

Using Digital Tools for an Enhanced Risk Communication in Health Professionals – Patient Interactions

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Summary

This study investigated the effect of integration of new media tools into health professionals –patient interactions to improve the communication of risks associated with medical interventions and healthcare decisions. As technology became increasingly prevalent in healthcare settings, understanding how digital tools could facilitate transparent and comprehensible risk communication was crucial. The study explored various digital platforms, communication strategies, and their impact on patient understanding, engagement, and shared decision-making. A qualitative case study design was adopted to delve deeply into the experiences, perceptions, and practices of health professionals and patients regarding the use of digital tools in risk communication. Semi-structured interviews were used to allow for flexibility in exploring participants' views while ensuring that key topics related to digital tools and risk communication were covered.

Keywords: digital tools, risk intelligence, risk communication, doctor–patient interactions, healthcare, patient engagement, shared decision-making.

Skaitmeninių įrankių naudojimas komunikacijos apie riziką gerinimui sveikatos darbuotojų ir pacientų sąveikoje

Santrauka

Šiame tyrime nagrinėjamas naujų žiniasklaidos priemonių integravimas į sveikatos priežiūros darbuotojų ir pacientų sąveiką, siekiant pagerinti komunikaciją apie riziką, susijusią su medicininėmis intervencijomis ir sveikatos priežiūros sprendimais. Technologijoms vis labiau plintant sveikatos priežiūros įstaigose, labai svarbu suprasti, kaip skaitmeninės priemonės gali palengvinti skaidrų ir suprantamą informavimą apie riziką. Tyrime nagrinėjamos įvairios skaitmeninės platformos, komunikacijos strategijos ir jų poveikis pacientų supratimui, įsitraukimui ir bendrų sprendimų priėmimui. Buvo priimtas kokybinis atvejo tyrimo planas, siekiant įsigilinti į sveikatos darbuotojų ir pacientų patirtį, suvokimą bei praktiką, susijusią su skaitmeninių priemonių naudojimu informuojant apie riziką. Empiriniame tyrime buvo atliktas iš dalies struktūruotas interviu tam, kad būtų galima lanksčiai tirti dalyvių nuomones, kartu užtikrinant, kad būtų išnagrinėtos pagrindinės temos, susijusios su skaitmeninėmis priemonėmis ir informavimu apie riziką.

Pagrindiniai žodžiai: skaitmeninės priemonės, rizikos žvalgyba, rizikos komunikacija, gydytojo ir paciento sąveika, sveikatos priežiūra, pacientų įtraukimas, bendrų sprendimų priėmimas.

Introduction and analysis of scientific sources

Risk communication is the process of sharing information and opinions about risks and hazards associated with certain activities, products, or events. It involves the exchange of information and views among experts, decision-makers, and the public (Lundgren & McMakin, 2018). The goal of risk communication is to effectively inform the public about potential risks and hazards, and to help people understand and respond to those risks in a rational and informed way (Stern, 1991). This can include providing information on the likelihood of an event occurring, the potential impact of the event, and the actions that can be taken to mitigate or prevent the event. Effective risk communication also involves listening to and addressing the concerns and questions of the public (Rowan, 1994).

Effective risk communication between a doctor and a patient is an integral facet of the doctor-patient interaction, significantly influencing patient understanding, active decision-making, and

overall health outcomes (Lundgren & McMakin, 2018a). Patients are empowered to make informed decisions about their healthcare when they receive appropriate communication about the risks (Linden, 2019), benefits, and alternatives of treatment options under consideration, fostering their autonomy and active involvement in their medical journey. Risk communication also adheres to the principles of patient-centered care by underscoring the patient's values, preferences, and concerns in the medical decision-making process (Mead et al., 2020).

Open communication about risks breeds trust between doctors and patients, solidifying the relationship. Trust is core in healthcare, leading to patient satisfaction, compliance with advice, and the likelihood of patients sharing pertinent health information (Chang et al., 2013). Effective risk communication also manages patient anxiety by providing clarity about the uncertainties and potential risks of clinical interventions. Patients who fully understand the risks and benefits are more likely to comply with treatment plans (Jin et al., 2008), leading to better healthcare outcomes and fewer complications.

From an ethical standpoint, ensuring patients are adequately informed upholds respect for autonomy and ensures patients act in their best interests. Legally, effective risk communication protects healthcare providers from disputes related to a lack of informed consent. Moreover, risk communication is a dynamic, ongoing process of engagement and education. As medical knowledge advances, healthcare providers must keep patients informed about new developments and potential risks associated with their conditions or treatments (Lundgren & McMakin, 2018b). Digital tools and communication platforms facilitate continuous education, allowing patients to stay informed and engaged in their healthcare beyond traditional office visits.

Effective risk communication within health communication is a multifaceted process grounded in fundamental principles, with transparency being paramount. This entails not merely acknowledging risks and hazards but committing to a well-informed, clearly articulated understanding of various dimensions, including the essence of inherent risk, its likelihood of occurrence, and its potential impact on individuals and communities (Renn, 2020). Transparency in risk communication goes beyond mere discussions of surface-level hazards, demanding a detailed, well-defined, and clear explanation of the risk's characteristics, origins, and possible consequences (Trkman & Desouza, 2012). It involves a comprehensive depiction of the risk's nuances, ensuring that the information is not just precise but also accessible and understandable to a diverse audience.

Health communication aims to provide a clear and direct portrayal of the risk, its magnitude, and the range of potential outcomes, empowering the public to make informed decisions regarding their health. Furthermore, transparency includes acknowledging the uncertainties and, at times, the evolving nature of certain health risks (Lundgren & McMakin, 2018b). Communicators are tasked with conveying the dynamic nature of the available information, recognizing that knowledge is not absolute and that risk assessments may change over time (Lengel & Daft, 1988). This approach instils confidence in the audience, demonstrating a commitment to providing information that is as accurate and current as possible, despite ongoing changes.

Timeliness is the key in ensuring that relevant and up-to-date information about health risks is promptly communicated, enabling individuals to make informed decisions. Customized messaging is also crucial in effective risk communication (Lengel & Daft, 1988). Communications must be tailored to resonate best with the target audience, considering their level of understanding, concerns about the risk, and cultural and linguistic differences (Sellnow et al., 2008a). This strategy encourages two-way communication, fostering an active dialogue between communicators and the public. Trust is established through active listening to the public's questions and concerns, which in turn influences the accuracy and relevance of the information shared.

The success of conveying risk information hinges not just on sharing data but also on providing practical advice. It's crucial to not only make people aware of the dangers but also to give them specific, actionable steps to manage or avoid these risks (Jessor, 2014). This course of action goes beyond simply raising awareness; it's about empowering people with the means to take active measures for risk reduction and prevention. It involves breaking down complex risk information into clear, easy-to-follow instructions. Health communicators should clearly explain the risks and suggest

realistic, implementable actions that people can integrate into their daily routines (Fischhoff, 2012). These actions might include changes in lifestyle, adherence to health guidelines, or the use of preventive strategies, all aimed at improving individual safety and health.

In today's multifaceted society, it's also essential to use various communication channels to ensure the message reaches a diverse audience effectively (Michael & Chevront, 1998). People get their information through different means, so using a mix of channels is key to engaging different groups effectively. This can include traditional media like TV and radio for widespread reach, as well as social media platforms for quick information sharing and real-time interaction. Social media also encourages community dialogue, allowing people to exchange experiences and advice on managing risks (Taprial & Kanwar, 2012). Furthermore, engaging directly with communities through workshops, informational sessions, and local leaders is crucial, especially for reaching groups less exposed to mainstream media. This ensures the messaging is tailored to the specific needs and contexts of different groups.

By utilizing a broad range of communication channels, health communicators can establish a comprehensive and inclusive network that covers various societal sectors. This strategy acknowledges the varied ways people prefer to receive information and guarantees that messages about risks are effectively communicated to both large audiences and specific target groups (Monge & Contractor, 2003). The combination of traditional and modern communication methods not only makes risk-related information more accessible but also helps to foster a sense of shared responsibility and proactive action within the community. In summary, strategically employing diverse communication channels not only improves access to information about risks but also helps to build a community culture that is informed, responsive, and cooperative in addressing these risks.

Ongoing surveillance and assessment play a crucial role in determining the success of risk communication initiatives. It's important to consistently evaluate the influence of communication strategies to identify whether the information is effectively reaching the target audience and producing the intended results (Sellnow et al., 2008b). This continuous review allows for timely modifications and refinements to enhance the effectiveness of the communication efforts.

Moreover, partnering with key stakeholders is fundamental to the success of risk communication. Collaboration with public health authorities, medical professionals, local community leaders, and specialists is vital. This ensures that the communication strategies are grounded in scientific evidence, cater to the specific requirements of the community, and can address new and emerging issues as they arise.

Embracing these core principles significantly support risk communication and risk intelligence in healthcare by equipping individuals with precise and actionable insights. This not only cultivates trust and comprehension but also leads to better health outcomes for the public.

The widespread presence of digital technology has transformed health communication, particularly in the domain of risk communication. These advancements introduce a multitude of tools and platforms that can be utilized to boost the effectiveness and reach of risk communication efforts.

Platforms like Facebook, Twitter, and Instagram offer unmatched opportunities for swift and extensive distribution of health risk information (Kreuter et al., 2013a). They enable timely updates on new risks, allow for immediate responses to public inquiries, and provide direct access to further resources.

Mobile applications represent a distinctive channel for delivering bespoke and relevant information directly to users (Warner-Søderholm et al., 2018). For example, health agencies can utilize these apps to share information tailored to specific locations, such as notifications about prevalent diseases or alerts regarding contaminated water sources. This method empowers individuals to make well-informed decisions about their health and safety.

Interactive websites also play a crucial role as comprehensive sources of information on health risks and hazards. They offer a dynamic platform for continuous interaction with the public. These websites can host forums for discussion, supply useful resources and tools, and act as a centralized point for reliable and current information. This interactive element not only educates but also actively engages the community in understanding and managing health risks.

Chatbots serve as a cutting-edge tool for instantly and autonomously handling frequently asked questions about health risks. They increase the accessibility and promptness of information delivery by providing immediate answers to common questions, reducing the need for direct human involvement (Chakraborty, 2020).

Platforms such as YouTube and Zoom offer versatile means for capturing audience attention through webinars and pre-recorded videos. These platforms facilitate the spread of information in a format that's both widely accessible and easy to understand for various audience groups.

SMS and text-messaging services offer a straightforward and efficient method for delivering urgent information and notifications to individuals and communities. This proves especially useful for swiftly spreading news about imminent health threats or critical public health updates.

Virtual and augmented reality technologies present immersive and interactive ways to greatly improve comprehension and reaction to health risks. These technologies can recreate real-life situations, giving individuals the chance to hone their skills in a secure and controlled setting.

Incorporating these varied digital tools into existing communication strategies can significantly enhance the efficiency and impact of risk communication. This comprehensive approach equips individuals with personalized, easily accessible information, fostering a more informed, proactive, and engaged public (Cairns et al., 2013). In the light of this information, this study aimed to investigate the effect of integration of new media tools and into health professionals –patient interactions to improve the communication of risks associated with medical interventions and healthcare decisions.

Research Methodology

In this study, we employed a qualitative single case study design to gain in-depth insights into the experiences, perceptions, and practices of health professionals and patients concerning the utilization of digital tools in risk communication. The research methodology involved conducting semi-structured interviews, allowing for a flexible exploration of participants' perspectives while ensuring comprehensive coverage of key topics related to digital tools and risk communication. Specifically, interviews were carried out with three health professionals and two patients both suffering from obesity who volunteered to participate in the study.

The Participants

During the research, a study was conducted involving three healthcare professionals and two patients. The focus group of healthcare professionals comprised one physiotherapist, one dietitian, and one medical doctor. The physiotherapist who held a doctoral degree in the field of teletherapy. The dietitian was pursuing a master's degree in her field and practices independently. The medical doctor was actively engaged in utilizing social media. All patients interviewed had experienced obesity and health issues associated with obesity. Health professionals' ages ranged between 25 and 35, with a focus on their engagement in digital media. For patients, a different approach was taken. The focus wasn't on their age but on their duration of experience with their illness. The patients' ages ranged between 45 and 65, and they had all been suffering for 20 years.

Data Collection Tool

Semi-structured interview questions were collaboratively developed with expert input to ensure relevance and comprehensiveness. The interviews, lasting about 30 – 45 minutes each, were conducted face-to-face where possible, at locations convenient for the interviewees such as their university, workplace, café, or online via Zoom, depending on their availability. The interviews were conducted by the author of the study, ensuring a consistent interview process across all sessions. Prior to each interview, consent was obtained from all participants for recording the session for transcription purposes. This consent was crucial for ethical compliance and maintaining the integrity of the data collection process. The audio recordings were then transcribed verbatim to facilitate detailed analysis.

Trustworthiness and Ethical Considerations

To ensure the trustworthiness of the research findings in this study, measures were implemented across various stages of the research process. Credibility was reinforced through prolonged engagement and member checks, which involved participants reviewing the accuracy of the interview transcriptions of findings with their experiences, as exemplified when a patient confirmed the nuanced impact digital tools had on managing their chronic condition. Transferability was facilitated by providing descriptions of the participant demographics and settings, which varied from university locales to local cafes, allowing for a richer contextual understanding. Dependability was ensured by maintaining a detailed audit trail from the development of the interview guides to the transcription process. These practices were not only adhered to during data collection and analysis but also carefully documented to uphold the ethical integrity and accuracy of the study's reported outcomes, thus enhancing the overall reliability and validity of the research.

Research data analysis and findings

Before conducting the interviews, three main themes were established, and semi-structured interview questions were accordingly prepared. The themes include the Integration of Digital Tools in Risk Communication, which explores their status, usage, and potential enhancements; Risks Associated with Digital Tools, which assesses the threats and opportunities these tools present; and Ethical Concerns, which evaluates the ethical implications of using these tools in risk communication. These themes guided the comprehensive development of the interview questions.

Dietitian highlighted the transformative role of digital tools in healthcare, accentuating the convenience of accessing health professionals online, which fostered easier communication and therapy participation. The pandemic had notably advanced digital literacy among patients, marking a pivotal shift towards digital health service delivery. These tools, particularly valuable in preventive medicine, enhance risk communication, enabling proactive health management. They proved especially beneficial for the elderly, simplifying the monitoring of dietary compliance and treatment processes. While digital tools unlocked new possibilities in healthcare delivery, ensuring ethical usage, especially regarding patient information, was crucial, underscoring the need for adherence to data protection laws.

“Accessing health professionals through online platforms offers significant convenience for patients. This allows for easy communication with specialists like psychologists and dietitians, and participation in therapies online. Among digital tools, social media is mostly preferred to reach patients. Especially the use of Instagram is quite common.”

From a research perspective, utilizing online platforms for healthcare access is pivotal for enhancing risk communication. It enables efficient, direct connections between patients and health specialists, like psychologists and dietitians. This immediacy is vital for effective management and response to health risks, aligning healthcare services with the demands of modern, patient-centered care, and presenting a significant area for ongoing research into its impacts on healthcare outcomes and patient engagement.

“The pandemic has made patients more prepared in terms of digital literacy. This can be seen as an important step in delivering health services through digital mediums. Many opportunities have emerged, especially in the context of preventive medicine.”

The enhanced digital literacy of patients, as a byproduct of the pandemic, is a significant stride in risk communication. This newfound proficiency in digital platforms empowers patients to engage more effectively with health services online, facilitating timely and informed responses to health risks and potentially transforming the landscape of healthcare delivery and risk management.

"The use of digital tools, especially in preventive medicine, offers great potential in informing patients about health risks beforehand. This enables patients to manage their health more effectively. While the use of social media raises patients' awareness about healthy living, I think fake accounts also pose a threat to people."

The adoption of digital tools in preventive medicine significantly enhances risk communication, allowing patients to receive timely, personalized health risk information. This proactive approach not only educates but also empowers patients to take charge of their health, leading to more effective health management and a proactive healthcare culture.

"Digital tools have been a game-changer, especially for our elderly patients. It's so rewarding to see them manage their diets and treatments more effectively with innovations like pictured portions."

The use of digital tools is particularly beneficial for the elderly, streamlining the monitoring of diets and treatments. Innovative methods such as visual portion representations have proven effective abroad for ensuring adherence to dietary recommendations, enhancing the management of patient health through technology.

"Digital tools are opening new doors in delivering health services. Especially, entering symptoms and signs into an online system before visiting a healthcare center enables doctors to assess patients' conditions more quickly and effectively."

The integration of digital tools in healthcare, particularly for pre-visit symptom logging, significantly enhances risk communication. It enables a more efficient initial assessment, allowing healthcare professionals to swiftly identify and respond to potential health risks, thus improving the overall speed and effectiveness of medical interventions.

"The ethical use of digital tools really resonates with me. Ensuring we have proper permissions and respect data protection laws when dealing with sensitive patient information is something I take very seriously. In particular, some of our colleagues sharing sensitive information about their patients, which may include personal information, poses a great threat to patient privacy."

In the realm of risk communication, the ethical use of digital tools, especially concerning patient data and imagery, is crucial. Obtaining explicit consent and complying with data protection laws not only safeguards privacy but also fosters trust in digital healthcare platforms. This trust is fundamental for effective risk communication, ensuring that sensitive health information is shared and used appropriately, enhancing patient safety and the integrity of health interventions.

Physiotherapist emphasized the benefits of digital tools in healthcare, noting enhanced clinic accessibility and strengthened doctor-patient interactions through platforms like social media and maps. Digital communication offered unique dynamics, influencing patient satisfaction and treatment adherence. Social media's role in promoting services and the comfort of receiving home-based rehabilitation highlighted digitalization's impact. The pandemic's push for telehealth adoption, especially among the elderly, underscored the importance of robust internet infrastructure and professional training in digital tools.

"Communication with patients through digital platforms offers a different dynamic from face-to-face communication. In this process, patient satisfaction and adherence to treatment emerge as important criteria."

The shift to digital communication in healthcare redefines patient interaction, emphasizing the importance of maintaining patient satisfaction and adherence to treatment in the digital sphere. This approach is crucial for effective risk communication, ensuring that patients remain engaged and informed, thereby enhancing the efficacy of health interventions and promoting positive health outcomes.

"Since my PhD thesis was on tele-therapy, I had the opportunity to deeply explore the opportunities offered by digital tools in risk communication. The integration of digital tools into

health services, especially through platforms like social media and map applications, facilitates patients' access to clinics and strengthens doctor-patient interaction."

The use of digital tools like social media and map applications in health services significantly improves access to clinics and enriches the doctor-patient relationship, fostering a more connected and efficient healthcare experience.

"The use of social media tools plays an effective role in promoting physiotherapy and rehabilitation services. Especially advertising campaigns conducted through platforms like Instagram increase the visibility of clinics."

The strategic use of social media tools, particularly in platforms like Instagram, is highly effective in enhancing the reach and visibility of physiotherapy and rehabilitation services. These advertising campaigns play a crucial role in attracting more patients and increasing clinic awareness.

"The use of telehealth applications, especially during the pandemic, has become widespread. During this period, the use of social media and digital literacy skills of the elderly have become significant issues."

The widespread adoption of telehealth applications during the pandemic has underscored the importance of digital literacy, particularly among the elderly. This period has highlighted the need for proficiency in social media and other digital tools to access healthcare services effectively.

"For the effective use of digital health services, it's necessary to strengthen internet infrastructure and for health professionals to receive education in this area. However, I believe that digital tools should be used very carefully in risk communication. Otherwise, I think that such tools can cause more harm than good. In this context, it should be ensured that the digital literacy level of patients is sufficient."

Doctor recognized the increased convenience digital tools offer in scheduling and accessing healthcare, enhancing medication management and patient safety. While digitalization accelerated health and exercise tracking, concerns about timely data updates and the reliability of digital health applications were noted. Emphasizing the importance of patient privacy and data security, doctors advocated for strict adherence to ethical standards and legal regulations in the deployment of these digital services.

"Patient privacy and data security are among the most important issues in digital health services. The use of such applications requires the patient's consent and informed approval. Health professionals should strictly adhere to ethical rules and legal regulations."

Risk communication is therefore highly fundamental with regards to the protection of the privacy of patients and securing data in any digital health services. Thus, informed consent and ethical and legal compliance become a larger issue of trust and integrity in health communication, both essential for effective risk management and its responses in the digital health scenario.

"Compared to the past, much more convenience is provided in scheduling appointments and accessing doctors. Tools like Google applications and WhatsApp allow patients to see doctors' availability and communicate with them online."

The digital evolution of tools, such as Google applications and WhatsApp, has revolutionized the process of making healthcare appointments, introducing unprecedented convenience in scheduling and direct communication with healthcare providers. These tools and platforms significantly enhance the accessibility of healthcare services, simplifying the process for patients to manage their healthcare needs efficiently.

"Through digital health applications, I can see records of my previous medications and check interactions of new ones. This facilitates medication management and enhances safety."

The use of digital health applications in managing medication is, in fact, a giant leap towards providing personalized health care. These applications enable patients to review their medication

history and check interactions with new prescriptions, simplifying the management process while ensuring an enhanced level of patient safety. Such technological integration adds valuable information, helping patients make more informed healthcare decisions and fostering a proactive attitude in managing health.

"The use of digital tools sometimes causes delayed reflection of results. It would be better if certain test results, like radiology imaging, are updated more quickly."

Though the use of digital tools has its own set of advantages, the issue with such tools taking a longer time to update important test results, such as radiology imaging, is a matter of concern. Having these results updated speedily would aid in making the use of digital tools in health management more efficient and reliable.

"Digital tools enabled daily health and exercise tracking. These tools increased motivation and promoted healthy habits. However, their effective use should be supported with adequate information and guidance."

Digital tools for monitoring health and exercises play a critical role in inspiring motivation and encouraging the adoption of healthy living. To draw maximum benefit from these tools, users should be provided proper advice on how to use them effectively and how to integrate them seamlessly into their daily routines.

"The use of digital health applications can assist in acting quickly in emergency situations and reduce unnecessary hospital visits. However, these applications need to be accurate and reliable to provide correct information and directions. In addition, protecting patient privacy when using digital tools is extremely important. For example, in the hospital where we work, only field specialist doctors can access the database where psychiatric records are kept. No matter what digital tool is used in risk communication, ethical rules should not be relaxed in any way."

Digital health applications prove invaluable during emergencies, enabling timely decisions that can prevent unnecessary hospital visits. Their worth is unchallenged in providing instant and accurate information and guidelines, ensuring users can make informed decisions promptly. In addition, patient privacy should be protected, and ethical rules should not be compromised when using digital tools in risk communication in the medical field.

Patients appreciated the ease of scheduling appointments and managing medications through digital platforms, emphasizing the importance of timely data, reliable applications, and the crucial role of patient privacy and data security in digital health services. They advocated for improved information and guidance to maximize the benefits of digital health tools.

"At the age of 12, my left hip broke and dislocated. I didn't walk for about a year. Doctors only said that my leg might be short and that I might need a hip prosthesis in the future. No information was given regarding the risks that my leg condition might pose. Since my left leg was weak, I always put pressure on my right foot and my right foot became flat and my right kneecap slipped. I had a herniated disc because my left leg was short. I became a blood pressure patient because I couldn't do sports and lived a sedentary lifestyle. If a healthy risk communication had been established with me and my family; Maybe I would be less affected by this discomfort."

This narrative illustrates the fundamental role of detailed risk communication in healthcare. The absence of thorough information and guidance on potential complications following an injury can lead to a cascade of health issues. Adequate initial communication could have highlighted preventive measures, potentially mitigating conditions like knee and back problems, as well as lifestyle-related health issues. This situation reinforces the necessity for clear, proactive communication between healthcare providers and patients, clearly outlining potential risks and strategies to avoid them for effective long-term health management.

"Scheduling appointments and accessing doctors has become much easier than before. Tools like Google applications and WhatsApp allow us to see doctors' availability and communicate with them online."

Certainly, new digital tools such as Google applications or WhatsApp have made scheduling appointments and speaking with doctors more convenient. They allow patients to see a doctor's availability in real time and provide a direct platform for online communication at their own convenience.

"Through digital health applications, I can see records of my previous medications and check interactions of new ones. This facilitates medication management and enhances safety."

Digital health applications greatly enhance medication management by offering the ability to easily access previous medication records and check for interactions with new prescriptions. This leads to an improvement in the safety and management of medications for users.

"The use of digital tools sometimes causes delayed reflection of results. It would be better if certain test results, like radiology imaging, are updated more quickly."

The concerns regarding the delay in updating digital medical results, especially for critical tests like radiology imaging, are well-founded. Prompt updates of such results are crucial for accurate diagnosis and timely treatment. Addressing these delays would greatly enhance patient care and outcomes.

"Digital tools enable daily health and exercise tracking. These tools increase motivation and promote healthy habits. However, their effective use should be supported with adequate information and guidance."

Digital health tools and physical activity tracking tools help streamline daily activities and serve as a source of encouragement and motivation towards a healthy lifestyle. However, for effective utilization of these tools, detailed guidance and comprehensive information are mandatory. This ensures that users can effectively engage with the tools to reap the maximum health benefits.

"Patient privacy and data security are among the most important issues in digital health services. The use of such applications requires the patient's consent and informed approval. Health professionals should strictly adhere to ethical rules and legal regulations."

Patient privacy and data protection are indeed paramount in the realm of digital health. It is crucial that consents obtained from patients are fully informed and transparent. Upholding data integrity and maintaining trust in digital health services necessitate strict adherence to ethical guidelines and legal stipulations, always ensuring the safeguarding of patient data.

The whole interviews presented a multifaceted view of digital healthcare, with shared appreciation for the efficiency and patient-centric approaches it offered. Dietitians, patients, doctors, and physiotherapists acknowledged the transformative impact of digital tools on accessibility, communication, and healthcare delivery. However, each group brought unique perspectives: dietitian emphasized ethical considerations; patients sought timely and reliable information; doctor focused on data security and patient consent; physiotherapists noted the importance of digital literacy and infrastructure. This collective insight underscored a collaborative move towards a digitally advanced, ethically sound, and patient-focused healthcare model.

Discussion

Digital tools in the healthcare system have markedly revolutionized the dynamics of health professional-patient interactions, particularly in the context of risk communication. The results of this study underscore the pivotal role these technologies play in enhancing communication, understanding, and engagement in medical decision-making, a finding that is in line with previous research indicating the increasing digitalization of healthcare (Lundgren & McMakin, 2018; Warner-Söderholm et al., 2018).

Interpretation of Findings: The integration of digital platforms like social media and mobile applications has facilitated a more direct and accessible form of communication between health professionals and patients. This immediacy not only empowers patients by providing them with timely and tailored health information but also fosters a more collaborative approach to healthcare. The dietitian's highlight of digital tools in preventive medicine aligns with these insights, suggesting that such tools significantly enhance the proactive management of health risks (Cairns et al., 2013). However, the expression of concerns over privacy and data security by participants, especially in relation to the ethical deployment of these tools, echoes existing literature that stresses the importance of trust and integrity in digital interactions (Chang et al., 2013).

Implications of Findings: The findings suggest that digital tools can significantly improve the efficiency of health services and patient satisfaction, which are crucial for effective risk management and better health outcomes. However, this study also highlights the critical need for a robust infrastructure and continuous professional training to leverage these digital advancements effectively. The widespread use of these tools necessitates stringent measures to protect patient privacy and data, underscoring the need for regulatory compliance and ethical considerations in the deployment of digital technologies in healthcare (Fernández-Alemán et al., 2013).

Limitations and Future Research: This study is not without limitations. The qualitative approach, while in-depth, is based on a relatively small sample of participants, which may not fully represent the broader population's experiences. Future research should aim to include a more diverse and larger sample to validate these findings further. Additionally, quantitative methods could be employed to measure the impact of digital tools on patient outcomes quantitatively. In conclusion, a foresight study on the relationship between risk communication and social security expenditures can be conducted.

Conclusion

The introduction of digital tools in healthcare, as emphasized by both dietitian and patients, has significantly transformed the accessibility to health services. Platforms such as Google applications and WhatsApp have streamlined the process of scheduling appointments and enabled direct and rapid communication between patients and healthcare professionals (Gencorelli, 2023). This digital shift ensures that patients can readily ascertain their doctors' availability and engage in consultations irrespective of geographical barriers or wait times, fostering a healthcare environment that is more responsive. Prompt access plays a crucial role, especially in managing health risks and emergencies, by facilitating timely interventions and ongoing interactions between patients and providers (Aminabee, 2024).

The move toward digital health services has been notably influenced by the rise in digital literacy among patients, a trend that gained momentum during the pandemic (Aminabee, 2024). Observations from dietitian revealed a willingness among patients to utilize digital platforms for health-related interactions, marking a significant shift in how patients adapt to new technologies and highlighting the potential for these platforms to become fundamental elements of healthcare delivery. An informed patient base, adept in digital interactions, sets the stage for more advanced, efficient, and personalized healthcare services (Dinesen et al., 2016).

Digital tools have enhanced the accuracy of risk communication in preventive medicine (Lundgren & McMakin, 2018c). These platforms enable the swift dissemination of vital health information, allowing patients to receive timely advice and take preventive actions. Such immediacy ensures that patients are well-informed about potential health risks, facilitating a shift toward more personalized and effective risk management strategies.

Moreover, digital tools offer a customized approach to health communication, proving particularly advantageous for specific groups such as the elderly (Kreuter et al., 2013b). These platforms enable healthcare professionals to offer personalized advice, ensuring that the guidance not only reaches but resonates with individual needs. This tailored communication is pivotal in effective

risk management, considering each patient's unique requirements and preferences, thereby improving health outcomes and adherence to medical advice.

The ethical deployment of digital tools in health communication underscores the critical importance of maintaining patient privacy and data security (Myers et al., 2008). The digital landscape offers vast opportunities for the management of patient information, necessitating ethical navigation to ensure informed consent, data protection, and compliance with privacy laws (Rockwern et al., 2021). These measures are integral to sustaining trust and integrity within the patient-provider relationship.

Finally, the potential of digital tools for continuous patient education and engagement is instrumental. These platforms maintain an ongoing connection between patients and healthcare providers, establishing a dynamic where health education is an iterative process. Such continuous engagement ensures that patients are well-informed, enabling them to make informed health decisions and adhere to treatment plans, thus embodying a proactive approach to healthcare management.

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