

Comparing the Efficacy of Multimedia Tools with High Fidelity Simulators in Teaching Cardiac Auscultatory Skills in Undergraduate Medical Students: A Comparative Study

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Background: Cardiac auscultation and echocardiography are essential methods for diagnosing congenital heart diseases (CHD) in children. Training undergraduate (UG) students on cardiac auscultation is essential to strengthen the psychomotor abilities on cardiac examination for identifying CHD. Faculty at medical schools offers these abilities to students using a variety of instructional strategies using simulators.

Aim: To compare the efficacy of multimedia tools with high-fidelity simulators in teaching cardiac auscultation skills among UG medical students.

Materials and Methods: The present study was an open-label single-center, blinded randomized comparative study conducted among final-year undergraduates who attended a four-week pediatric clinical rotation from a medical college located in Coimbatore, Tamil Nadu, India from July to December 2018. All the participants were randomly assigned to either the high-fidelity simulation-based teaching group (HFT) or the multimedia-based teaching group (MMT). Theoretical knowledge and clinical skills based on the cardiovascular system examination were assessed before and after providing training using high-fidelity simulators and multimedia tools.

Results: Theoretical knowledge pretest scores were 30.88 ± 8.87 and 32.21 ± 9.57 in the HFS and MMT groups which increased to 47.35 ± 3.51 and 47.21 ± 3.76 respectively with both groups showing significant improvement ($p < 0.001$) but no statistically significant difference was observed intergroup ($p > 0.05$). However, clinical skills such as placing the bell of the stethoscope ($p = 0.0002$), timing the murmur ($p = 0.049$), and looking for the thrill ($p < 0.005$) showed better outcomes among the participants from the HFS group.

Conclusion: High-fidelity simulators help in improving the clinical skills essential to diagnose CHD. In resource limited setting, effective utilization of multimedia tools can be used as a substitute to embark cardiac auscultation skills among UG students.

Keywords: Simulators, Auscultation, Cardiovascular, Medical students, Clinical skills

References

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