Utilization of Communication Robot in Patient Education

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Abstract. In Japan, the population is expected to decrease. Moreover, the proportion of elderly people living alone among the elderly population is expected to increase for both men and women. Therefore, the demand for elderly care is increasing year by year. In this paper, we aim at making environment in which elderly people can receive interactive guidance, and reducing the burden on medical staff such as caregivers and nurses. So, we design a patient education by ARCS model which classifies concepts related to learning motivation, and consider to utilize a communication robot "Pepper".

Keywords. Patient education, ARCS model, Communication robot, Pepper, Learning motivation

1. Introduction

Japan is facing problems such as shortage personnel in care and nursing field due to advancement of aging society with falling child birthrates and decline of population of people in production ages [1]. This study aims at making environment in which elderly people can receive an interactive guidance even if they are at home and reducing the burden on medical staff such as caregivers and nurses. For that purpose, we consider utilization of communication robots.

2. Communication Robots

Communication robots aim to live associated with the human being unlike industrial robots which improve work efficiency. A Danish communication robot named “Alice” is reported. Alice is approximate 60cm tall and Alice is good at communication with elderly. Alice can speak human language, and inform a medical staff of the records [2]. In addition, Paro, a fur covered robotic seal, was specifically designed for therapeutic uses with the elderly [3].

In Japan, People have a high affinity to robots. The main reasons are robots which help people such as “Astro Boy” and “Doraemon” are well known. We therefore try to utilize communication robots for patient education in Japan. In this study, we use Figure 1: Pepper (Aldebaran/ SoftBank Robotics)
“Pepper” (Figure 1). Pepper is approximately 120cm tall and Pepper has a tablet terminal mounted with a touch panel. Pepper as well as Alice can communicate with people, however, Pepper is different from Alice in that Pepper's speaking words are displayed on tablet terminal and also users can play games such as card game with this tablet terminal.

3. Developing Applications

We try to make environment in which elderly people can receive interactive guidance even if they are at home and reducing the burden on medical staff such as caregivers and nurses, and we have developed the application for medication advice and diet support until now. These are designed by ARCS model [4] which classifies concepts related to learning motivation into four categories: "attention," "relevance," "confidence," and "satisfaction".

The application for medication advice is evaluated between medical staff from 30 to 89 years old in Japan. The result shows “Pepper’s impression”, “attachment to Pepper”, “motivation to learn”, “comprehension”, and “attention” are highly valued [5]. We consider Pepper’s looks and behavior are like children, so Pepper is highly acceptable to users especially elderly. The personal robot “Alice” is similar in this point, but Japanese people prefer Pepper to Alice culturally. Because Alice looks like human beings too much, many Japanese people feel somewhat weird.

In this time, we developed a new application. It is used to prevent hypertension. The points that we thought and worked out are as follow: Pepper shows the statistical graph of user’s blood pressure value with a comment to explain the data visually. Moreover, all of our applications have the function that the medical staff and family can get to know the user’s medical data by e-mail.

4. Conclusion

We developed the new application for elderly people to prevent hypertension by communication robot “Pepper”. In the future, we will enrich not only the education contents but also Pepper’s conversation pattern and amusement application.

References