Check for updates

Original Research Article

DIGITAL HEALTH

DIGITAL HEALTH
Volume 10: 1–12
© The Author(s) 2024
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/20552076241288368
journals.sagepub.com/home/dhj

Sage

Ethical acceptability of telemedicine: Nursing home resident's perspective on telemedical consultations

Nataliya Sira[1], Dominik Groß[1], Optimal@NRW Research Group[2] and Saskia Wilhelmy[1]

Abstract

Objective: The use of telemedicine in health care has recently expanded, and with it the need to evaluate its use from an ethical perspective. Studies investigating the ethical acceptability of telemedical consultations (TC) in nursing homes are lacking, and in particular, the perspectives and experiences of older adults with TC are underrepresented. The objective of this study is to identify ethically relevant parameters in the acute care of nursing home residents using TC and to derive recommendations.

Methods: A combination of qualitative research methods was employed to gain a comprehensive understanding of the research topic. These included semi-structured face-to-face interviews and participant observations. Due to the phased design of the cluster-randomized controlled intervention trial in the overarching study project, our investigations were carried out in phases before and after the implementation of the telemedical systems in the nursing homes.

Results: We identified various ethical challenges associated with the use of TC, including those related to autonomy, participation, privacy, self-conception, beneficence, security and justice. Our analysis indicates that the use of TC for nursing home residents is ethically acceptable, provided that several recommendations to promote acceptability are considered.

Conclusion: Our findings provide insights into the variety of ethical challenges that can arise when using TC in nursing homes to provide care for older adults while also providing information on how these challenges can be addressed. Furthermore, these findings provide guidance for further research to improve the care of residents in nursing homes from an ethical perspective.

Keywords

Telemedicine, telemedical consultations, nursing home residents, older adults, ethical acceptability

Submission date: 11 April 2024; Acceptance date: 16 September 2024

Introduction

The global average life expectancy has increased. Individuals born in 1950 could expect to live for an average of 46.5 years, whereas global life expectancy had risen to 73 years by 2019.[1] In the European Union, average life expectancy has risen further, from 77.6 to 80.1 years, over the last two decades.[2] This development, in conjunction with an increasing shortage of health care

[1]Institute for History, Theory and Ethics of Medicine, University Hospital, RWTH Aachen University, Aachen, Germany
[2]Department for Acute and Emergency Medicine, RWTH University Hospital, Aachen, Germany

Corresponding author:
Nataliya Sira, Institute for History, Theory and Ethics of Medicine, University Hospital, RWTH Aachen University, Wendlingweg 2, 52074 Aachen, Germany.
Email: nsira@ukaachen.de

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (https://creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access page (https://us.sagepub.com/en-us/nam/open-access-at-sage).

professionals,[1] is prompting health systems around the world to identify new strategies to ensure care and to meet the needs of the population.[3–5] These strategies aim to contribute to adequate health care and facilitate the work of health care professionals.

In this context, it would be erroneous to view telemedicine as a panacea;[6] rather it can be regarded as a supplementary measure in the medical care. The term 'telemedicine' is used in a variety of ways. One proposed overarching definition is to consider it as a subset of telehealth, where communication networks are utilized to enable the delivery of health care services from one location to another.[7] The utilization of telemedicine offers a range of social and health economic possibilities, including enhanced patient care and satisfaction, as well as the potential for cost savings in health care. Concurrently, the implementation of telemedical technology is also associated with technical and infrastructural challenges, as well as concerns regarding data protection and security.[8] One example of such an additive instrument of telemedicine is the telemedical consultation (TC). It enables the provision of medical care for patients situated at a distance from one another by means of audiovisual communication technology. The advantages and disadvantages of telemedical systems are also evident in this context. These include the ability to communicate with and care for patients over a vast geographical distance, as well as cost and time savings. Conversely, the lack of physical presence inherent to TC limits the ability to conduct direct physical examinations.[9,10]

It is noticeable that there is a lack of research focusing on the use of telemedicine for older adults in nursing homes. This is despite the fact that older adults represent a target group that can be reached to counteract the aforementioned demographic change through using telemedicine and to additively exploit the positive effects of its use. The majority of studies on telemedicine concentrate on general patient and clinician satisfaction,[11,12] as well as the specific medical specialties in which telemedicine is employed, such as radiology or radiation oncology.[13–16] Furthermore, research has primarily focused on the use of digital health systems in the patient's home environment,[17,18] with a paucity of studies evaluating its implementation in nursing homes.

In the contemporary era of digitalization, the field of health care is undergoing a profound transformation, with technology playing an increasingly important role. While the traditional physical relationship of trust between doctor and patient has historically been a defining characteristic of medicine, contemporary health care is increasingly shaped by technological advancements, such as telemedicine. As previously stated, this can result in added value for those involved, but it can also give rise to ethical challenges.[19] With regard to the ethical challenges that specifically relate to the implementation or use of telemedical systems for older adults in nursing homes, no specific studies can be found. Rather, there are investigations that focus on certain ethical aspects, such as patient autonomy, related to the field of telemedicine,[20] or those that focus on other specialities, such as the ethical considerations surrounding the use of TC in palliative care or pain therapy.[21,22] There are also ethical considerations pertaining to the use of e-health and digital applications in medicine.[23–25]

The Optimal@NRW study (trial registration number: NCT04879537) addresses this research gap. The overall idea of this project is to enhance the quality of medical care provided to nursing home residents by using a telemedical system in 25 nursing homes in the Aachen region (North Rhine-Westphalia [NRW], Germany) with the objective of reducing hospital stays.[26] Optimal@NRW offers an alternative in acute care for two reasons: (1) timely provision of medical care to nursing home residents represents one of the most pressing challenges currently facing Germany due to the declining number of general practitioners; and (2) hospital admissions and the extensive utilization of ambulances frequently occur when outpatient care is not made available.[26] In addition to investigating the establishment of this system, its efficacy, economic implications for health care and social implications, this project also examines the ethical acceptability of using this telemedical system. To this end, a variety of stakeholders, including health care professionals, TC doctors and nursing home residents, are being examined. The present study is focused on the population of nursing home residents.

In examining the ethical perspective, we differentiate conceptually between social acceptance and ethical acceptability with respect to the use of technology,[27] following the approach of Grunwald.[28] In this context, ethical acceptability refers to the ethical-normative justification of the use of technology, including the reasonableness of individual and social consequences.[28–30] In contrast, social acceptance refers to the general perception and the resulting potential acceptance or rejection of the use of technology.[31] For example, it could be argued that the use of TC in nursing homes is socially accepted by residents, who tolerate its use for their care. It could also be argued that the use of TC is ethically unacceptable because it violates the personal rights of residents. The two constructs are not mutually dependent; the acceptance of something by individuals or society does not necessarily imply its ethical acceptability. This view can also be applied in reverse.[30]

A variety of models and criteria catalogues can be employed for the ethical evaluation of the socio-technical applications in medicine.[32,33] These tools provide a framework for evaluating the ethical acceptability of the utilization of medical technologies that have an impact on individuals and society.[29,34]

The objective of this study is to identify ethically relevant parameters in the acute care of nursing home residents using TC and to derive recommendations. In pursuing this objective, we seek to gain insights to the current and

potential ethical challenges that may arise from the implementation of telemedicine in nursing homes. In particular, our study focuses on the needs and preferences of older adults and their engagement with the implemented telemedical system.

Method

In the following section, we introduce the study concept of the overarching study project Optimal@NRW and our interview study on ethical acceptability. Furthermore, we present our interview study and its participants as well as the qualitative analysis methods used.

Study concept

The overarching collaborative study project, Optimal@NRW, has the objective of enhancing the quality of medical care for nursing home residents through the implementation of a telemedicine system in 25 nursing homes situated in the Aachen region (North Rhine-Westphalia [NRW], Germany) in order to reduce unnecessary hospitalizations of residents.[26] The project is designed as a multicentre, cluster-randomized, controlled intervention study in a stepped-wedge design. The current standard of care for nursing home residents in Germany serves as the control group, while the use of the telemedicine system in the 25 nursing homes represents the intervention. The study will analyse the establishment of the telemedical system, its effectiveness, the economic impact on the health care system, the social impact and the ethical acceptability.[26]

The telemedical care of a resident within the study is provided in acute health situations, such as fever or low temperature, cold symptoms, nausea, dizziness, urinary tract infection, abdominal pain, chronic complaints or drug demand. However, it is not provided in life-threatening medical situations, such as severe chest pain with shortness of breath, sudden speech disorder, symptoms of paralysis or unconsciousness.[26] In the aforementioned acute situations, a visit is conducted by a TC doctor who is connected to the resident via a telemedical system, enabling a live, visual and acoustic connection. The resident is accompanied by a caregiver, who provides technical and health support to the resident and acts as a liaison between the resident and the TC doctor. During TC, the doctor is able to communicate with the resident and the caregiver, and utilize technical equipment of the system to measure vital parameters, such as blood pressure and pulse. Furthermore, the TC doctor can request the assistance of mobile non-physician practice assistants, that is, medical assistants or nurses with at least basic medical training, who support the nursing home on site in the care provided by the TC doctor and perform medically delegable services.

The research project is divided into three phases: before, during and after the use of the telemedical system. This will provide a comprehensive perspective for mapping the situation in the nursing homes, identifying needs and adapting barriers, and conducting evaluation. The overarching project, including the individual studies conducted by the various project partners, underwent a review and was approved by the Ethics Committee of the Medical Faculty of RWTH Aachen University. To participate in the overarching study, the residents and their health legal guardians (if applicable) were informed in advance and their written consent was obtained. This consent also extended to participation in surveys and interviews of the project partners.[26]

Interview study

In order to ascertain the ethical acceptability of the new telemedical system, the perspective of the residents, that is the stakeholder for whom this new care structure is intended, provides valuable insights. In accordance with the stepped-wedge design of the overarching project, the resident interviews were conducted in two phases: 'before usage' and 'during usage' of the telemedical system. The orientation towards these two phases of the overarching study design allows for the combination of an exploratory approach with a descriptive approach for the conception and implementation of our interview study. The initial 'before usage' phase of our study was designed to gain a deeper comprehension of the typical daily routines of the nursing homes and specificities and needs of their residents. In this phase, an exploratory approach was employed, supplemented by participant observations to gain a more insightful understanding of the different nursing homes and their residents. The observations were conducted in an open and participatory manner, with both residents and caregivers aware of the observation and the observer participating in interactions with those being observed. This included staying in the nursing homes with the residents or attending technology workshops to train caregivers in the use of the telemedical system. The observations were documented in an unstructured manner, guided by general instructions regarding the content of the observation as a basis, such as the environment, processes, emotional and social aspects, etc. In this initial phase, residents who had not yet received a TC were interviewed. The semi-standardized interview consisted of 13 items and, in addition to socio-demographic aspects, included questions pertaining to health status, experience in the nursing home and the care situation, as well as questions on medical care and contact with doctors. The findings from this phase were integrated into the development of an interview guide for the subsequent 'during usage' phase, which relates to ethical considerations in relation to the newly implemented telemedical care system, with a focus on conducting TC with residents.

The second 'during usage' phase of our study started with the implementation and use of the telemedical system, and thus the possibility of TC in the nursing

homes. The study population of this phase consisted of nursing home residents who had received TC. The semi-standardized interviews, comprising 42 items, included socio-demographic aspects, general questions about the TC experience and the medical care situation as well as specific questions about the perceived advantages and disadvantages of TC. In addition, the specific technical and social interaction with the TC doctors were surveyed.

The interview questions were developed by the authors and are based on a synthesis of ethical principles and criteria. The ethical principles used were the four basic principles of biomedical ethics, which have become established internationally in medical ethics for the evaluation of ethics in medical practice: beneficence, non-maleficence, autonomy and justice.[35] Furthermore, ethical criteria from the research literature that can be used to evaluate the interaction between humans and machines in medicine were employed.[32,33] The selected criteria catalogues are based on the four principles of biomedical ethics but also contain other criteria that are specifically pertinent to human–machine interaction in medicine. They provide a more comprehensive evaluation framework, including additional criteria such as security, privacy, participation and self-conception. In particular, the ethical criteria from Manzeschke et al.,[33] which are designed as a model, offer an appropriate analytical tool for evaluation. The model facilitates the systematic identification of ethically problematic effects of socio-technical arrangements and provides starting points for the development of interview items on ethically relevant questions, such as 'How can (based on a practice that is consistently oriented towards the individual's right to self-determination) people be supported in exercising their self-determination?'.[33] Furthermore, the design of the interview guide was supported by unstructured participant observations, also conducted in the nursing homes as previously described in the 'before usage' phase, and a secondary analysis of existing data from a project partner on the social acceptance of TC in acute medical situations.[36]

The following section outlines the operationalization of the interview guide of the 'during usage phase', presenting the selected ethical principles and criteria and describing the items derived from them.

Autonomy. The principle of autonomy underscores the significance of an individual's autonomy and self-determination. In this regard, patients should be empowered to make informed decisions about their medical treatment based on comprehensive and understandable information.[35] The use of technical support systems, such as telemedicine, also raises the issue of preserving or promoting patient autonomy. This raises ethical questions about the possibility of informed consent or the potential impact on freedom of choice.[32] In line with this view of autonomy, questions were included in the interview guide that relate to the residents' ability for autonomous action with respect to the TC and the possibilities for their self-determined participation. A total of twelve items were included for this purpose. Examples of autonomy-related questions included whether the respondents had been asked to agree to a TC in the specific situation, whether they had been able to see the doctor clearly during the TC, or whether they had asked any questions or talked to the doctor during the TC.

Participation. The concept of participation can be defined as the equal involvement of individuals in social activities, which contrasts with forms of exclusion or marginalization. In practical terms, it means providing people with the opportunities, rights and resources that enable them to live in society with others.[33] We follow this concept of participation and relate it to the ability of residents to participate in medical care through TC. We consider participation to be closely related to the concept of autonomy. To this end, 2 of the 12 aforementioned autonomy items also encompass aspects of participation, which address the question of whether the use of telemedical technology, specifically the device used to conduct a TC, disrupted the resident during the conversation with the TC doctor and whether they would prefer to use the TC device themselves instead of a caregiver.

Beneficence. The ethical principle of beneficence requires that medical actions be taken in the best interests of patients. The objective should be to benefit and promote the well-being of a person.[35] With respect to technical support systems such as telemedicine in patient care, questions arise, for example, about the potential benefits for patients, in terms of mortality, morbidity or quality of life.[32] We transferred this idea of benefit to the role of the doctor during the TC, who is supposed to promote the well-being of the residents. To this end, six items were included in the interview guide to elicit the residents' perspective, such as whether the TC doctor was able to help them during the TC or whether they felt well cared for by the doctor.

Privacy. It is a right of freedom of persons, the purpose of which is to guarantee that people can behave and live as they wish without coercion, provided that they do not restrict the freedom of others. Thus, in a figurative sense, privacy represents an inviolable area around a person that should be protected. With the use of technical support systems, such as telemedicine in the care of individuals, the concept of privacy needs to be expanded to include aspects of data security and data protection, and to consider the change in the self-determination of individuals in their interaction with technical systems.[33] We also see the need for this expanded view of privacy in relation to intermediate technologies such as TCs and personal technical support in the interaction between the resident and doctor, leading to a change in the classic private doctor–patient conversation. For this purpose, four items were included in the interview

guide to investigate whether other people were present during the TC, whether the presence of other people was perceived as disturbing for the residents and whether the residents felt the need to speak alone with the doctor during the TC.

Security. It is linked to the ethical principle of non-maleficence. This principle emphasizes the avoidance of harm to patients through medical interventions. This includes refraining from unnecessary interventions, avoiding negligent behaviour and balancing benefits and risks.[35] In addition to these considerations of objective safety, the subjective perception of safety of the individuals involved in a medical situation, such as doctors, caregivers or patients, are also crucial.[33] Patients' subjective perceptions of safety were the primary focus of the five items included in the interview guide. These items addressed key aspects such as the level of safety experienced by residents during the TC, the presence of technical issues or the perception of care received during the TC compared to an on-site visit.

Self-conception. The term 'self-conception' refers to a person's or group's awareness and perception of themselves. Self-conception is shaped or changed by subjective experience on the one hand, and by social constructs on the other. For example, factors such as illness or age can affect a person's self-conception. At the same time, social constructs, such as the acceptance or rejection of concepts of illness or aging, can exert an influence. Technical support systems, such as telemedicine, can also influence self-conception.[33] We follow this consideration of self-conception and relate it to whether residents fundamentally believe that TC should be possible in the future and whether they would like to receive such care in the future. We have integrated two items for this purpose.

Justice. The ethical principle of justice seeks to provide a comprehensive understanding of justice in health care, encompassing both individual and societal dimensions. These include the equitable distribution of health care resources, fair access to medical care and the equal treatment of patients.[35] With regard to the use of technical support systems in medicine, such as telemedicine, ethical issues of non-discriminatory access to technology or the equal distribution of potential benefits and harms for patients can arise.[32] On the basis of these considerations, we focus on equity of access and on equitable distribution of work through the use of TCs. To this end, two items were included into the interview guide. The items inquires whether the residents believed that every nursing home should be permitted to provide TCs and whether they had the impression that the use of TCs resulted in caregivers having a greater workload than usual.

In addition, seven items on the socio-demographics and living situation of the residents in the nursing homes were integrated, along with four items concerning basic information about the TC, including whether residents had participated in a TC, the reason for the TC, and a request for a step-by-step description of the TC, as well as an opportunity for open feedback. Based on the developed interview guides (see Supplemental material), interviews were conducted in the nursing homes during the two aforementioned phases from June to September 2022 ('before usage' phase) and from September to December 2022.

Participants

A total of 20 interviews with residents were planned for each phase of the study. The number of residents was based on two factors: the number of TCs carried out in the various nursing homes and the number of potential residents who could be interviewed. Additionally, the willingness or ability of the residents to talk about TCs was considered, with potential limitations due to cognitive or physical restrictions. The number of TCs was collected and managed by the overarching study project, which provided us with information on the location of the TCs and enabling us to contact the relevant nursing homes to request interview appointments. The residents who agreed to take part in the overarching study project were contacted by the nursing home coordinators to arrange an interview. If residents expressed an interest in participating, they were provided with further information by the interviewer on the day of the interview regarding the procedure and content of the interview. They were then asked for their consent. Participants were also informed that they could cancel the interview at any time.

During the 'before usage' phase of the study project, participants who had not yet received TC were interviewed ($n = 20$). After eliminating dropouts, such as residents who discontinued the survey at the beginning, 16 interviews were deemed suitable for analysis. The interview duration varied between 7 and 28 min. The average of the participants was 80 years, with an age range of 62–90 years. The majority of the interviewees were women ($n = 10$; average age 85 years) and, on average, older than the male interviewees (average age 72 years). Regarding their experience of living in a nursing home, the average length of time spent in their current facility at the time of the survey was around five years on average ($n = 15$). Of these, two residents stated that they had been living in their nursing home for 17 and 20 years, all others stated a range of 1 to 9 years.

A total of 13 interviews were conducted in the 'during usage' phase of the study project with residents who had received a TC. After eliminating dropouts, such as residents who discontinued the survey at the beginning or who could not remember the TC they received, four complete

interviews and two incomplete interviews could be used for analysis. The interview duration varied between 13 and 29 min. The average age of these six interviewees was 77 years (range: 60–91 years) and the majority were women ($n = 4$). On average, they had been living in their nursing homes for 2 years (range: 1.5–4 years).

Qualitative analysis

All interviews were registered as audio files and transcribed manually. To ensure the confidentiality of the participants, the interview transcripts were anonymized so that no conclusions could be drawn about individual persons. A manual qualitative content analysis was employed to examine the interviews.[37] The content of the transcribed interviews was subjected to a systematic examination based on deductive categorization. The ethical principles and criteria previously defined for the interview guide were used as categories to screen the interviews for related ethical topics. In other words, the content of the interviews was reviewed to determine whether it reflected the specified ethical aspects, and then assigned to the predefined categories. Furthermore, an inductive method was used to explore the potential for additional ethical issues within the interviews and documentation of observations.

The interviews and observations were conducted by the first author, a PhD candidate with a background in the humanities (MA) and experience of conducting interviews. She was employed as a research assistant at the RWTH Aachen University Hospital and was not acquainted with the participants. Prior to the commencement of an interview, the interviewer introduced herself as a research assistant on the project at Aachen University Hospital and provided a brief overview of the study and eliciting the residents' personal opinion. No additional characteristics of the interviewer were mentioned. As the interviewer was a stranger to the participants, they were typically provided with supplementary assistance by the caregivers at their facility, who introduced the interviewer to them. The interviews were conducted individually with the participants in the absence of the caregivers; in select instances (e.g. for language support), the caregivers remained present for the duration of the interview. All interviews and observations were coded, reviewed and evaluated by the first author, with discrepancies in attribution clarified by consensus with the last author. The last author holds a PhD in medical ethics and has been employed as a scientist at the RWTH Aachen University Hospital for a decade. She has considerable experience in qualitative research in the field of medicine.

Results

During the 'before usage' phase of the study project, the majority of interviewees indicated that they could envision participating in a TC although a preference for local doctors was also expressed. Overall, the feedback on the use of TCs and their benefits in the 'before usage' phase was mixed: On the one hand, the option of a TC was rated positively, as it allows for a prompt medical decision-making process with doctors. However, there was also scepticism about whether doctors can conduct a proper examination with a telemedical device.

The qualitative results of the interview study from the 'during usage' phase are presented below. The following quotations from residents have been translated from German into English.

Autonomy and participation

The initial decision to utilize TC, as opposed to hospitalization or contacting a general practitioner, for their care is primarily made by the caregiver, as evidenced by the following quote from a resident: '[…] the caregiver, yes […] they came in advance, about, already long time ago, whether we would agree to it' (84 years, female). In general, residents are less involved in this decision-making process. The final decision to conduct a TC is made by the TC doctor. In the event of a TC, the attending doctor (not routinely) seeks the resident's consent for the consultation. Regarding the way of contact, residents indicated a preference for face-to-face interaction with the doctor, citing the more personal nature of the interaction and the ability to engage in direct communication as key factors. In comparison, they expressed less preference for a TC, as this represents an unusual modality for them to communicate with the doctor via a screen. In general, it can be observed that in the specific acute medical situation of the residents, TC is considered to be useful. This is justified by the fact that they were helped with their medical problem, as evidenced by a resident's quote 'the main thing is that I was helped' (82 years, female). Additionally, some residents postulate that novel approaches to care will inevitably be integrated into health care in the future. The TC doctor and resident are visible and audible to each other on a screen. The majority of residents could clearly see and hear the TC doctor, for example, they could describe the doctor's appearance. However, some residents stated, that despite the high quality of the TC device, they were unable to recognize the TC doctor due to physical limitations, such as poor eyesight.

With regard to the interaction between the parties involved during a TC, the residents provided divergent accounts of their experiences. In some cases, residents reported direct communication with the TC doctor. In other instances, the doctor did not engage in direct communication with the resident, instead consulting with a caregiver about the resident. Residents indicated that the caregivers, who are present with the resident during the TC, were predominantly involved in this communication situation. The presence of other individuals, such as other

care professionals of the nursing home, during the TC was not reported by the residents. Overall, the residents rated the communication with the TC doctor via the TC device and screen as positive.

The TC device is operated by a caregiver, who is responsible for initiating the device and connecting it to the TC doctor, as well as using the technical equipment, such as the digital stethoscope. In contrast, the residents utilize the device passively, communicating with the TC doctor through a screen. The majority of residents report that they rely on care personnel to assist them in using the TC device and that they would be unable to use the device independently.

Beneficence and privacy

Our findings indicate that residents did not experience severe or acute pain as a result of their health conditions during the TC. The residents stated that the TC doctors provided assistance in a range of ways during a TC, including prescribing medication, referring them to a specialist, or simply engaging in conversation. One resident (64 years, male) stated, 'She could help, yes' and 'With this, with the talk, the conversation. The doctor spoke […]'. Residents reported that they felt well cared for by the TC doctor during the TC.

Residents also stated that they felt well cared for by the caregivers during a TC. They attributed this to the prompt performance of medical procedures ordered by the TC doctor, either immediately or the following day, for example blood sampling. Also, the mere presence of the caregivers was perceived as beneficial. One resident (84 years, female) stated, 'Yes, that I got medication right away […] And the next day they took blood again […]'. In terms of security, residents reported that they generally felt secure during TCs, both medically and organizationally. This perception was attributed to several factors, including the empathy of the TC doctor, the time spent with them during the visit and the organization around the TC.

Regarding the aspect of privacy, the presence of caregivers during a TC was required as a mandatory component of the project, as they were responsible for operating the telemedical devices and equipment for both the residents and TC doctors. The continuous presence of caregivers in this context is not a source of concern or discomfort for the residents. One resident (84 years, female) stated, '[…] we are a family. It didn't bother me at all. They also keep our [health] records […]'. The nursing home residents interviewed reported that the caregivers are close confidants.

Feeling of security

When TC was compared to a medical visit in the nursing home (e.g. by a family doctor), residents provided a range of responses. On the one hand, the medical care was described as equally good, and there were no discernible differences in the care situation for them. Conversely, residents indicated they perceived the care provided in a TC to be fundamentally distinct from that provided in person, with the latter being perceived as superior in terms of quality of examinations (e.g. better examination). Furthermore, the feedback indicated that the speed of availability of a TC doctor should be emphasized in comparison to face-to-face care. Finally, the residents indicated that both forms of care (TC doctor or doctor on site) are ultimately accepted. Overall, the respondents considered TC as a viable alternative to on-site care. It was also mentioned that the provision of TC care will inevitably increase in the future given that doctors will be unable to dedicate the requisite time to visit all patients on-site.

Furthermore, the residents expressed satisfaction with the care staff's ability to effectively utilize the TC device, which they attributed primarily to the device's technical functionality.

Self-conception and justice

In general, the residents indicated that the possibility of TC should be maintained. Regarding their own future participation in a TC, the residents expressed mixed views. Although they were satisfied with the TC, they indicated that they would prefer to be seen by a doctor on site because they missed the personal contact with the doctor.

With regard to the issue of justice and equitable access to the TC system, residents expressed support for the provision of TC by nursing facilities; they believe TC benefits both residents and caregivers. One resident (84 years, female) stated, '[…] because it's more comfortable, maybe for both, for the caregivers and for us'. It is not believed by the residents that a TC will result in increased workload for the caregivers: While one resident stated that the caregivers only have to retrieve the device from a room where it is stored, another resident notes that it is difficult to assess the situation, but that the caregiver appeared satisfied during the TC.

Discussion

The objective of our qualitative study was to investigate the ethical acceptability of a new telemedical care system in nursing homes, with a particular focus on the residents. The following section presents a discussion of the main findings.

Strengthening residents' autonomy and participation

In our interviews, we discovered that some participants experienced difficulties in recalling their consent to participate in the overarching study project or to take part in TCs. For instance, some respondents in the 'before usage' phase indicated a desire to participate in the overarching study

despite their prior inclusion. This phenomenon may be associated to common age-related memory fluctuations.[38] It would therefore be appropriate to adapt the information provided, for example by repeating or renewing the consent given with a time interval. This should also be applied to the practice of using TC. In the period before a TC, it would be beneficial to provide residents with further explanation of what they can expect. It is essential that the nursing homes and the staff on site consider this aspect in order to ensure that residents are adequately involved in decision-making processes regarding the use of TC.

The interviews also revealed that residents often want nursing and medical staff to make decisions, especially during periods of poor health. These presumed age-related limitations could be compensated for by educational initiatives.[20] In the practical application of TC, it would also be beneficial to hold regular information events, such as presentations of the devices or opportunities to try them out, to familiarize residents with the still-new medium. This could strengthen residents' health literacy, which in turn would promote their autonomy.[32] Similarly, nursing home professionals and TC doctors should be made aware of the need to involve residents as much as possible in the decision-making process about a TC. Understandably, this involvement in the decision-making process is also highly dependent on the resident's decision-making capacity, which may be impaired due to cognitive or physical limitations. In addition, both caregivers and TC doctors have a responsibility to ensure that the resident receives good care. Therefore, it is advisable to sensitize and involve all parties in this decision-making process.

In our interview study, we included residents who were cognitively able to talk about their experiences of telemedicine. In addition, residents were included in the study on a voluntary basis, even though they may not have fully understood the reasons and objectives of telemedicine or its potential advantages and disadvantages. Such participation interests were then reviewed by a legal guardian (e.g. relatives or professional guardians), who could then consent to participation after weighing the benefits and risks for the resident. Such residents have also received TC in acute medical situations without necessarily having a clear understanding of the specifics of the telemedical interaction. This naturally raises the question of how to address the situation of individuals who are unable to give their autonomous consent in the context of medical care or research. In the context of modern technologies such as telemedicine, which can be difficult to understand, it is of particular importance to ensure that adequate information is provided and that informed consent is obtained. Moreover, it is important to consider the ethical principle of justice that individuals with cognitive impairments should have the right and opportunity to receive appropriate care, including via TC. For individuals who are unable to give consent, a number of advanced solutions are being discussed, such as the use of advance directives, substituted judgement and best interest or consensus seeking.[39,40]

Triangular constellation in TC: Loss of privacy?

According to our results, the TCs were characterized by a triangular constellation (resident, caregiver and TC doctor) with a specific communication path. During the TC, communication did not always occur directly between the doctor and the resident. Instead, it was primarily facilitated by the caregiver, either through their involvement or exclusively. This was observed in instances where there was difficulty in understanding or the resident was unable to provide information, but the caregiver possessed the requisite knowledge. The presence of other people during a doctor's visit can influence the doctor–patient conversation. For example, if other people are perceived as disruptive, this can affect the quality of conversation.[41] Our study indicates that residents consider the presence of caregivers during a TC as beneficial, as they facilitate communication with the TC doctor and assist with the use of the TC device. The fact that the caregivers were described as confidantes and equated with 'family members' was not perceived as an invasion of privacy. In addition, the care facility is the resident's home, and the individuals who work there are familiar and known to them. This is in contrast to the care provided by caregivers during a hospital stay. On the other hand, the residents also mentioned a reduction of privacy. However, the presence of a caregiver during the TC was still preferred due to the aforementioned aspects. It should be noted that the loss of privacy connected to older adults admission to a nursing home is significant because of the dependency that is created.[42] The findings of our study indicate that residents did not desire to be left alone during a TC. They expressed a preference for the presence of caregivers, as evidenced by one resident's explicit request to the TC doctor to speak with the caregiver and clarify the treatment plan. This relationship of dependency and this triangular constellation in communication are also observed in visits to doctors in nursing homes. It is important to note, however, that the active involvement of a caregiver in the use of the device in the present project creates an additional dependency on top of the existing one in communication. To maintain privacy, residents should be afforded the option of consulting with the TC doctor in private, should they so desire. It is imperative that both nursing and medical staff proactively convey this information to residents.

Increased communication effort due to distance

The TCs in this project were performed in acute situations but not in life-threatening medical situations.[26] Residents reported that they did not experience excessive pain

during rounds and felt well cared for. However, the study does not allow any conclusions to be drawn as to whether TC would also be accepted in more serious cases.

The field of nursing has undergone a significant transformation as a result of the integration of modern technologies in the health care sector. This has led to changes in patient care, giving rise to questions such as how compassionate care can be effectively integrated into a digitized environment[43] or what benefits and challenges the use of wearable electronic devices in nursing education presents.[44] The findings of our study indicate that a number of factors contribute to residents' perception of being well cared for during a TC. These include communication from the TC doctor, caregiver support, time, passive use of the TC device and, most importantly, the feeling of being medically supported. A lack of time available to physicians to care for their patients can result in negative outcomes, including stress and burnout for physicians[45] and suboptimal patient care.[46] The findings of our study indicate that among the nursing home residents, the duration of the TC was not a critical factor. However, this issue was also discussed in another study part of the project, in which the caregivers of the nursing homes studied described the duration of the TC with the residents as being longer than that of a typical medical visit with a doctor. The long duration of a TC was proactively addressed in the project, with the process subsequently optimized.[27] Based on our findings, we would support the hypothesis that a TC may require more time than a personal visit by a doctor. This assumption is based on the residents feedback that doctors have taken sufficient time during a TC and on the assumption that doctors accompany their care process step by step during a TC in a communicative manner. This implies that the doctor must both elucidate the intended procedures to the resident and furnish the caregiver with the requisite information and instructions to ensure the execution of the doctor's instructions. The caregiver serves as an extension of the doctor, performing tasks that would otherwise be conducted by the doctor in person, such as applying a digital stethoscope. The differing perception of those involved and the triangular communication between the doctor, resident and caregiver represent a temporal factor here.

'Do no harm' is one of the four basic principles of biomedical ethics according to Beauchamp and Childress.[35] This ethical principle also has implications for the field of telemedicine, where patients can be diagnosed and treated from a distance. This is due to the fact that the requirements for diagnosis and treatment are evolving with the advent of remote treatment and intermediate technology. Research shows that in many situations, TC can provide the same diagnosis as an on-site visit.[47] Nevertheless, diagnostic certainty may correlate with a subjective sense of security. Basically, the residents' feedback indicates that they felt safe during the TC, which they make dependent on the interaction of the TC doctor with them (empathy, communication and time), the technical functionality of the TC (smooth process), the involvement of the caregiver, not perceiving a major difference from the on-site visit and, above all, on feeling better after the TC. One potential caveat is the feedback from residents indicating that on-site diagnoses, defined as examinations conducted by a doctor on site, are perceived as better than diagnoses made by a doctor during a TC. This estimation can also influence how residents perceive the quality of their care and, linked to this, their sense of security with regard to the diagnosis made during a TC. It is therefore important that residents receive an adequate quality of care during diagnosis (and also during subsequent treatment) in a TC that is comparable to an on-site visit so that they are not exposed to any risk. In other words, it must be ensured that sufficient diagnostic tools are available for the specific medical situation and that appropriate diagnostic measures can be applied. In cases of doubt, the diagnosis should be supplemented or replaced by an one-site care support, for example by non-physician practice assistants authorized to perform delegable medical activities, by the family doctor or by hospital. It is also essential that residents are adequately informed about the diagnostic and examination tools that are available via the TC device. These include, for example a digital stethoscope and a pulse oximeter. In contrast to an on-site visit, the resident is aware of the transmission of numerous vital signs directly to the TC doctor. The resident cannot see this on the screen; only the caregivers and the TC doctor can see it. Therefore, it is necessary to provide the resident with sufficient explanation.

Adjustments in patient beneficence and justice issues

While some residents express a preference for an on-site visit from a doctor, others argue that the distinction is irrelevant and that the crucial factor is the provision of assistance. Residents offer divergent views when asked to assess the level of beneficence between a TC and an on-site visit. While the majority of residents indicated that the quality care is comparable between the two modalities, or that TC is a faster way to receive care and assistance, some stated that these two forms of medical consultation are fundamentally distinct and that in-person examination is superior. From the residents' perspective, a TC appears to be a viable alternative to medical care in the absence of a doctor on-site. However, it should be an additional option and not a substitute for care. Some residents report a feeling of distance during a TC, others admitted that a TC is pleasant for both sides, caregivers and residents, and it should be also used again in the future. In regard of the issue of self-conception and the related questions about the future availability of TC and the resident's desire to

receive them, the feedback from the residents is mixed. This suggests that the level of participation in a TC, as illustrated by the resident's comprehensive account of the TC, may serve as a predictor of future interest in another TC. In other words, the more actively residents engage in a TC, the higher their likelihood of expressing interest in future TCs. As already mentioned, a triangular constellation created in the context of TC may violate certain principles of privacy, participation and autonomy, especially if the patient is discussed without their involvement. This lack of patient involvement makes the triangular constellation dysfunctional. Regarding the example of legal guardians who may be involved in the communication between the health care personnel and patients, Kliche reports that patients describe the situations when health care personnel talk to a third person (legal guardian) about the patient in the patient's presence and at the same time show disinterest in the patient's statements and downgrade their importance.[48] Therefore, in order not to exclude the residents during the TC process, communication strategies should be considered to enable residents to participate in TC. For example, in order to provide personalized telemedicine, patient-centred communication can be employed.[49] This includes: (1) planning for participation, for example asking patients if they would like to involve other people in the TC, which could be a caregiver or family member, (2) opening the TC with introductions and brief non-medical conversation, (3) eliciting the patient's perspective, for example setting the agenda together, asking the patient to describe how symptoms have affected daily life and sharing decision-making, and (4) demonstrating evidence of active listening, for example being fully present, minimizing distractions such as taking too many notes or looking at multiple screens, using non-verbal communication to convey empathy, and observing and responding to the patient's emotional cues.[6]

Finally, with regard to justice in the adoption of the TC in the nursing homes, it should be noted that telehealth options generally promote greater access to health care.[50] However, it can be assumed that certain groups, such as older adults, people with low levels of education or below-average cognitive skills, may be at a disadvantage due to their low technical affinity or understanding of technology.[25] But, it is important to note that the nursing home residents involved in the overarching study project, regardless of age-related problems, their technical affinity or cognitive skills, have technical support from the caregivers and do not have to use the devices on their own. The majority of our study participants believe that a TC option should be made available in every nursing home as a way for residents to contact a doctor. Therefore, it is crucial to consider that the advent of telemedicine should not result in the emergence of a digital divide within society. Rather, telemedical applications must be made accessible to all patients who require or desire them.[51] Therefore, in order to ensure justice, it is imperative to guarantee access to age-appropriate support systems. In the context of nursing homes, this translates to the necessity of ensuring the availability of TC with a doctor for older adults. On the one hand, the residents should be asked if they prefer to speak with a doctor alone, in order to respect their privacy and autonomy, but on the other hand, the presence and support of the caregivers should be available. A further consideration is the number of TC devices available for each nursing home and solutions for situations where a TC device is needed for several residents simultaneously. In order to define the appropriate number of devices, further studies on the frequency of their use would be required. It is the responsibility of the health care system to ensure the equitable distribution of medical resources and establishment of an appropriate framework. Medical treatment must be accessible to all people.[51] This also means that caregivers possess the necessary technical abilities and demonstrate a commitment to ongoing development in this domain (digital literacy).

It has been established in research studies that individuals with reduced vision or hearing may encounter difficulties in following a video consultation.[52] Furthermore, older adults may experience challenges with virtual reality,[20] which can result in a perception of the TC-device and the doctor who appears to them on the screen as merely a TV image.[52] Additionally, age-related memory changes may also be a factor,[38] potentially impacting our results.

It should be noted that this study is not without limitations. The planned number of participants for this study was not reached. Although the initial objective of recruiting 20 participants was met in the preliminary ('before usage') phase of the study, the number of interview transcripts ultimately deemed suitable for analysis was reduced to a total of 16. In the second ('during usage') phase of the study, 13 interviews were obtained, rather than the planned 20. Of these, only six could be considered for analysis, as a result of dropouts. Accordingly, data saturation was not achieved due to the small number of interviews. Nevertheless, ethically relevant issues were identified through the analysis of the interviews, and recommendations could be derived from them. However, these results should not be generalized, as further studies are needed to corroborate them. In addition, the guides used for the interview study were created by the authors themselves, as no existing questionnaires on the specific topic were available. The interview guides were used for the first time in this study without undergoing pretesting.

Conclusion

Our study offers preliminary insights into the resident's perspectives on TC thus contributing to research aimed at understanding the perspectives and perceptions of

telehealth recipients. Based on the predetermined ethical principles and criteria, we were able to identify the chances and challenges that a TC system provides to residents of nursing homes and to find suitable framework condition for further implementation of such telemedical systems. Our results indicate that the use of TC in nursing homes is ethically acceptable on the basis of the criteria we defined and analyzed, and thus represents an additional tool for the care of residents. Concurrently, the findings illustrate the various ethical challenges that may arise when using a telemedicine system in care facilities. In this regard, our recommendations may prove beneficial when considering an ethical perspective in the development and implementation of telehealth systems for nursing home residents. While our results are project specific and may not be generalizable, we suggest further studies to continue assessing the perspective of the nursing home residents in order to relate to further ethical challenges that may arise in different settings.

Acknowledgements: The authors thank all of the nursing home residents who participated in the interviews and the care personnel as well as nursing homes coordinators for their helpful assistance with the study.

Contributorship: NS: investigation (lead), conceptualization (equal), methodology (equal), data curation (lead), formal analysis (lead), visualization (lead), writing – original draft (lead) and writing – review and editing (equal). DG: project administration (lead), project funding (lead) and writing – review and editing (supporting). ORG: critical review of the manuscript (supporting). SW: investigation (supporting), conceptualization (equal), methodology (equal), data curation (supporting), formal analysis (supporting), writing – original draft (supporting) and writing – review and editing (equal). All authors read and approved the final manuscript.

Declaration of conflicting interests: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics approval and consent to participate: The project Optimal@NRW was approved by the local ethics committee of the University Hospital RWTH Aachen (CTC-A Nr. 19-019; EK 463/20). Informed consent was obtained from all participants.

Funding: The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was funded by the German Joint Federal Committee "Innovationsfond" (grant number: 01NVF19015).

Guarantor: Nataliya Sira (NS)

ORCID iD: Nataliya Sira https://orcid.org/0000-0001-6913-6908

Supplemental material: Supplemental material for this article is available online.

References

1. World Health Organization. World health statistics 2023. A visual summary, https://www.who.int/data/stories/world-health-statistics-2023-a-visual-summary/ (2023, accessed 5 July 2024).
2. Eurostat. Life expectancy at birth down to 80.1 years in 2021, https://ec.europa.eu/eurostat/web/products-eurostat-news/w/DDN-20230316-1 (2023, accessed 5 July 2024).
3. Thinley S. Health and care of an ageing population: alignment of health and social systems to address the need. *J Health Manag* 2021; 23: 109–118.
4. Rudnicka E, Napierała P, Podfigurna A, et al. The World Health Organization (WHO) approach to healthy ageing. *Maturitas* 2020; 139: 6–11.
5. Rahman MS. Health care in aged population: a global public health challenge. *J Medicine* 2019; 20: 95–97.
6. Record JD, Ziegelstein RC, Christmas C, et al. Delivering personalized care at a distance: how telemedicine can foster getting to know the patient as a person. *J Pers Med* 2021; 11: 37.
7. Sood S, Mbarika V, Jugoo S, et al. What is telemedicine? A collection of 104 peer-reviewed perspectives and theoretical underpinnings. *Telemed J E Health* 2007; 13: 573–590.
8. Elendu C, Egbunu EO, Opashola KO, et al. The role of telemedicine in improving healthcare outcome: a review. *J Adv Res* 2023; 24: 55–59.
9. Stoltzfus MT, Kaur A, Chawla A, et al. The role of telemedicine in healthcare: an overview and update. *EJIM* 2023; 35. DOI: 10.1186/s43162-023-00234-z
10. Di Cerbo A, Morales-Medina JC, Palmieri B, et al. Narrative review of telemedicine consultation in medical practice. *Patient Prefer Adherence* 2015; 13: 65–75.
11. Harkey LC, Jung SM, Newton ER, et al. Patient satisfaction with telehealth in rural settings: a systematic review. *Int J Telerehabil* 2020; 12: 53–64.
12. Nguyen M, Waller M, Pandya A, et al. A review of patient and provider satisfaction with telemedicine. *Curr Allergy Asthma Rep* 2020; 20: 1–7.
13. Mustafa SS, Vadamalai K and Ramsey A. Patient satisfaction with in-person, video, and telephone allergy/immunology evaluations during the COVID-19 pandemic. *J Allergy Clin Immuno Pract* 2021; 9: 1858–1863.
14. Riley PE, Fischer JL, Nagy RE, et al. Patient and provider satisfaction with telemedicine in otolaryngology. *OTO Open* 2021; 5. DOI: 10.1177/2473974X20981838
15. Shaverdian N, Gillespie EF, Cha E, et al. Impact of telemedicine on patient satisfaction and perceptions of care quality in radiation oncology. *J Natl Compr Canc Netw* 2021; 19: 1174–1180.
16. Polinski J M, Barker T, Gagliano N, et al. Patients' satisfaction with and preference for telehealth visits. *J Gen Intern Med* 2016; 31: 269–275.
17. Facchinetti G, Petrucci G, Albanesi B, et al. Can smart home technologies help older adults manage their chronic condition? A systematic literature review. *Int J Environ Res Public Health* 2023; 20: 1205.

18. Silva IDS, Silva CRDV and Lopes RH. Digital health interventions and quality of home-based primary care for older adults: a scoping review protocol. *Front Public Health* 2023; 10: 1022587.
19. Ananfack Nguefack EG, Essomba AA, Ndiparah G, et al. Ethics in telemedicine and telehealth: a literature review. *IRJAES* 2020; 5: 67–70.
20. Rubeis G, Schochow M and Steger F. Patient autonomy and quality of care in telehealthcare. *Sci Eng Ethics* 2018; 24: 93–107.
21. Schuessler N and Glarcher M. Caregivers' perspectives on ethical challenges and patient safety in tele-palliative care. An integrative review. *J Hosp Palliat Nurs* 2024; 26: E1–E12.
22. Schmidt M, Wilhelmy S, Czaplik M, et al. Akzeptanz und ethische Implikationen der ärztlichen Telekonsultation. Das Beispiel Schmerztherapie. In: Inthorn J and Seising R (eds) *Digitale Patientenversorgung. Zur Computerisierung von Diagnostik, Therapie und Pflege*. Bielefeld: transcript, 2021, pp.107–125.
23. Cordeiro JV. Digital technologies and data science as health enablers: an outline of appealing promises and compelling ethical, legal and social challenges. *Front Med (Lausanne)* 2021; 8: 647897. DOI: 10.3389/fmed.2021.647897
24. Jokinen A, Stolt M and Suhonen R. Ethical issues related to eHealth: an integrative review. *Nurs Ethics* 2021; 28: 253–271.
25. Gross D and Schmidt M. E-health and digital applications–the ethical perspective. In: Lanzerath S, von Kielmansegg S and Hasford J (eds) *The development of medical devices: ethical, legal and methodological impacts of the EU medical device regulation*. Zürich: LIT, 2020, pp.117–139.
26. Brücken D, Unterkofler J, Pauge S, et al. Optimal@ NRW: optimized acute care of nursing home residents using an intersectoral telemedical cooperation network—study protocol for a stepped-wedge trial. *Trials* 2022; 23: 1–16.
27. Offermann J, Ziefle M, Sira N, et al. Telemedicine in nursing homes: Insights on the social acceptance and ethical acceptability of telemedical consultations. *Digit Health* 2023; 9. DOI: 10.1177/20552076231213444
28. Grunwald A. Zur Rolle von Akzeptanz und Akzeptabilität von Technik bei der Bewältigung von Technikkonflikten. *TATuP* 2005; 14: 54–60.
29. Petersen J and Manzeschke A. Soziale Akzeptanz und ethische Angemessenheit. In: Meißner A and Kunze C (eds) *Neue Technologien in der Pflege. Wissen, Verstehen, Handeln*. Stuttgart: Kohlhammer, 2021, pp.211–224.
30. Meyer T, et al. Zur ethischen Relevanz von Akzeptanz und Akzeptabilität für eine nachhaltige Energiewende. In: Fraune C, Knodt M and Gölz S (eds) *Akzeptanz und politische Partizipation in der Energietransformation. Gesellschaftliche Herausforderungen jenseits von Technik und Ressourcenausstattung*. Wiesbaden: Springer VS, 2019, pp.45–60.
31. Dethloff C. *Akzeptanz und Nicht-Akzeptanz von technischen Produktinnovationen*. Lengerich: Pabst Science Publishers, 2004.
32. Marckmann G. Ethische Aspekte von eHealth. In: Fischer F and Krämer A (eds) *Ehealth in Deutschland. Anforderungen und Potenziale innovativer Versorgungsstrukturen*. Berlin, Heidelberg: Springer, 2016, pp.83–99.
33. Manzeschke A, Weber K, Rother E, et al. *Ergebnisse der Studie „Ethische Fragen im Bereich Altersgerechter Assistenzsysteme"*. Berlin: VDI, 2013.
34. Loos C and Quante M. Ethische Akzeptabilität als zentrale Aufgabe philosophischer Politikberatung. *Zeitschrift für Praktische Philosophie* 2021; 8: 15–46.
35. Beauchamp TL and Childress JF. *Principles of Biomedical Ethics*. 8th ed. New York, Oxford: Oxford University Press, 2019.
36. Offermann J, Wilkowska W, Schaar AK, et al. Offer consultations in acute medical situations in nursing homes. In: Proceedings of the 8th International conference on information and communication technologies for ageing well and e-health (ICT4AWE), 2022, pp.105–116. DOI: 10.5220/0011058100003188.
37. Mayring P. Qualitative content analysis. *FQS* 2000; 1. DOI: 10.17169/fqs-1.2.1089
38. Small GW. What we need to know about age related memory loss. *Br Med J* 2002; 324: 1502–1505.
39. Lazaridis C. Informed consent and decision-making for patients with acquired cognitive impairment. *Neurol Clin* 2023; 41: 433–442.
40. Fields LM and Calvert JD. Informed consent procedures with cognitively impaired patients: a review of ethics and best practices. *Psychiatry Clin Neurosci* 2015; 69: 462–471.
41. De Veer AJ and Kerkstra A. Feeling at home in nursing homes. *J Adv Nurs* 2001; 35: 427–434.
42. Applegate M and Morse JM. Personal privacy and interactional patterns in a nursing home. *J Aging Stud* 1994; 8: 413–434.
43. Ali S, Kleib M, Paul P, et al. Compassionate nursing care and the use of digital health technologies: a scoping review. *Int J Nurs Stud* 2022; 127: 104161.
44. Araújo AAC, Gardim L, Salma J, et al. Advancing nursing education through wearable electronic devices: a scoping review. *Nurse Educ Pract* 2024; 79: 104032.
45. Prasad K, Poplau S, Brown R, et al. Time pressure during primary care office visits: a prospective evaluation of data from the healthy work place study. *J Gen Intern Med* 2020; 35: 465–472.
46. Freedman S, Golberstein E, Huang T-Y, et al. Docs with their eyes on the clock? The effect of time pressures on primary care productivity. *J Health Econ* 2021: 102442. DOI: 10.1016/j.jhealeco.2021.102442
47. Ohligs M, Stocklassa S, Rossaint R, et al. Employment of telemedicine in nursing homes: clinical requirement analysis, system development and first test results. *Clin Interv Aging* 2020; 15: 1427–1437.
48. Kliche O. Unterstützte Entscheidungsfindung: Wie „rund" läuft die Triade Ärzt*in-Patient*in-Betreuer*in? In: Bundesverband der Berufsbetreuer/innen e.V. (BdB) (eds) *Betreuungsreform 2023: Alles neu, alles gut? Jahrbuch BdB 2023*. Köln: Balance Buch + Medien Verlag, 2023, pp.171–182.
49. Hashim MJ. Patient-centered communication: basic skills. *Am Fam Physician* 2017; 95: 29–34.
50. Hull SC, Oen-Hsiao JM and Spatz ES. Practical and ethical considerations in telehealth: pitfalls and opportunities. *Yale J Biol Med* 2022; 95: 367–370.
51. Riepe C and von Schwanenflügel M. Ethische Herausforderungen und Chancen von Telematik und Telemedizin. *Gesundheits- und Sozialpolitik* 2013; 67: 52–54.
52. Hjelm NM. Benefits and drawbacks of telemedicine. *J Telemed Telecare* 2005; 11: 60–70.