

# Chapter 13

## Use of Socially Assistive Robots in Mental Health: Barriers and Facilitators

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### ABSTRACT

*Access to mental healthcare is faced with many challenges and to address the needs of patients, socially assistive robots (SAR) have been used as an innovative therapeutic tool. The literature highlights a variety of relevant functions and benefits that these robots can serve, be it companion, coach, or play partner. This chapter aims to contribute to the current knowledge about SAR in mental health as a tool that could complement the support provided by professionals, identifying its barriers and facilitators. Despite the presence of certain barriers to their implementation (e.g., technical problems, professionals' resistance), social robot interventions generally show positive effects on patients with mental health conditions.*

DOI: 10.4018/978-1-6684-9251-2.ch013

## **BACKGROUND**

In mental health, there is a well-documented gap between people in need of support and those who receive care (Lawrence & Kisely, 2010), which may be due to a lack of available professionals, difficulties of transportation, the stigma around engaging in mental health care and financial barriers (Andrade et al., 2014).

To address this treatment disparity, socially assistive robots (SAR) have been used as an innovative therapeutic tool, increasingly explored in recent years to address the growing need for alternative interventions (Guemghar et al., 2022), increasing the use, fairness, and cost-effectiveness of services (Dino et al., 2022).

SAR was developed to provide assistance through social interaction (Scoglio et al., 2019) and to create a friendly and effective interaction with the person, with the additional aim of giving assistance to them and achieving measurable progress in life quality and well-being, often related to motivation, rehabilitation or learning (Feil-Seifer & Matarić, 2005).

According to their function, they can be classified into three primary roles: companion, coach, and play partner.

In terms of design, SAR, often in animal or humanoid forms, have a variety of functionalities to engage a user's attention (Rabbitt et al., 2015). Animal-like robots are created to reproduce the physiological, psychological, cognitive, and socioemotional benefits of animal-assisted therapy without the associated inconveniences (Valentí Soler et al., 2015).

Pet robots are considered a safer choice for therapy in a care setting or even at home as animals may not be allowed inside care settings, to avoid the potential risk of causing injury to patients and professionals, the possibility of causing allergic reactions, and the potential inconvenience related to cleaning and hygiene (Valentí Soler et al., 2015).

Professionals and patients can also show undesirable reactions to animals, both negative (e.g. fear) and overly positive (e.g. becoming too attached). Aggressive patients can also frighten or hurt animals. Less noise, less work requirements and less costs are additional benefits of using pet robots (Valentí Soler et al., 2015).

Other potential advantages of robot therapy include the fact that there are fewer known adverse effects, there is no need for specially trained professionals and the sensors of some robots can respond to environmental changes (movements, sounds...) by simulating interaction with the patient (Valentí Soler et al., 2015).

SAR embodied in a humanoid appearance show the highest levels of acceptability and usability among patients. These robots, with humanlike facial features, communication modalities, and motion patterns, seem to create a more natural interaction (Barrett et al., 2019). Some robots can converse, play music, and display images or videos. Others may even perform movements to demonstrate a set of physical exercises (Guemghar et al., 2022).

SAR are typically fully programmable and can express a variety of different behaviors that might be modified and adapted over time, for example, during the treatment, allowing their customization to patients' needs (Rasouli et al., 2022).

The application and effectiveness of socially assistive robots have been investigated in mental health, along the life cycle, either in housing and/or institutional context, and some barriers and facilitators were identified (Koh et al., 2021).

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