

Use of Social Robots in Dementia Care: A Mixed-methods Study of Feasibility in India

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BACKGROUND

Social Robots are designed to provide companionship and improve social interaction in persons with dementia (PwD) with evidence largely restricted to high-income countries.¹

In India, the rapidly aging population is witnessing a decreasing availability of informal caregivers²

- There is a need for low-cost, effective interventions
- Use of social robots in dementia in India has not previously explored as a potential intervention for PwD

HYBRID-FACE ROBOT (HFR)

The HFR is a tele-operated, digital social robot capable of 8 emotive responses (refer figures), consisting of a windows tablet and a 3-dimensional face plate to convey realism and depth.

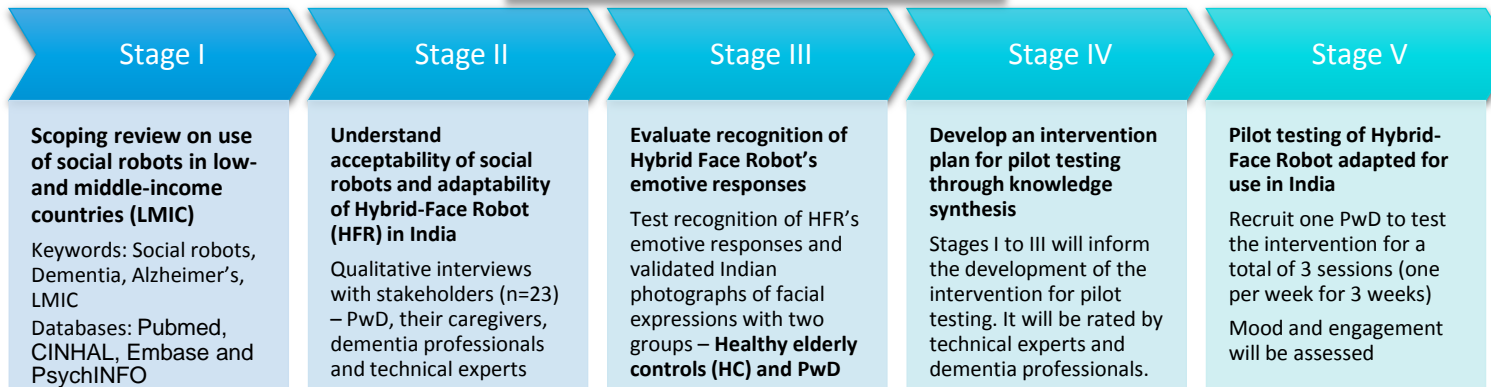
RESEARCH QUESTIONS

- Is it feasible to use social robots in dementia care in India?
- Will PwD and their caregivers accept the use of social robots such as Hybrid Face Robots?
- Can the Hybrid-Face Robot be adapted for use in India?

METHODS

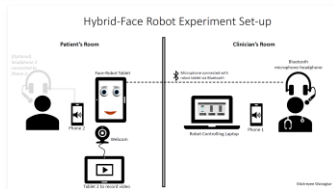
This study incorporates a mixed methods design and was carried out at Dementia Care in SCARF (DEMCARES), Schizophrenia Research Foundation (SCARF), Chennai, India in collaboration with Biomechanics Lab, Imperial College London, UK between January 2019 and August 2020.

METHODS



Stage I

- Studies from LMIC settings – very limited
- One LMIC, Mexico tested Ava – a conversational robot with persons with dementia
- Paucity of studies on the use of social robots in dementia in India



Stage II

- Stakeholders (n=23)
- Caregivers and PwD expressed their intent to use social robots, perceived it to help with caregiving and reduce social isolation in PwD.
- PwD and their caregivers were willing to accept social robots if it is **affordable, easy to use and if assistance was available.**
- Stakeholders expressed **concerns regarding security and misuse of the robot** and expected the robot to have **artificial intelligence, sustain a conversation and monitor the PwD**

RESULTS

Stage IV

- Intervention Plan
- Duration of session – **30 minutes**
- Activities for PwD-Robot interaction – **Discussion of newspaper articles and listening to music**
- Strategies to introduce Hybrid-Face Robot and facilitate engagement – **Starting with introduction of robot, exchanging pleasantries, using music to improve engagement**



Stage III

- PwD (n=14) HC (n=26)
- Good recognition rates for photographs of human facial expression in both the groups
- Poor recognition of Hybrid-Face Robot's emotive responses in both the groups



Stage V

- Results showed a **trend of longer engagement with each session** (n=1, male PwD)
- Mood was found to be stable through the session
- Some technical issues that resulted in distractibility of the PwD were noted
- Despite technical issues, **caregiver perceived the robot to potentially help with her relative's cognition**

CONCLUSION

- Caregivers and PwD were open to the idea of using social robots provided it were affordable and easy to use
- Caregivers perceived social robots to reduce caregiver burden and possibly reduce social isolation in PwD
- HFR's emotive responses need to be adapted for use in India
- Pilot testing with HFR shows a trend of increasing engagement in PwD
- Caregivers and PwD in a middle-income country such as India could potentially benefit from a low-cost robotic intervention such as the HFR

FUTURE DIRECTIONS

- Cultural adaptation of HFR'S emotive responses to improve recognition by PwD in India
- After addressing technical difficulties and limitations of HFR, test it in a larger sample of PwD

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