ABSTRACT

Effective nursing education is crucial for the quality of patient care. Traditional training methods using mannequins have limitations, prompting the exploration of innovative alternatives like Virtual Reality (VR). This study aimed to conduct a comparative study on the effectiveness of VR compared to the method of watching videos with mannequins, with a primary focus on its impact on nurses' cognitive performance as measured by Electroencephalography (EEG). This research employed a quantitative comparative study design involving 24 participants with no prior knowledge, who were divided into a VR group and a video group. Data were collected via a post-session quiz to measure knowledge transfer and through EEG recordings (specifically Gamma waves) during the learning session to measure cognitive engagement. The quantitative analysis showed no significant difference in quiz scores, indicating both methods were equally effective for knowledge transfer. However, the EEG dynamic analysis revealed that the VR group exhibited significantly higher frequency and duration of Gamma wave bursts. In conclusion, although the measured learning outcomes were equivalent, the primary advantage of VR lies in its ability to create a more stimulating learning process, fostering a more active and in-depth cognitive engagement.

Keywords: Virtual Reality, Nursing Training, Cognitive Performance, EEG, Cognitive Efficiency.