

Exploring Emerging Patient Responsibilities in Telemedicine Use: An Empirical Study

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Abstract. Telemedical solutions are increasingly utilized by physicians to cope with emerging challenges in modern healthcare. Rising numbers of patients due to demographic change and associated health issues complicate the comprehensive provision of care. Digital technologies, such as video consultation tools that establish a virtual connection between patients and practitioners, are able to antagonize these issues to some extent. However, the digitalization of care processes affects patients as well, who are increasingly obliged to be an active part of healthcare by using telemedicine and assessing its applicability and functionality. As a result, patients become more and more responsible for an effective and successful implementation of telemedicine. In that vein, this study proposes preliminary empirical findings and discussion points drawn from an ongoing research project. Findings suggest that responsibilities emerge regarding the preparation of online appointments, decision-making, the perpetuation of behavioral patterns, and the prevention of overuse.

Keywords: Telemedicine, Qualitative Study, Patient Responsibilities, Primary Care, Healthcare Technologies

1 Introduction and Background

The health domain faces great challenges that exert increasing pressure on existing structures and providers. For instance, the continuous demographic change and associated, age-related health issues are responsible for increasing patient numbers in need of care (Demiris & Hensel, 2008). Simultaneously, a decline in care availability and the emergence of an inequitable distribution of healthcare services takes place (Wilson et al., 2009), *inter alia* due to decreasing numbers of professionals, especially in rural areas (Mueller et al., 2020). As a reaction to these issues throughout the last

two decades, an ongoing trend towards the digitalization of healthcare is noticeable. A variety of digital approaches and tools are under constant development and already in use. For instance, a wide spread technology in relation to others is the live video consultation (Kvedar et al., 2014). Further, sensory equipment can be used to measure vital signs of patients, which can be utilized by practitioners (Pantelopoulos & Bourbakis, 2010). Online databases and platforms allow patients to proactively seek information on health issues and treatments online (Ahmad et al., 2006). As a result, digital technologies promise benefits for effective and satisfying treatments, a comprehensive supply of care, an increase in availability and quality of

care services, and the release of provider-sided resources by making higher patient numbers more manageable.

Since treatments and therapies are mutual processes by nature (Hojat et al., 2010), involving healthcare consumers and providers as well, the introduction of digital tools and procedures increases the responsibility on both sides to cope with emerging necessities and challenges (Mueller et al., 2020). Digital technologies further promote deliberate treatments that can be triggered and partially controlled by patients as well (Castro et al., 2016). A shift from a more passive to a more active patient role can be detected (Osei-Frimpong et al., 2018). With the rise of digital technologies within therapeutic settings, patients are increasingly in charge to actively use modern tools, provide vital parameters and information, acquire the needed competencies for appropriate and effective use, and be aware of their own health and potential measures (Van Woerkum, 2003), hence increase their health literacy. Health literacy can be defined as “[...] the ability to understand and interpret the meaning of health information in written, spoken or digital form” (Adams et al., 2009, p. 144). The concept involves individual knowledge on both health and adequate treatment, as well as the required skills to plan and act appropriately (Nutbeam, 2008). It appears to be an important factor when it comes to adequately and comprehensively assess, understand, and communicate one’s own condition (Kreps, 2017; Mueller et al., 2019), which can be reinforced by digital technologies (Kayser et al., 2015).

Digital technologies, as can be seen in many other sectors (e.g., Mäkinen, 2006), lower the threshold for partaking in dispersed processes. Hence, new habits and behavioral patterns are formed by patients regarding the consumption of care, the execution of therapeutic measures, and the consultation of physicians (Mueller et al., 2020). Simultaneously, patients become responsible for making decision and behaving in a way that aligns with the structures and

processes prevalent in healthcare. For instance, overconsumption of digital offers can increase provider-sided workloads, whereas the neglect of those can render digitalization efforts unprofitable and cumbersome to implement and maintain.

This study seeks to expand our understanding of what kind of responsibilities emerge for patients playing an active role in digitalized care. To date, only little research has been done looking at the way patients can handle the increasing amount of telemedical offers in a responsible, beneficial, yet satisfying way. Hence, the objective of this research-in-progress paper, being part of a superordinate project, is to provide first empirical insights on the responsibilities of patients in telemedicine use. Hence, this study is guided by the following research question (RQ):

RQ: *What kind of patient responsibilities emerge from the incorporation of telemedicine tools within primary care treatment processes?*

The paper presents preliminary findings drawn from semi-structured interviews, which have been conducted engaging five users of telemedicine. The findings suggest several tasks, attitudes, and behaviors patients perceive and attach importance to regarding the use of a video consultation system. As a contribution, this paper further enables the implementation and utilization of telemedicine within primary care processes that incorporate the patient as an active, responsible, and self-aware actor.

2 Methods

2.1 Case Description

This paper is part of a larger research agenda within a regional project on the digitalization of rural primary care processes and treatments. The project is intended to strengthen the understanding of how patients and physicians perceive, evaluate, intend to use, and actually use telemedicine for primary care treatments. Amongst other approaches and innovations, the utilization of online video consultation tools is

treated as a feasible and beneficial measure to cope with increasing patient numbers and declining prevalence of healthcare professionals and graduates practicing in rural areas. As a prerequisite of digitally supported healthcare, the user acceptance of such technologies needs to be further elaborated. Here, this study positions itself in order to build an empirical baseline and achieve deeper insights on user attitudes and behavior.

2.2 Data Collection and Analysis

As a part of the overarching project, we conducted an initial set of five interviews engaging patients that have already encountered telemedicine in their treatments. The interviews took between 19 to 30 minutes (25 minutes on average) and were conducted by the author on a participating physician's practice site. Following a convenient sampling approach, the physician reached out to patients that have already used the video consultation system and were willing to participate in the study. The sample consisted of 1 female and 4 male participants aged between 35 and 52 years (42 years on average), whereof 3 showed non-chronic symptoms and 2 were patients with chronic diseases. They had used telemedicine between one and two times. The participants were briefed and signed an informed consent before each interview started, which clarified the data acquisition and analysis process, the voluntariness of partaking in the study, and their right to withdraw their participation. The interview guideline included questions on various factors underlying the use of and attitudes towards telemedicine. Here, the classification by Or and Karsh (2009) was adapted to our context, comprising patient, social, environmental, organisational, and technical factors. The guideline remained unchanged across all interviews. The interviews were audio recorded, transcribed non-verbatim, and translated from German into English for the purpose of analysis and reporting.

For preliminary data analysis in the light of the superordinate research question, we followed

an approach comprising open, axial, and selective coding (Strauss & Corbin, 1998). While open coding seeks to assign labels to interview statements and passages, axial coding aims for subsuming labels under common categories. Finally, selective codes are identified that represent the major theoretical underpinnings of the data, containing and describing all axial codes. For instance, the interview statement "*In principle, I use it the same way as I did before, or rather in the same frequency, so I do not go to the doctor more or less often.*" is openly coded as 'consultation of physician as usual', subsumed under the axial code 'moderate and conscious use', finally leading to 'behavioral patterns' as the selective code. In this preliminary stage, the data analysis used for this study is done by only one researcher. In upcoming studies, analyses are performed dyadically to increase reliability and detect a broader spectrum of phenomena.

3 Interim Findings

The interim findings encompass four important categories that describe emerging patient responsibilities in telemedicine care, which are (1) preliminary considerations, (2) decision making, (3) behavioral patterns, and (4) overuse. As a supplementary finding, the benefits of telemedicine perceived by the participants are reported to describe positive reactions to using a video consultation tool. To preserve the interviewees' anonymity and prevent the delineation of interviews by their order, the numbers assigned to interviews have been randomized (Mueller & Heger, 2018).

3.1 Perceived Benefits

As literature and the collected empirical data show, the application of telemedicine such as video consultation tools within primary care processes and treatments come with meaningful benefits. In the perception of the study participants, the possibility to contact their general practitioner in a spatially independent way is of major value, being an efficient and pleasant way to get treatment:

“And in case of simple things, like discussing blood values, you only want to know how they are, are they okay [...] I’m saving a lot of time, because I am not sitting here [the practice], and for him [the physician] too, in that time he can do other things. I find it very effective.” (Interview 5)

“Consulting the doctor through the video consultation is simply easier for me because it is more pleasant, faster, I am more flexible [...] Because otherwise you had to be here a quarter before your appointment, then you have three people ahead of you, then you wait half an hour. So you have an [video consultation] appointment at ten o’clock, it is finished in ten minutes and everyone is happy.” (Interview 3)

In addition, using telemedicine for physician consultation is oftentimes favored over visiting the practice personally due to, for instance, shorter waiting times or avoiding a potential contagion:

“It is also more comfortable to sit at home than in a waiting room, where many others with some kind of disease are waiting, because the risk of infection is not quite so high when you sit at home and wait.” (Interview 2)

“So if that was offered to me, I think I would always prefer the video consultation. Unless I really have physical complaints, or something visible where I would say, the doctor must have a look at it.” (Interview 2)

“I am here regularly and I didn’t feel like always sitting in the waiting room, and then [the video consultation] was offered to me and I jumped on the offer relatively quickly.” (Interview 3)

Apparently, as our preliminary findings show, telemedicine can lead to high use intentions and actual use by patients that are seeking the aforementioned benefits and convenience. However, since digital offers such as video consultations lower the bar for contacting a

general practitioner and ease the access to treatments, patients become increasingly obliged to think about the necessity, quantity, and extent of seizing the virtual alternatives. In this regard, the data suggests several patient responsibilities when it comes to actually using telemedicine for physician consultation.

3.2 Preliminary Considerations

One responsibility mentioned by the participants relates to considerations patients should engage in before consulting the physician via a digital tool or even making a respective appointment. In this regard, the interviews suggest that patients should carefully assess their health status, potential issues, and proper ways of dealing with them. Not every health issue is suited for telemedical treatment, since it requires, for instance, a physical meeting and examination. Here, the patient seems to become more and more responsible for the feasibility and, thus, the outcome of the consultation, obliging them to prepare each session by themselves:

“[You do not] address topics that you cannot actually discuss during the video consultation. [...] you should bring along preparations, even as a patient, so that you do not address anything where the doctor tells you ‘well, let us end this here, because you still have to come by’.” (Interview 4).

Further, one participant mentioned that certain checks and assessments can be done independently and self-sufficiently:

“Before I drop by here [the practice], I check a few things anyway. And if everything I checked is fine and I have not found a solution yet, then I will come here.” (Interview 2)

This, in turn, requires patients to have fairly high degrees of health literacy as well as self-efficacy when it comes to fathoming what treatment suits them best.

3.3 Decision Making

Being closely linked to the preliminary considerations, patients are invoked to sculpt their decision making process accordingly. Weighing off given possible treatments, including those supported by telemedicine, can lead to several outcomes that help the patients to behave in a certain way, hence making a decision. As the data suggests, the participants are inclined to waive using telemedicine in the first place given the situation:

“I would not even arrange such a video consultation appointment, but come here [the practice] directly for consultation.” (Interview 4)

“But in the future I must always distinguish between what I have and what I want, and then I can decide for myself whether to do it via video conference or in person. However, you have to think about it yourself [...]” (Interview 5)

One participant mentioned the need for judging the situation in an autonomous way and exhibiting a certain degree of self-discipline:

“I think that somewhat depends on the patient himself. How do I judge that myself? Do I have to go there [the practice] now? Is it serious? Of course, a certain self-discipline is necessary.” (Interview 5)

Apparently, the presence of telemedical offers calls for an increase in individual competencies that enable patients to make appropriate decisions without risking their health.

3.4 Behavioral Patterns

As some of the interviewees mentioned, the sole possibility to consult a physician online does not necessarily lead to new behavioral patterns regarding the frequency and reasoning of appointments. The data suggests, that although telemedicine facilitates easy and low threshold access to a desired treatment, patients tend to behave the same way as they did before:

“In principle, I use it the same way as I did before, or rather in the same frequency, so I

do not go to the doctor more or less often.” (Interview 3)

“Actually, only when I really have an issue. Yes, sure, one should do preventive medical checkups, but actually [I consult the doctor] as usual in the end.” (Interview 1)

“The question is how I deal with it myself. I handle it the way I have handled it so far, when I think I have to go to the doctor, due to a cold or whatever, I use this tool.” (Interview 5)

Patients behaving this way put less stress on physicians and the healthcare system overall. Thus, telemedicine is clearly seen as a valuable supplement and, in some cases, substitute for visiting the practice, as long as the patients' consumer behavior remains unchanged.

3.5 Overuse

However, while telemedicine lowers the threshold for physician consultation and, thus, consumption of health services, the risk of overuse emerges:

“Yes, if [telemedicine] is totally accepted [by patients], it is like everywhere else, there could also be an overuse. But probably not by everyone, but this could of course also lead to it, because it makes it actually easier to contact [the doctor].” (Interview 5)

“When everyone sees how easy it is to use, it can of course also go the other way around, that I use it more often, compared to when I go to the doctor.” (Interviewee 5)

As our data suggests, patients are aware of potential impacts that solutions such as video consultation systems can have on capacities of physicians. One interviewee refers to common sense when using telemedicine for treatments:

“I could imagine that this could be exploited. I could say, in case I need a yellow note [attesting one's inability to work], due to partying a little bit more on the weekend than usual [...] So if I am at the doctor's regularly and he knows me, he already

knows how to deal with it. But as I said, I also know that you should not switch off your common sense. I know when I can get an online appointment and when not.”
(Interview 3)

It is also stated, that physicians might be able to detect unjustified online consultations, which takes away some portion of responsibility from the patient. However, patients tend to be aware of negative consequences the overuse of telemedicine might have, such as high effort for physicians to cope with increased availments.

4 Preliminary Discussion

The findings suggest, that patients do hold a share of responsibilities when it comes to making telemedicine work in healthcare. Apparently, patients are obliged to step into an active role and contribute to the success of digital tools such as the video consultation by adapting their use behavior. A shift from pure consumption to a form of co-creation can be detected (Osei-Frimpong et al., 2018). In order to achieve a satisfying and effective digital experience, patients increasingly need to be aware of their health issues, potential and feasible measures, and the applicability and bounds of technology. To further discuss the interim findings, two initial propositions are presented in the following. Propositions represent an entrenched way to depict theoretical outputs and infuse future research (Baxter & Jack, 2008). The first proposition covers the findings regarding preliminary considerations patients should encounter before making a telemedical appointment. With the rise of the video consultation being introduced by increasing numbers of primary care physicians, its feasibility and applicability to address the patient’s health issue(s) should be incorporated into decision making processes:

Proposition 1: In order to increase the effectiveness of telemedicine, patients should upfront assess the feasibility of using digital tools for treatment.

It becomes clear, that the patient’s health literacy as well as self-efficacy regarding technology use and evaluation play important roles. Health literacy refers to an individual’s knowledge about health, prevalent or emerging issues, and possible treatments, as well as the competence to process it and act accordingly (Adams et al., 2009; Nutbeam, 2008). Hence, as a prerequisite for an effective implementation and continuous use of telemedicine, higher levels of individual health literacy must be achieved. Besides, once a patient is able to fathom necessities and possibilities of a digital treatment, the capability to use telemedicine properly is vital. Here, the concept of computer self-efficacy is important (Compeau & Higgins, 1995). Patients need to be able to use respective technologies in an effective and confident way. With regard to technology design, patients should be asked to provide information on their symptoms beforehand, while providing them informational support to accomplish this. The second proposition refers to the behavior patients should display in order to keep the amount of effort associated with operating telemedical solutions low and avoid overuse:

Proposition 2: Patients should maintain behavioral patterns with regard to using telemedicine for physician consultation to prevent overuse and minimize efforts associated with its operation.

Deploying telemedicine within former analogous processes and operating it effectively comes with great efforts for physicians (Mueller et al., 2020). However, since tools such as the video consultation enable a low threshold and easy way to contact practitioners, patients might neglect those efforts since they take the technology for granted due to its high dissemination in other areas of life. A potential tendency towards a disproportionately frequented use emerges, which calls for a moderate, considerate, and goal-oriented use of telemedicine and associated levels of behavioral control (Ajzen & Madden, 1986). Respective behavioral patterns need to be formed and promoted in order to facilitate the digital

transformation of primary care procedures. On a design level of telemedical tools, the implementation of ways to assess the necessity of online treatment in relation to the amount of previous sessions and outcomes seems feasible.

5 Conclusion and Future Research

This paper proposes preliminary findings and propositions empirically drawn from an ongoing research agenda. With regard to the RQ, the findings suggest that a variety of patient responsibilities arise from the implementation of telemedicine within treatment processes, such as preparations and respective decisions patients should make upfront an appointment to ensure treatment effectiveness. The paper contributes to our understanding of the way patients perceive and use digital offers within care and opens up a wide space for further research. The paper exhibits some limitations, such as the small sample size and the low generalizability. For the time being, the study does not consider sample characteristics, such as varying health issues and technical skills, which might unveil new facets of the emergence and specification of patient responsibilities. A potential sample selection bias might remain undetected.

Thus, the paper calls for complementary research activities building upon the proposed findings. First, the conduct of additional interviews engaging a wider, more heterogeneous population can deliver deeper insights on patients' attitudes and behaviors while illuminating sample characteristics and differences. Second, subsequent studies should promote further development and extension of propositions that are suitable to be transferred into testable hypotheses, which then again represent the foundation for quantitative studies, e.g., in the form of online surveys. In doing so, generalizable insights can be achieved and further integrated within telemedicine design and application processes.

6 References

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