

The Effect of Using an Educational Robot on Fear and Pain in Children During Vaccination: A Randomized Controlled Study

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Abstract

Objective: The aim is to evaluate the effect of using an educational robot on fear and pain in children during vaccination.

Method: The study was designed as a randomized controlled trial comprising two groups: a robot-assisted intervention group and a control group. The study was registered at ClinicalTrials.gov (NCT06856395). Ethics committee approval, informed consent from parents, and institutional permission were obtained. The sample consisted of 82 four-year-old children, including those from the pilot study. Data collection tools included the "Sociodemographic Data Form," "Children's Fear Scale (CFS)," "Wong-Baker FACES Pain Rating Scale (WB-FACES)," and a "Satisfaction Form".

Results: There were no significant differences between the groups regarding pre-test scores on the CFS and WB-FACES scales. The robot-assisted intervention group showed no significant difference in CFS scores between the pre-test and post-test; however, the control group experienced a significant increase in fear levels. Additionally, the mean CFS post-test scores of the control group were statistically significantly higher than those of the robot-assisted intervention group ($p < 0.05$). Both the robot-assisted intervention group and the control group showed significant differences between pre-test and post-test WB-FACES results; however, the control group's mean post-test score was statistically significantly higher than that of the robot intervention group ($p < 0.05$).

Conclusion: It was determined that children who interacted with an educational robot during vaccination experienced lower levels of fear and pain compared to children in the control group. Accordingly, it is suggested that low-cost, interactive mini educational robots could be utilized in clinical and field settings as a supportive method to reduce vaccination-related fear and pain in 4-year-old children.

Keywords

Childhood vaccination, Needle fear, Fear, Pain, Vaccination, Pediatric nursing.