Do You Have Pain?

A Robot who Cares

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Do You Have Pain? A Robot Who Cares

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ABSTRACT

Patient Reported Outcome Measures (PROMs) are a means of collecting information on the effectiveness of care delivered to patients as perceived by the patients themselves. A patient's pain level is a typical parameter only a patient him/herself can describe. It is an important measure for a person's quality of life. When a patient stays in a Dutch hospital, nursing staff needs to ask a patient for its pain level at least three times a day. Due to their work pressure, this requirement is regularly not met. A social robot available as a bed side companion for a patient during his hospital stay, might be able to ask the patient's pain level regularly. The video shows that this innovation in PROM data acquisition is feasible in older persons.

KEYWORDS

Patient reported outcome measures, pain level, social robot, interaction design, elderly.

1 INTRODUCTION

A Patient Reported Outcome Measure (PROM) is any report of the status of a patient's health condition that comes directly from the patient, without interpretation of the patient's response by a clinician or anyone else. Pain is one of the most prominent and frequently asked PROM parameters.

2 METHOD

There are various scales used to measure a patient's pain level [2]. For people without cognitive problems a numeric rating (0-10) scale is often used. For people with mild to medium cognitive problems a verbal pain scale is used: no pain, mild pain, moderate pain, severe pain, worst possible pain. We selected a scale with faces developed for children older than six and elderly with cognitive impairments (Figure 1). It is supported with a 0-10 rating scale. We designed the interaction using the situated Cognitive Engineering method [1]. We used relevant values for supporting patients in pain in the hospital context. We programmed the interaction design in the robot

Pepper v1.7 from Softbank Robotics (Tokyo, Japan). Our participant group consisted of 31 community-dwelling elderly (average age 76.3, sd=5.2, 45% female). The question to the participant was: "It is important that we ask regularly if someone suffers from pain. Therefore our question is: do you have pain?". If the participant's answer was "yes", the robot said "I am sorry to hear that" (an affective statement to create a relation with the patient) and asked to score the pain using the screen picture shown in Figure 1. The patient named a number, and the robot repeated that number for confirmation, and the data was stored. If the pain level was above 4, the robot stated that in such cases a nurse would be called directly.
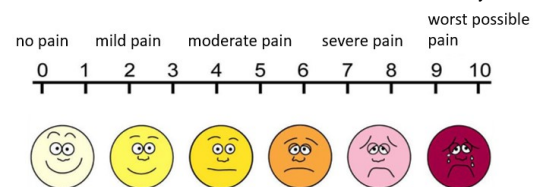

Figure 1 - Visual analogue pain scale

3 RESULTS

Figure 2- Participant in chair viewing the robot

All 31 participants were able to declare their pain level, found the question easy to answer, and did not mind being asked on their pain level by a robot. Pain data were successfully saved.

4 CONCLUSIONS

We conclude that it could be feasible for this social robot to measure pain from elderly persons. Data can be inserted directly into a patient's Electronic Health Record. Frequent pain recording is technically possible and socially feasible. We have planned to extend this into more complex, multidimensional methods of robotic pain assessment.

Acknowledgement

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