Purpose

➢ To get an overview of the social robotics field, its focus in terms of Health and Wellness applications, current issues/challenges in the field, and implications for health policy

Background

➢ Social robots are complex machines that can interact with humans and with each other
➢ Social robotics is an emerging field with existing and envisioned applications/products for many sectors including healthcare and education
➢ Social robots are seen as a possible way to address the human resource and economic pressures on healthcare systems (eg. created by growing elderly populations) [1]

Methods

➢ Review of social robotics literature
➢ Used Knowledge Share ver. 2.1.3 (KSv2), developed by Dean Yergens (http://people.ucalgary.ca/~dyergens/ksv2.htm) to systematically review literature.
➢ Databases: ScienceDirect, Compendex, IEEE, Communication Abstracts, Scopus, OVID(All), EBSCO(All), Academic One File, Web of Science, JSTOR
➢ 171 articles included out of 489 (include: English, PDF available; exclude: pure technical, conference announcements, books); Kappa factor 0.88
➢ Used Atlas.ti 6.27 qualitative data analysis software

Table 1. Keyword hits within the literature

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Number of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>60</td>
</tr>
<tr>
<td>Healthcare</td>
<td>19</td>
</tr>
<tr>
<td>Patient</td>
<td>40</td>
</tr>
<tr>
<td>Elderly</td>
<td>47</td>
</tr>
<tr>
<td>Disability</td>
<td>30</td>
</tr>
<tr>
<td>Autism</td>
<td>28</td>
</tr>
<tr>
<td>Education</td>
<td>63</td>
</tr>
<tr>
<td>Stroke</td>
<td>9</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>21</td>
</tr>
</tbody>
</table>

Healthcare Robots

➢ Rehabilitation (e.g. post-stroke, motivation to do exercises) [2],
➢ Autism (e.g. teaching to recognize social cues, facial expressions, eye contact, etc) [3],
➢ Physical disabilities (e.g. movement, motivation) [4],
➢ Nurses, blood pressure [5], carrying [6]
➢ Bathing [6]
➢ Easing vaccinations for youth [7]

Eldercare Robots

➢ Bathing, carrying, assisted walking [6]
➢ Companions [8]

Issues for Social robotics

➢ Acceptance [5]
➢ Safety [9]
➢ Ethics – of using robots for patient care, for elderly care (ex. loneliness from less human contact because of robot companions) [1]
➢ Authenticity crisis for human relationships [10]

Gaps and Future Directions

➢ Some social robotics research is taking place in Canada: [6][7]
➢ Need qualitative data on the views of general public, healthcare professionals, policy makers and researchers – which social robotics applications would be acceptable, and why?
Next step for this project:
➢ Survey study underway, with Disability service workers in Saskatchewan.
➢ Which robots do they see as acceptable, and for which tasks?
➢ Plan to do a similar study with Calgary service organization, and with healthcare professionals, researchers and other healthcare stakeholders

References

This research is made possible through the generous support of...
Robotics Applications

Applications | Description | Potential Users/Venues | Example Robots
--- | --- | --- | ---
Elderly care robots | Bathing, carrying, assisted walking | Elderly, nurses, long-term care facilities | 
Healthcare robots | Rehabilitation (e.g. post-stroke, motivation to do exercises), for autism (e.g. teaching to recognize social cues, facial expressions, eye contact, etc), for physical disabilities (e.g. movement, motivation), nurses, bathing | Therapists, in homes, hospitals, clinics | 
Education robots | Arithmetic, reading, tutors, classroom companions | Schools, in homes | 
Service robots | Cleaning, vacuuming, trash disposal | In homes, hospitals, offices, clinics, etc | 
Companion robots | Conversation, emotional responses, sex, marriage partners | Elderly, general users | 

- Medical perspective is dominant – focus on treatment, “fixing”
- Wellness angle is missing, as is ability-diverse angle (helping people to live as they are, rather than “fixing” them)
- Main disability of focus is autism, but others can benefit from robotics

http://medicine.ucalgary.ca/vaccine-research-Calgary