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ORIGINAL ARTICLE

Social robots in care homes in French-speaking Switzerland: A qualitative and reflective study

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Summary
Background. — The number of elderly people with dementia in nursing homes is increasing in French-speaking Switzerland. This study investigates the use of social robots to improve and/or maintain the quality of life of these subjects, analyzed from the perspective of beneficence.
Methodology. — Semi-structured face-to-face interviews were conducted in a selected number of care homes using social robots with their residents in French-speaking Switzerland. The impact of this use was analyzed at anthropological and ethical levels by developing a reflexive analysis around two central themes: truth and beneficence.
Results. — The reflexive analysis illustrated the importance of several themes in the use of social robots in institutions, including the: (1) fears and hesitations surrounding the use of social robots in care homes; (2) role of interdisciplinarity and training of the nursing staff in this use; (3) necessity of a continuous evaluation guiding the use; and (4) importance of values and attitudes. In particular, this study highlighted the importance of showing at what levels this use is beneficial and identifying the ''fuzzy'' uncertainties that need to be studied in depth in order to make this practice increasingly ethical.

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Conclusions. — This exploratory study shows that using social robots (in particular in animal form) in care homes, is perceived by the users (health care workers and animators of the visited care homes) as having a generally positive impact on the residents, particularly for those suffering from dementia. These positive impacts occur at the level of bodily experience, as well as the maintenance, or even improvement, of personal capacities. At the same time, this use, when well framed, seems beneficial both for the residents the care team involved, who progressively notice the beneficial effects through the daily care relationship.

Background

The ageing population poses new challenges to society and the medical world today. According to the World Health Organization (WHO), current life expectancy is over 60 years. Furthermore, the proportion of people aged 60 and over will almost double from 12 to 22 percent between 2015 and 2050, i.e., a total of 2 billion people [1]. Switzerland, like most Western countries, is following this trend [2].

With the aging of the population, the prevalence of chronic diseases is also increasing, such as dementia. Among older people, dementia is one of the most common conditions, and is a leading cause of death, disability and dependency worldwide. It causes significant changes in lifestyle and social relationships. Approximately 150,000 people in Switzerland live with dementia, with the majority of sufferers aged between 65 and 95 years old. The risk of developing dementia tends to increase from the age of 85 [2]. As a result, retirement homes in Switzerland are taking in increasingly older people with a higher risk of developing some form of dementia. A study by the Swiss Alzheimer's Association revealed that two thirds of the residents in aged care homes suffer from dementia-related disorders [3].

One of the fundamental ethical issues in the care of residents with dementia is to continue to offer them the best quality of life possible. This means, among other things, that these people can continue to maintain or develop their own abilities important for their well-being and quality of life [4]. Among the tools to serve this objective, new technologies are considered privileged tools for communication, stimulation, and assistance to autonomy and mobility [5]. For example, in the field of robotics, there are different types of tools that are currently used in geriatric care. The TA-SWISS study by Becker distinguishes three types of robots [6]:

- therapeutic robots: training and movement aids, serving mobility and independence purposes;
- assistive robots: devices that complement or facilitate the lives of people;
- social robots: devices that accompany and interact with people.

In Switzerland, some care homes have introduced these innovative products from the field of robotics and, in particular, social robotics [7], including the use of the multisensory seal Paro in some institutions in French-speaking Switzerland [8]. Other interactive robots such as Zora, Nao, or Sia have also been used in care homes in some medium and small cities in the region for mainly playful purposes [9]. Companion, assistance, therapeutic or even playful robots, whose objective is to improve the life of the caregiver as well as the patient, occupy an increasingly important place in Swiss long-term care institutions [10]. A key question which emerges from the use of these robots is: in what way can or should these technological means be used ethically? (i.e., in a supportive perspective and not replace the caregivers or the family caregivers [11]). This implies questioning the beneficence of such use with regards to the benefit of the older person.

The enormous progress of new technologies, in particular intelligent technologies in the field of geriatric care, is reexamining the anthropological basis established until now. The presence of an intelligent technology such as a social robot in a care home occupies an effective — that is to say, first and foremost physical — place in the field of geriatric care and thereby proposes (or imposes?). It is our hypothesis that new forms of interaction generate ethical questions (widely addressed by the scientific literature and the general public) but also anthropological and philosophical questions. Among them: what role do we wish to give to these new technologies? Are they there to prolong, assist or replace the actions of the caregiver?

To answer these questions, the present study explores the use of certain social (or assistance) robots with elderly people in care homes, as part of a research project ''IPARC'' (Interactions between the elderly and robots: understanding the place of the living elderly body, funded by the ''age and society'' domain of the Leenaards Foundation). This study is particularly interested in the impact of the interaction between a robot and an elderly person in a care context from the point of view of health care workers and animation staff who use the robot. Much work has been done in Switzerland [7] and elsewhere [12] on the benefits and hazards [13] of this use in geriatric care. The topic of robotics, in this setting, raises and has raised questions primarily of ethics [14]. Are these technological entities beneficial (from the perspective of beneficence) or on the contrary a risk for the preservation of the integrity of the elderly, the caregivers and, above all, the care relationship? If opinions are divided today on these questions, it is commonly accepted

that a certain reasonable and reasoned use of these new technologies with the elderly can make sense. However, it remains to be determined which one and in what way. This philosophical-ethical reflexive empirical investigation complements theoretical research through the literature which gave rise to a first article [15].

Methodology

This research employed qualitative data collection techniques including an online survey followed by semi-structured face-to-face interviews with care homes in French-speaking Switzerland. An authorization from the Research Ethics Commission of the University of Lausanne (UNIL; 2.09.2021) was granted. Considering, on one hand, that the beneficiaries of the use of social robots in care homes are mostly elderly people with dementia, and therefore potentially vulnerable, and, on the other hand, the difficult health period due to COVID-19 pandemic in which the interviews took place, we chose to interview health care workers using social robots (for example, nursing staff and social and cultural animators). It is also important to bear in mind that the care workers themselves are key stakeholders regarding the use of social robots. Usually older adults with dementia and care workers can provide some different perspective of insights on this issue. The interviews took place between January and April 2022.

In order to contact these care homes, an online pre-questionnaire was created on a UNIL server which was sent to several cantonal associations linked to the care homes in French-speaking Switzerland. These associations were then transmitted our questionnaire (see Appendix 1) to the different care homes. Based on the responses received, the respective institutions were contacted and invited for interviews. Semi-structured interviews were conducted using a questionnaire on the use of social robots in care home in order to capture the experience of caregivers and their accounts of the impact on residents from both objective (body-health) and subjective (lived experience-body) perspectives. The research team conducted eight interviews with seven care homes, each interview lasted between 40 to 60 minutes. Interviewees included the staff of the care home: between one and six people from different fields (management, care, animation). The common point between the people interviewed is the interest for a multidisciplinary approach (occupational therapy, nursing care, animation, geriatric medicine, art therapy) and the importance given to the training-commitment of associations (continuous training in well-being, quality of life, dementia, palliative care, geriatrics, Alzheimer's association or Palliative Care) in relation to the demented elderly person.

Interviews were recorded, transcribed and then anonymized. Thematic analysis was used to analyse the interview data through the creation of a mind map structured initially according to the structure of the questionnaire, then by thematic grouping according to the results obtained. This analysis was carried out by the first author, discussed and clarified with the other authors of the article. The data are stored in a secure server at the UNIL. The consent of the interviewees was requested at the beginning of each interview.

The care homes we interviewed were from different cantons and had either a geriatric or a psychogeriatric mission. On average, they have about 100 residents. The types of social robots used in these homes are mostly animal-based, such as the Paro seal or the cat robot. The management team of a care home that used a humanoid type of robot (Zora) was also interviewed. In general, the people who have introduced these robots in care homes have become aware of their existence and benefits through conferences, direct testimonies from colleagues in other care homes, scientific articles or through the media (for Zora).

Finally, the research team directly observed two instances where social robots were used with residents and indirectly observed such uses through three videos made by the care teams in place. Although the content of these observations is not used in this article, they greatly contributed to allowing us to visualize and corroborate the information transmitted during the interviews.

Results

Through the analysis of the semi-structured interviews, a series of common themes emerged: hesitations or fears related to the use of robotics, the importance of training, the need for ongoing evaluation, the importance of the role of the person handing over the robot (caregiver, facilitator), the type of robot used, the issue of time, etc. These themes have been grouped under three main headings:

- concerns and hesitations in using a social robot in a care home;
- forms of use of the social robot in care home;
- conditions for ''good'' use of a social robot in a care home.

Concerns and hesitations in the use of a social robot in a care home

Almost all interviewees mentioned the existence of hesitations or concerns (their own, from colleagues, or from families) related to the use of robots with residents. The hesitations seem to come primarily from families and staff. Acceptance is rather positive on the part of the residents: ''Moreover, when a lady gets upset, other residents say go and get her the animal'' (L_1). To overcome these hesitations, the means used by the teams are communication and ethics. It is a matter of experimenting and showing the benefits that this use brings: ''I think that it [is done] little by little... It is true that people are a little skeptical when they see it the first time, then after...'' (P_1).

A key concern identified is the risk of dehumanizing the elderly person. This is based on the idea that we have of what a robot is: an artificial and cold entity that has no real emotion. As such, there is the concern of deluding the recipient into believing that it is a living being capable of feeling and sensing. This question is also at the center of the users' concerns. Interviewees' opinions on this question are divided. For some, it is important to say explicitly that it is a robot: ''Even for a resident who knows Paro, we will rename it a robot. But not in the sense of taking the place of an animal, it's a robot!'' (R_1). For others, the important thing is to be ''real with them'' in order to ''respect all levels''

of perception (G_1). In other words, if a resident thinks that it is a little cat, the carer must not go against this at the risk of creating confusion. The concept of ''reality'' was raised several times in the interviews, particularly in relation to the form that the social robot should take. While there is consensus in the academic literature that the robot should be as similar as possible to something that exists in nature, except for the human being[1], there are different opinions among interviewees about what kind of reality is beneficial for the elderly person with dementia. Some believe that it must be directly related to the lived experience: ''It is not my reality to put a seal on the residents' lap'' (P_2). Others, on the other hand, believe that it is better if there is no connection with the lived experience: ''It's interesting, the seal, because it doesn't remind them of the dog or cat they had'' (N_1).

Another concern is that of infantilizing the residents through the use of the robot, which would be a kind of toy. There is also the idea that the robot is useless, that it is a waste of time. Finally, some staff members expressed the concern of being replaced in their tasks by robot substitutes. In relation to replacement, a leader in charge of animation suggested a way of thinking: ''What can be replaced? What can't be replaced? The algorithm cannot explain the lived experience, the relationship, the feeling'' (V_2).

An additional consideration that appeared was the question of gender. Is a social, animal-like robot suitable for women, men or both? While everyone agrees that the main target audience is elderly people suffering from dementia, opinions differ on the question of gender. Some believe that women ''are much more open'' (L_1), more inclined to care, to cajole (R_1): ''I have a little more reticence. I need a bit more to go to a man and offer him the robot''. (N_1)[2].

Forms of use of the social robot in care homes

The social robot is considered in care home as a medium, i.e., a complementary means to other therapies in order to improve the life of the residents: ''We never stop trying to evolve, to improve the quality of life of the resident. That's what we're looking for at all costs'' (L_1). The various forms of use of the social robot in care institutions, their purpose and supporting testimonies identified through the interviews are listed in Table 1. In this sense and according to the various interviews, the robot can be considered as a relational, therapeutic, sensory and innovative medium.

Conditions for ''good'' use of the social robot in care homes

According to the interviewees, it is necessary to give consideration to training on the use of social robots, and continuous evaluation of the use of social robots with beneficiaries. This helps to ensure that the use has a beneficial and not deleterious effects on the quality of life and well-being of the residents.

Training on the use

For the interviewees, it is important to prepare for the use of Paro in advance, i.e., by means of good in-house and interdisciplinary training. The first training session often takes place with the vendor, who explains how Paro works, how it should be used and what its benefits are. Then, the people who introduced the robot to the care home train the people who will be using the robot with the residents: ''We created a little framework that we gave to the caregivers. How to use it? In which way? It's not a robot that you put down and give to the person, there's a whole process. But it's true that we didn't bring Paro in just like that. We had to train the staff and provide them with a good framework'' (R_1). In general, the robot is presented to the teams and families. Acceptance varies within the teams and is quite good in the case of the cat robot. One director noted that acceptance was better when the teams were able to experience interaction with the robot (looking at it, stroking it). All the interviewees agree that it is necessary to follow a line, a process. This process can be more or less ''concrete'' or ''structured'' (P, R, M). Particularly in the case of Paro, which is a robot with artificial intelligence and very sensitive sensors, a protocol for use is important. On the one hand, it is important to take care of the robot, which can be fragile and/or expensive (R_1). Furthermore, it is indispensable to take care of its use in order to take care of the residents in an optimal (and ethical) way. This means knowing how to bring it in (often already turned on) and how to take it out. Depending on the needs of the older person, the resident must not be left alone with the robot and ''the relational triangle between caregiver and resident must be maintained'' (R_1). The robot can be used individually or collectively, for example during a group session. However, the individual relationship between the resident and the robot is generally favored. This kind of framework was referred to as the ''Paro attitude'' by one of the teams interviewed: ''The Paro attitude is an attitude. When I go to pick up Paro, I'll take it out of its box and then at that moment, I turn it on... It's not an object that I just pick up... And then when the time is over, announce the goodbye of Paro to the residents before leaving'' (R_1). Time was an important element that emerged in the interviews. Almost all of the interviewees agreed that time should be taken with Paro, which means between 10 and 30 minutes. Beyond 30 minutes, fatigue can start to set in. The cat robot appears to impose less time constraints, but one must be careful about the time it takes to switch on, which can also tire the residents.

Continuous evaluation

It is also important, according to all the interviewees, to set up an ongoing evaluation before, during and after the interaction(s) with the robot. The main tool for evaluation is observation. Everything is noted and recorded: ''We'll note how they react to Paro. This can also happen if we take Paro to a small sitting room. We can see if there are people who are interested or disinterested'' (R_1). Ongoing evaluation allows us to see the benefits, or otherwise, of use and

[1] The idea that the robot should not have a humanoid form as this may confuse residents and cause anxiety. This perspective is defended by a body of scientific literature [25].

[2] The issue of gender was not raised by all participants in a consistent and clear manner. Therefore, we will not discuss this issue in this work. The issue of gender should be explored in greater depth.

Table 1 Quotes from interviews illustrating the types of use and purposes of social robots.

Forms of use	Purpose	Testimonials
Relational	Communicating with the resident	''With Paro we can go a little further in the relationship, especially for people who have difficulty speaking... You have to take the time, but Paro has the time'' (N_1)
		''We highlighted it in our study ... The staff were happy because they felt useful. They had a tool to relate more to the resident and other than just through daily care. So, there were a lot of staff who expressed that. They were happy to have a different way, they felt useful in a different way, and they really felt more connected to the resident. It was beneficial for them'' (M_1)
Therapeutics	Reconnecting with reality, calming down, soothing anxieties, staying in the midst of other people, finding the smile, sometimes even the word	''The effect it has? It calms them down. They arrive with a smile. They stop crying and talk to the cat'' (P_1)
	In this way, Paro or the cat-robot become means of support and alternatives to polymedication	''We use Paro to limit the use of medication because it avoids giving medication to calm the person down. And then we use other methods, we have many others, but Paro is the most important one to accompany the person'' (R_1)
Sensory	Stimulate bodily experience (lived body), awakens the body or maintains it in many ways. Because of the texture, the shape, the vibrations, the movements and the weight and physical characteristics of the animal robots, it is the touch that is the most solicited sense	''I had done a session with a resident. We realized that she needed something soft to stroke... We realized that it was good for them to touch'' (L_2)
	Feeling useful: the person who touches has the feeling of being useful, of providing care, of being in some way an actor in the interaction	''I think it's very important that they can touch the cat because they get care, they get medication, they get attention all the time. But they can rarely give anything (...). This cat when I pet him, he gets on his back, he shows his belly. It gives feedback to the residents of 'keep doing what you are doing, it's good''' (V_2)
	Initiate the body schema	''When we put Paro down, there is also this notion of weight. It is twice the weight of a small baby. But in fact, it also gives a sense of contentment'' (R_2)
		''In relation to this sensation of touch, residents have the sensation of feeling their body because we know that with dementia, there is this loss of sensation. And I think that at the level of the body, there is a presence and I think that there is also this memory of the body which was touched. The resident touches, but there is also this notion of being touched, so at the level of the way of existing, I am there, I exist. The fact of touching and well I feel my body'' (V_1)
Innovative	Communicate in a different way	''Sometimes it leads to other situations or maybe with gentlemen more often I would say. Or they will not be fascinated by Paro itself, but by the technology it represents (...) and so it's another interaction that's nice too'' (R_1)
	Valuing intergenerational links	''It was to say to ourselves we accompany 60 residents and these 60 residents have all their communication channels with us. And it was to coordinate our arcs to be able to actually enter into communication, bring something, create intergenerational interactions. That's not just a term. You have to be able to bring it, it means that you can have exchanges with the children, with the after-school, with the daycare centers, etc., it's also creating links'' (D_1)
	Valuing the complementary contribution of new technologies	''Always remember that it is a support and not a replacement. A support is well used at the right time. I think it's really. It's really a tool that is relevant and can bring a lot that can complement'' (V_2)

to reassess each situation at different times. Situations and needs can change: ''In the study, they were asked to describe exactly, in relation to these behaviors that had been chosen, what level of agitation or anxiety or pain, manifested. It was a very simple scale of zero, four observed behaviors, to one, two, three, three being the maximum of the behavior. And then during the interaction with the robot or another sensory activity, we also had to be able to rate. And then afterwards also the use and that's how we were able to identify the main trends'' (M_1).

Discussion

Through this study, it has been observed that the use of social robots in these care homes is framed by practices and rituals that are based on the values, principles and philosophies of the users of the different institutions. In this section, we will discuss and make explicit this ethical background in order to provide points for reflection on the use of social robots with a vulnerable population. From the results obtained, two points of ethical reflection are developed here that are intertwined with the three themes highlighted previously: deception (truth) and the notion of good (beneficence).

How to be 'real' with the resident/beneficiary? The question of deception

One of the main fears that we have raised concerns the general preoccupation of not ''deceiving'' the residents with whom the social robots are used, of being ''real'' with them. This issue is not trivial, especially since the target audience for this use are elderly people in institutions, i.e., in a situation of decontextualization in relation to their familiar home environment. Furthermore, these vulnerable people are, generally, suffering from cognitive disorders. The fundamental principles at stake here are the respect of autonomy, dignity, as well as the physical, psychological and moral integrity of each person. As for values, sincerity, the right to the truth, and respect for the person's state of health may also be at stake. As we have shown, opinions seem to differ as to what it means to ''deceive the person'', thus this is what will be discussed here. While some consider that residents are deceived when they are not told that the social robot is a robot (and not a living being or a human being), others consider that the perception of each person should be respected. In this regard, the Swiss Academy of Medical Sciences has issued some medico-ethical guidelines relating to the care and treatment of people with dementia [16]. If each person, especially in cases of dementia, has the right to forthrightness and truth, it can be important to take into consideration the type of dementia (moderate or severe) that the person has. The intention here is pivotal as it does not consist in wanting to mislead the person, but to allow positive emotions to be experienced by reanimating previous experiences (p. 25). The value of openness can thus be put into perspective with that of respecting the person's own perception (pp. 12—13).

As for the form that the social robot should have in order not to ''deceive the person'', the recommendations of TA-Swiss, which are reinforced by the results of this study, can provide some points for reflection. The coherence between the design (shape) of the social robot and its intended use contributes to the good of the older person who may be cognitively impaired in that the shape, humanoid or animal, is appropriate to the functional competence [6] (p. 48). If the goal is to maintain sensory abilities, for example, an animal-shaped robot such as Paro or the robot cat is adequate, as the person will be engaged by their various senses (sight, touch, hearing) and their body, as suggested by some interviewees. A systematic review by Yuan et al. also put into perspective the ethical and anthropological issues linked to robot appearance. While it is not clear how individual preferences or users' perceptions are affected by the robot's appearance. However, the review suggests that the robot's shape provokes certain feelings: sympathy, confusion, or even disgust. Thus, the type of population (elderly, young) and the objectives sought (interaction, stimulation, relaxation) should be taken into account during the design phase [17]. Other benefits, as shown in the results, are the therapeutic and relational effect. The gentle, caring and responsive aspect of the animal-shaped social robot has, for most users, beneficial, therapeutic effects and thus calls for reconnecting with the world and with others.

How to determine what is beneficent?

In biomedical ethics, seeking, protecting and promoting the well-being and interests of the patient is one of the fundamental principles that needs to be respected. This ''ethical'' goal, referred to as the principle of beneficence, which connotes acts or personal qualities of mercy, kindness, generosity and charity. Beneficence refers to altruism, love, humanity, and the promotion of the good of others. The principle of beneficence goes a step further by signifying a moral obligation to act for the good of others, helping them to promote their important and legitimate interests, preventing or removing possible harm [18]. This involves taking positive and active steps to seek the good (well-being) of the person. Bester [19] shows that there are two ways of understanding good: an objective way (therapeutic) and a subjective way (patient's wishes, goals and desires). While the objective dimension, in the case of social robots with care homes residents, has been addressed in the literature [20—23], the subjective dimension presents significant challenges. Indeed, how to define what is ''good'' or beneficent for a person with dementia who may not have the verbal ability to express his or her wishes, goals and desires? From this perspective of biomedical ethics, beneficence, in its subjective dimension, is subject to the principle of autonomy [24]. Therefore, how can one take into account the wishes of a person with dementia in relation to the use of social robots?

Respecting the autonomy of residents implies, as a minimum, ensuring that the explicit or implicit consent of each individual is obtained. In cases of dementia, this can be subtle and complex. Indeed, it is a question of observing, noting and re-evaluating, each time, the use of social robots with the beneficiary residents. It will be necessary to observe their reactions (verbal or non-verbal), their behavior and state in the short-, medium- and long-term. This

was demonstrated through this research with the need for caregivers or animators to establish a continuous evaluation. Moreover, the benefit may not be immediate nor recurrent. Thus it is important to consider that the situation may evolve in a beneficial or deleterious direction.

On the caregivers' side, and this point is important from the perspective of avoiding a conflict of values[3] that could complicate a situation, the experiences shared by participants show that it is also necessary to take into account the respect of their autonomy for their own good and that of the residents. Interviewees suggested that if a caregiver or facilitator is hesitant regarding the use of social robots with residents, it is difficult to ensure the beneficence of the use of the social robot.

Based on the findings of this research, we have identified several recommendations that can promote the beneficence of the use of robots in healthcare and autonomy of the person, especially the vulnerable person, in the use of social robots in aged care. It will therefore be necessary to mobilize ethical postures and attitudes that allow to:

- recognize the resident with dementia as a person capable of self-realization, i.e., of maintaining or increasing his or her own capacities and skills (Table 1);
- take into account the needs and desires of the person by being attentive to paraverbal and non-verbal language (voice, intonation), to signals of well-being or, on the contrary, of discomfort (embarrassment, withdrawal; see the C̈ontinuous evaluations̈ubsection);
- be careful not to ascribe assumptions with regards to the resident's wishes by leaving aside one's own projections, prejudices and fears (personal assessments, death, suffering) which can bias the care relationship (see C̈oncerns and hesitations in the use of a social robot in a care homeänd Ḧow to be 'real' with the resident/beneficiaryïn the discussion);
- respect the choice of the caregiver not to use a social robot with residents in order to respect their autonomy and to guarantee the benevolence of such use with residents (see subsection F̈orms of use of the social robot in care homes);
- accompany care through moral attitudes and values such as caring, empathy, patience (related to time), attention [25].

Conclusion

This study, carried out in seven care homes in French-speaking Switzerland, sought to understand ethically and anthropologically the impact of the use of social robots with elderly people suffering from dementia. To do so, semi-structured interviews were conducted with the staff of these care homes (caregivers, animators) and then analyzed thematically. The results showed that the use of a social robot, particularly in animal form, is perceived as bringing several benefits to the residents. These residents, generally at an advanced stage of dementia, develop or recover sensory, relational or creative capacities through contact with the social robot. The focus of this use is on the one hand the resident, in this sense the key question is whether the use of the social robot is beneficial for them, and on the other hand the staff who use it (care, animation) who are in a way the guarantors or custodians of an efficient and good use. It will therefore be necessary to develop ethical attitudes that accompany the care of residents with dementia by being genuine, caring, listening, and attentive to their attitude in this use: ''The goal is that the person still has a good life here, because when they arrive, they are not going to die right away... It is still a place of life. And then accompany them as best as possible until the end. So that she can be serene when they leave'' (L_2).

[3] We refer to value conflicts in the case that the caregiver is convinced that the use of social-robots with aged-care residents is not beneficial, or when the healthcare worker feels that the robot can be used as a substitute for essential gestures of care.

Human and animal rights

The authors declare that the work described has not involved experimentation on humans or animals.

Informed consent and patient details

The authors declare that this report does not contain any personal information that could lead to the identification of the patient(s) and/or volunteers.

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Authors' contributions

Conception and design of the study: S.P., N.E., R.J.J., N.B., Field work: S.P, N.E., N.B., Data analysis: S.P., Data interpretation and contextualization: S.P., N.B., N.E., Drafting of the article: S.P., Revising of the article: N.B., N.E., R.J.J., Translation: S.P., N.B., Approval of the final version: N.E., R.J.J.

Ethics and consent

Ethics approval has been obtained from the Research Ethics Commission of the University of Lausanne (UNIL; 2.09.2021). All interviews and data material were kept confidentially, and the study submitted to the Research Ethics Commission too. Written and oral information about the project was provided to all participants, and written informed consent was obtained and securely stored.

Availability of data and materials

Anonymised transcripts are available from the corresponding author.

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Disclosure of interest

The authors declare that they have no competing interest.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.jemep.2023.100918.

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