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Care robots in healthcare

Darlei Dall'Agnol [1]

1. Universidade Federal de Santa Catarina, Florianópolis/SC, Brasil.

Abstract

In this brief essay, I will first present a conceptual analysis of the conditions of respectful care and then apply it to the construction of robotic caregivers. We will demonstrate that there are two possible types of robotic caregivers and that, in general, due respect requires the appreciation of the patient's autonomy. Finally, this study shows the limits of robotic caregivers in the health sector.

Keywords: Bioethics. Delivery of health care. Respect. Robots. Health.

Resumen

Robots cuidadores en salud

En este breve ensayo, presentaremos un análisis conceptual de las condiciones del cuidado respetuoso y lo aplicaremos a la construcción de robots cuidadores. Demostraremos que existen dos tipos posibles de robots cuidadores y que, en general, el debido respeto exige valorar la autonomía del paciente. Finalmente, se exponen las limitaciones de los robots cuidadores en el sector sanitario.

Palabras clave: Bioética. Atención a la salud. Respeto. Robots. Salud.

Resumo

Robôs cuidadores na saúde

Neste breve ensaio, realizaremos uma análise conceitual das condições de cuidado respeitoso e aplicaremos à construção de robôs cuidadores. Demonstraremos que existem dois tipos possíveis de robôs cuidadores e que, em geral, o devido respeito exige a valorização da autonomia do paciente. Por último, destacam-se as limitações dos robôs cuidadores no setor da saúde.

Palavras-chave: Bioética. Atenção à saúde. Respeito. Robôs. Saúde.

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As we, humans, find ways to improve our physical, intellectual, and emotional abilities, among other things, leading to better health conditions and increased life expectancy of the population, care provided to the elderly becomes more challenging and complex.

Aging can be postponed, but not forever, because at some point a higher level of care will be needed. Recent studies show that the number of caregivers of the elderly has increased in recent decades [1]. Many of these professionals have an excessive workload that affects their own well-being, so this issue must be addressed in a different way to prevent aggravated health status of caregivers, since they may also need care.

In this context, an aging population can overburden the health system, raising many questions about equity and fair distribution of resources. In countries like Japan, where 25% of the population is over 65, care is becoming a social issue, and some companies are using robots for that [1]. However, before discussing whether robots can provide care, the following question should be made: What does care to vulnerable people really involve?

For a respectful care model

Based on some conceptual analyses of "care" [2] and "respect" [3], and especially considering the metaethical characterization of the reasons for actions with care and respect, what conditions are necessary and sufficient for W to know how to provide care to Y in a *respectful way* [4]? It seems to be the case if (only if):

- W sympathizes with Y and recognizes Y as a person;
- Y's well-being needs care and Y has the right to care in a fair health system;
- W fulfills his/her obligations with Y, benefiting Y.

When these conditions are met, we have "respectful care," which improves the person's well-being as something good *for them* [4,5]. It also involves moral feelings (sympathy) and recognition of personality. "Person" is understood here as an agent with justifiable rights/obligations.

In addition, the goal of care is clearly identified, that is, the patient's well-being. Also, the right to care imposes obligations to the provision of care by health professionals and, finally, there is an intrinsic attitude of appreciation by the benefitted patient because it is good *for them*.

This last condition shows that care is essentially a moral attitude. If this model were adopted, it could avoid both paternalism [6] and indifference [7], thus providing respectful care, a topic that will be addressed in the next section. This way, care and respect are two aspects of the same situation, which helps analyze the concept of respectful care using the same elements.

Can robots provide care?

We return to the question: Can robots provide care? Apparently the answer is yes. Pepper, "a robot with a heart," was sold to provide care to the elderly and children; Wakamaru, a "companion robot," was created to be with humans; Paro, a plush robotic seal, can be used for therapeutic purposes. There are many examples of robots for monitoring, message delivery, and medication reminders, as well as other devices to help provide care to the elderly.

In the field of nanotechnology, robots are being developed for medical use, either to administer drugs more effectively or use nanoparticles for therapeutic purposes [8]. In Japan and Europe, experimental tests are being conducted with some robots as caregivers [1]. In this context, the development of artificial intelligence (AI) will support the creation of care robots. But are robots the best solution to provide care to the elderly? Will robotic care really include comprehensive care?

Whether robots can perform this role will depend, in part, on what we mean by care and, consequently, on how they are designed and programmed. Perhaps the most important ethical question is which moral theory should be incorporated into the programming of a robot. In *Robot Caregivers*, Jason Borenstein and Yvette Pearson [1] address the topic of robots as caregivers that adopt features based on human abilities.

However, other questions emerge: Will robot caregivers only have technical abilities or will they be designed with feelings of sympathy or empathy to better respond to basic needs of patients?

Should they deliberate and make decisions with some degree of awareness? Should they be able to act autonomously or just follow instructions? If they were autonomous, should we consider them as people? Should they have civil rights and not just obligations?

Although these questions are not addressed in this brief essay, it will discuss which would be the best care robot. For this reason, some uses of robots in healthcare and related areas should be highlighted. From vacuum cleaners like Roomba, or machines that wash floors, iron clothes and move objects around the house to robots that are designed for therapeutic purposes to reduce stress, stimulate cognitive activities, perform physical therapy exercises, etc., robots can do most of the work and services for the elderly, leading to improvements in their quality of life and well-being.

Some robots can even perform nursing activities, such as measuring blood pressure, and others are already being used in other tasks, including complex surgeries. Also, care robots could be designed to act as companions on walks, playing chess, etc., and always be willing to listen to us, probably he (or she?) would never cheat us and, in the future, would be the ideal companion for some people.

Anyway, there is no doubt that care robots can improve the quality of life of people, including of vulnerable elderly people. But can robots provide respectful care?

Creating robots that respect

Designing a respectful care robot is a central question for robot ethics. To illustrate this issue, imagine a *Person-o-Matic*[10] machine that, by pressing a few buttons, produces two different types of care robots: an android and a humanoid.

The android is programmed with state-of-the-art medical knowledge, has excellent care skills etc., but always does what it thinks is best for the patient. On the other hand, the humanoid robot has the same knowledge and skills, but is sensitive and open to the needs and wishes of the patient, respecting his or her rights, privacy, and other basic freedoms. In other words, the difference is that the first is a simple care robot and the latter is a respectful care robot.

If you had to, which one would you choose to be your caregiver? I would choose a respectful humanoid robot, but I recognize that people may have reasons or circumstances to choose an android as a caregiver; for example, if the person has severe dementia. However, it seems that we are getting closer and closer to creating a humanoid robot, and not just in terms of external appearance. Tony Prescott, professor of cognitive neuroscience at the University of Sheffield, the United Kingdom, reports the progress of creating an artificial self[5].

For example, consider the recent attempts to create a conscious machine with different identities: an ecological self (which would distinguish itself from others and have a sense of ownership of the body); an interpersonal self (with self-recognition, the ability to see others as yourself and have empathy for others); a temporally extended self (which would be aware of a personal past and future); a conceptual self (which has a life story, personal goals, motivations, and values); and an inner self (a stream of consciousness and an inner life).

Suppose that, with a *Person-o-Matic* machine, different humanoid robots can be created with this or that self, for example, an ecological self, but not an interpersonal self, thus creating different personalities. There are many possible combinations. I would choose a care robot with an interpersonal self, which would not only fulfill the conditions to be a person, but would also have moral feelings, such as empathy. This way, if my analysis of respectful care is correct and considering that a care robot has moral feelings, a humanoid robot that can show understanding and respectful concern seems to be the best caregiver.

Should these robot caregivers be treated as people? It seems the answer is yes. In the not too distant future, we will be able to create care robots like the ones described above, which will no longer be machines, in other words, an *automaton*, a slave, an obedient servant. The best caregiver would be a humanoid robot that is able to genuinely provide care and respect people. In turn, it must also be respected and receive care.

It could lead people to feel emotional attachment to robot caregivers and raise various moral questions related to human-robot interactions, such as reciprocity of feelings, impact on education, employment, etc. However, it seems to be a good experience in a new world that natural beings (humans and other non-human animals) and artificial people coexist peacefully and cooperate with each other for mutual benefit.

Perhaps there are big differences, for example, artificial people would be practically immortal, while humans would not, even though a 100-year-old human would appear to be half as old according to our current standards. Does this difference between immortal artificial people and mortal humans have moral importance? The answer may be difficult, but an intriguing question is whether the robot would not want to become a fully human being and experience mortality. This is also very private.

Final considerations

Before ending this brief essay, it should be noted that some experts in robotic ethics consider that replacing human contact would have negative consequences in providing care to elderly people using robots. Given the current stage of robot development and the idea of respectful care, we should not consider robots as substitutes for human caregivers.

For example, Wakamaru is a domestic robot designed to be a companion for the elderly. It can be connected to the internet, has voice recognition features, calls the Mobile Emergency Care Service (SAMU 192) if someone falls, and has the basic role of reminding the patient to take medication. Therefore, it is very limited. As we think about creating better care robots, we may discover that this robot is just another human being or an artificial person very similar to us.

We conclude that the type of care that robots can provide is really limited and that a truly caring person, even if artificial, has a human form. The human being, perhaps in the future a sensible artificial person, should always be aware of monitoring the care provided by robot caregivers. Perhaps, we have to wait for the development of so-called "superintelligence" to create *truly* caring and respectful robots [10]. Robotic care is currently very limited and is not a suitable substitute for human companion. Consequently, current robots can collaborate, but they cannot be seen as the definitive solution to the social exclusion of the elderly.

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Darlei Dall'Agnol – PhD – ddarlei@yahoo.com
0000-0003-4203-1094

Correspondence
Rua Lauro Linhares, 970, ap. 804, Trindade CEP: 88036-001, Florianópolis/SC, Brasil.

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