. The provision requires high-quality telemedicine care
urgently needed research and a reduction in existing obstacles and training for professionals and generalists. Transident patients are very open to treatment with telemedicine applications. The foundations have been laid, development concepts in this area have great potential for the future and should be developed.

Acknowledgments

The authors would like to thank the participants, their teams, and all other supporters of this study. We also owe special gratitude to DGGG Junges Forum.

Authors' Contributions

The authors were involved in drafting the article and critically revising it for important intellectual

content and approved the final version to be submitted for publication.

Conflicts of Interest

None declared.

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Supplementary Files

Figures

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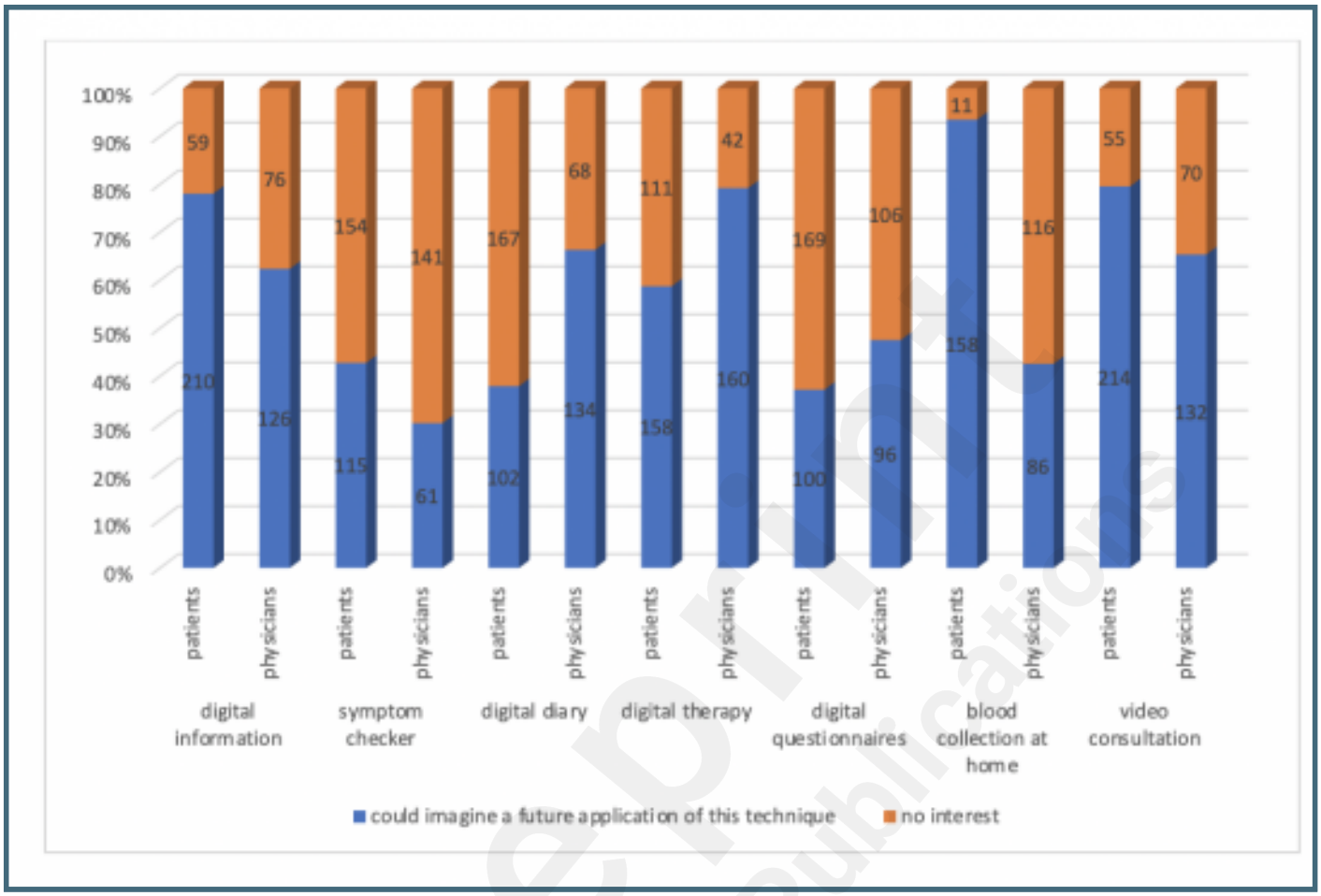

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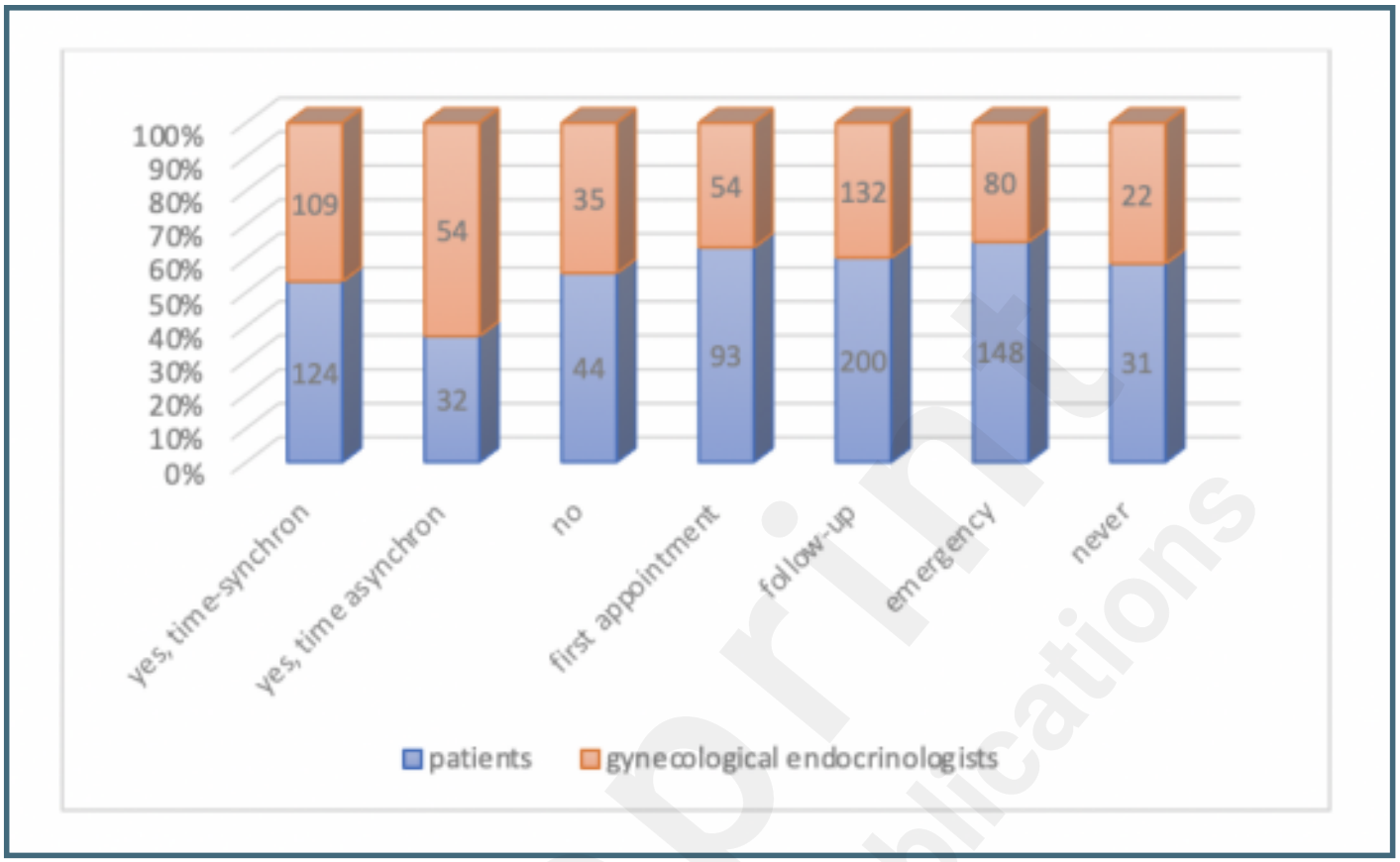

Multimedia Appendixes

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