EFFECT OF ROBOT-ASSISTED THERAPY ON HAND SPASTICITY REDUCTION IN STROKE PATIENTS: A META ANALYSIS

Haris Sutopo[1)], Argyo Demartoto[2)], Bhisma Murti[3)]

[1)]Health Polytechnics, Ministry of Health Surakarta
[2)]Faculty of Social and Political Sciences, Universitas Sebelas Maret
[3)]Masters Program in Public Health, Universitas Sebelas Maret

ABSTRACT

Background: Neuroplasticity is the basic mechanism underlying improvement in functional outcome after stroke. The advantage of using robot technology in rehabilitation intervention is the ability to deliver high-dose intensive training and repetitive practice of specific functional tasks which is important for recovery after stroke. This study aimed to examine the effect of robot-assisted therapy on hand spasticity reduction in stroke patients.
Subjects and Method: A systematic review and meta-analysis was conducted based on PRISMA flow diagram. This study following PICO method, Population= stroke patients, Intervention= robot-assisted therapy, Comparison= without robot-assisted therapy, and Outcome= hand spasticity. The articles published from 2012 to 2022 were selected from PubMed, ScienceDirect, and Springer Google Scholar databases. Keywords used "Robot Assistive Therapy AND Spasticity AND Stroke AND RCT". Meta-analysis was conducted using RevMan 5.3 application.
Results: 10 randomized controlled trials involved 272 participants from Italy, Belgium, Taiwan, and Korea involved in meta analysis. This study found that utilization of robot assistive therapy reduced hand spasticity in stroke patients but it was statistically non-significant (Standardized Mean Difference= -0.01; 95% CI= -0.17 to 0.16; p= 0.800).
Conclusion: Robot assistive therapy use reduces hand spasticity in stroke patients but it was statistically non-significant.

Keywords: robot assistive therapy, hand spasticity, stroke, meta analysis

Correspondence:
Haris Sutopo. Health Polytechnics, Ministry of Health Surakarta. Jl. Capt. Adi Sumarmo, Tohudan, Colomadu, Karanganyar, Central Java 57173, Indonesia. Email: hartop4wd@gmail.com. Mobile: 08155010610.

https://doi.org/10.26911/AB.ICPH.09.2022.40