The possibility of using intelligent robots for the prevention of dementia in the elderly

Kazue Sawami[1], RN PhD, Mitsuo Kimura[1], RN MS, Tetsuro Kitamura[1], PT, Masahiko Kawaguchi[1], MD PhD, Chizuko Suishu[2], RN Prof, Naoko Morisaki[3], RN PhD, Sonomi Hattori[4], RN Associate Prof.

[1] Nara Medical University, [2] Shubun University, [3] Himeji University, [4] Wakayama Medical University, Japan.

Abstract

Introduction: The pretest in this study verified the correlation between psychological stress and cognitive ability (Fig. 1). Given that this is the case, finding techniques to relieve stress in the elderly is desirable as a means for improving their cognitive ability and potentially preventing dementia. Prior research in robot therapy has verified the psychological effectiveness of communication between elderly people and intelligent robots. Against this background, the present study examines the possibility of using robots to stimulate the intellectual activity of the elderly. Specifically, a survey was conducted to investigate the attitudes of the elderly toward robot therapy.

Method: A questionnaire concerning the uses of robot therapy was given to a group of elderly participants in a health promotion program.

Results: The responses of 62 participants (28 male, 34 female) were analyzed. The average age of the subjects was 67.7 ± 5.3 years. Asked how they thought robots might be used, 24 respondents indicated that robots could be used as partners in conversation, 15 indicated that they could be used for heart-to-heart exchanges and healing, eight indicated singing and dancing together, four indicated brain training, and four indicated helping with body care (Fig. 2).

Discussion and conclusion: Elderly people are open to the use of intelligent robots as partners in conversation, singing, and healing. The results are consistent with previous studies; this type of attachment has the potential to promote psychological healing and comfort [1)]. The next challenge is to confirm the positive influence of robot therapy on cognitive functions.

Reference

1) Liang A, et al. A Pilot Randomized Trial of a Companion Robot for People With Dementia Living in the Community. JAMDA. 2017.

This research funding is scientific research expenses of the Japanese Ministry of Health, Labor and Welfare. We are grateful to NTT East for their contributions to the study.

Image

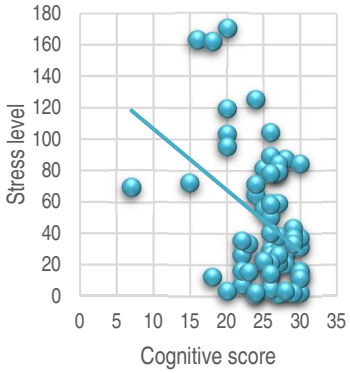

Fig.1. Correlation between stress (α-amylase) and cognitive score (MoCA-test) Pearson product-moment correlation-coefficients. r=-0.397**

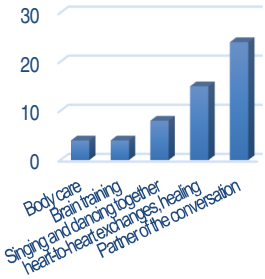

Fig.2. Awareness survey of robot therapy

Recent Publications

1. Sawami K, Kimura M, et al., (2017) Achievement of Brain Training Course for the Elderly. J Health Educ Res Dev, 5:1-4. Awards: World Academic Championship - 2017 in Nursing.
2. Sawami K, Kimura M, et al., (2017) Verification of the Impact of Storage by the Rhythm Phrase to be Repeated. SF J Geriatrics Pallia Care, 1:1-6.
3. Sawami K, Okazaki T, et al., (2017) Intervention for Elderly People to Prevent Stress and Cognitive Decline in Subjects. Current Opinions in Neurological Science, 1:44-52.
4. Sawami K, Kitamura T, et al., (2017) Relationship between cognitive function, vascular age and stress. International Journal of Case Studies in Clinical Research, 1:83-89.
5. Sawami K, Nakagawa H, et al., (2017) Verification of Preventive Effect of Dual-Task and N-Back Task Incorporated Music Therapy against Dementia. Neurochemistry & Neuropharmacology, 3:1-5

Biography

Kazue Sawami is a professor at Nara Medical University and completed her PhD at health science.

Her research is about the cognitive abilities of elderly people. Current clinical trials below. UMIN000029749, 000025484, http://www.g-nursing.com/katsudou.php

Email: sawami@naramed-u.ac.jp