

Impact of Physical Models of Fetal Heart on Prenatal Care



DASA



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Objectives

To assess how 3D-printed models of the fetal heart improve maternal understanding, emotional connection, and confidence in medical decision-making during prenatal care.

Methods

A multidisciplinary team created anatomically accurate 3D models of fetal hearts, including both healthy and CHD-affected anatomies. Each model was printed in life-size and in an enlarged version (5x scale) to enhance tactile and visual comprehension. A total of 21 pregnant women—6 with fetuses diagnosed with congenital heart disease and 15 with structurally normal hearts—participated in structured counseling sessions using the models. Following these sessions, participants and their partners completed a validated questionnaire evaluating their understanding of fetal heart anatomy, emotional responses, and decision-making confidence.

Results

Use of the 3D models significantly improved maternal understanding of fetal cardiac conditions, with 95.2% of participants reporting greater clarity. Among those with CHD-affected pregnancies, 100% expressed improved comprehension of the anomaly, and 66% reported decreased anxiety and increased emotional security. Across all participants, the models enhanced emotional bonding and boosted confidence in discussing treatment options, contributing to more collaborative and informed prenatal care.

Conclusions

3D-printed fetal heart models represent a powerful tool in prenatal education, fostering deeper maternal understanding, emotional reassurance, and more effective clinical communication.

Their integration into routine care can support more empathetic, informed, and confident decision-making among expectant parents.



Photos showcasing three-dimensional prints of fetal hearts with expectant mothers as part of case studies