Robotic Technology for Retraining Functions After Stroke: a Questionnaire Study from a Singapore Perspective

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Introduction

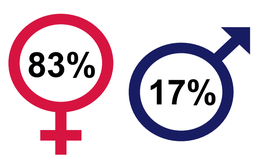
Background As an island nation with a high GDP, Singapore has a unique position due to its limited space but an increasingly ageing population. With recent advancements in technology, are stroke rehab therapists ready to embrace them?

Further, most rehab robots are usually reported for motor training. Rehab robots designed for **sensory** impairments (proprioception, tactile) are still lacking. Why is that so?

Goal We examined the perspectives of physiotherapists and occupational therapists on the use of **robotic technology** to objectively conduct assessment and deliver intervention for stroke survivors in Singapore. We also asked about their views on sensory therapy using robots.

Materials and Methods

- **Mode**: Online, self-administered anonymous survey.
- **Themes**: Perceptions, attitudes, and experiences measured by multiple-choice and 5-point Likert scale questions.
- **Total sample**: 136 clinicians; physiotherapists (*n* = 74), occupational therapists (*n* = 58).
- **Setting:** practitioners in acute, community hospitals, and day-rehabilitation centres in Singapore.

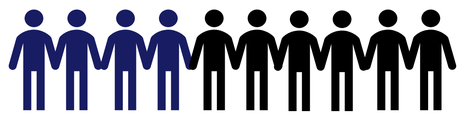




51% worked in inpatient care setting

average age **32.4**

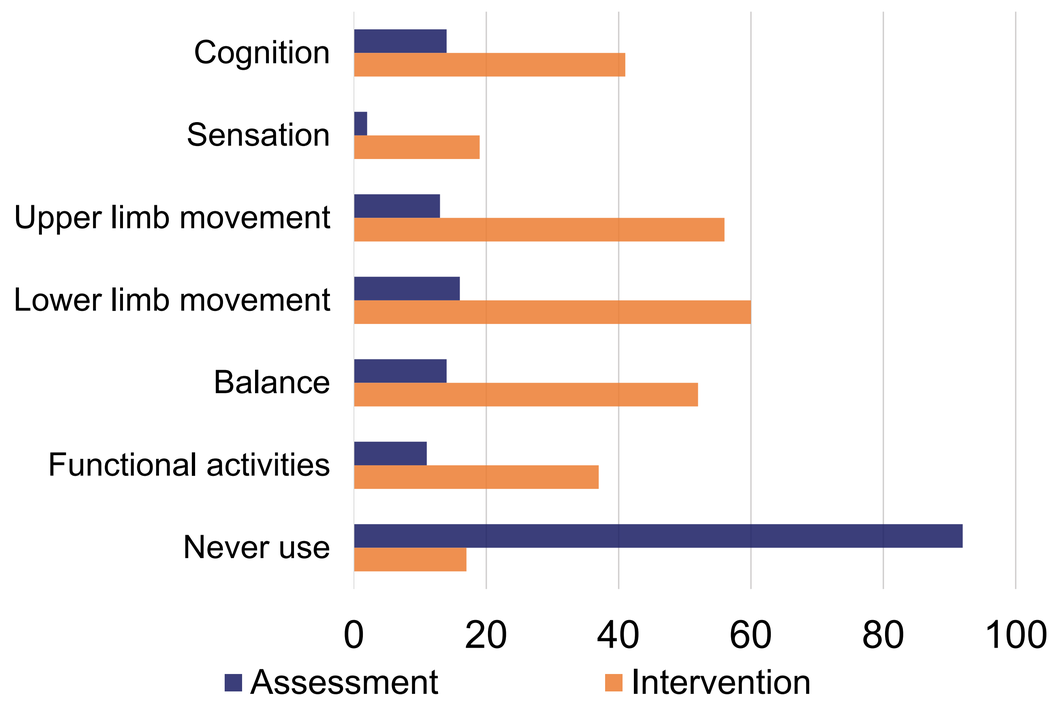
experience in stroke care **6.6 yrs**



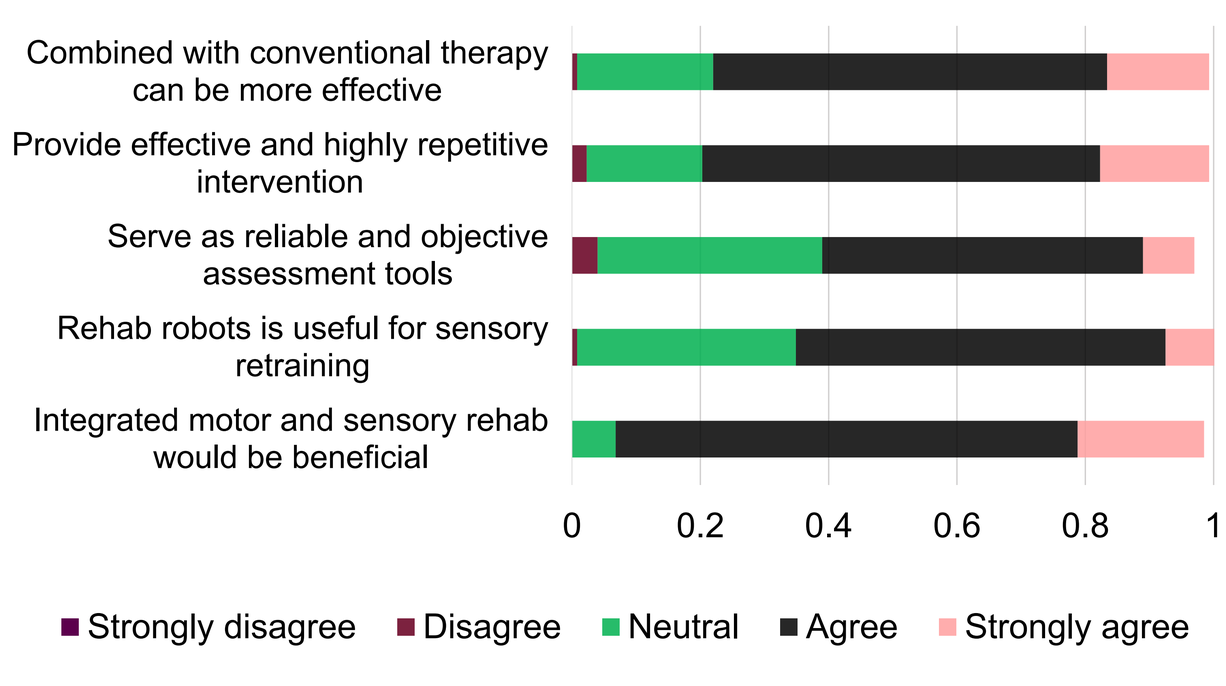
36% worked with subacute and chronic stroke patients

Results

Primary usage of technology in intervention or assessment



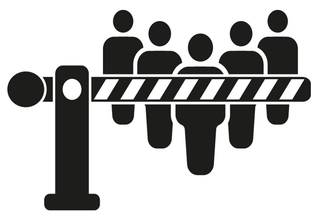
Perceived clinical importance of robotic in stroke rehabilitation



Three largest areas of **intervention**:
- Gait and mobility training
- Upper limb motor training
- Balance training

Barriers to adopting rehab robotics

Price of robot	= 89%	Space constraint	= 69%
Usability, ease of use	= 74%	Patient's needs	= 43%



Conclusions and future work

- Rehab robotics is more often used as an **intervention** tool rather than for assessment.
- Rehab robotics that combines **both motor and sensory** intervention can be more beneficial.
- **Barriers** to adoption are price, usability, and space constraints ►► in the Singapore context (island nation).
- Focus group interview is warranted to understand the type of robot clinicians prefer for sensory therapy.
- Note for healthcare providers and future studies: **cost-benefit analysis** with each adoption.

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