



Evaluation of the role of simulation training in nuchal translucency measurement

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Objective

To compare simulation-based ultrasonography (USG) training with conventional training in nuchal translucency (NT) measurement among first year radiology residents.

Methods

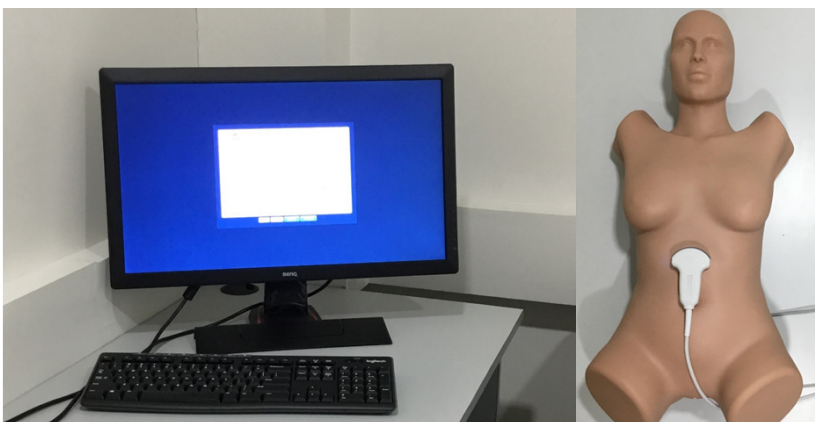
This is a comparative study between two 1st year radiology residents with no prior experience of performing NT scans. One of the resident was trained in the conventional method. The other resident received NT scan training in the simulation centre using the Vimedix Simulation system. Following the training period, both the residents and a staff radiologist performed NT scan on 100 pregnant women using the Philips Affinity 50 ultrasound machine. Subsequently, the images were evaluated by a blinded experienced radiologist who scored them based on specific criteria like proper depiction of nasal bone, hard palate, diencephalon etc. The data was then analysed using Wilcoxon signed rank test.

Results

There was significant difference between the accuracy of NT measurement between the two residents. The candidate trained in simulation fared better with a higher mean score (p value < 0.05). Statistically significant differences were found between specific evaluation criteria between the two residents.

Conclusion

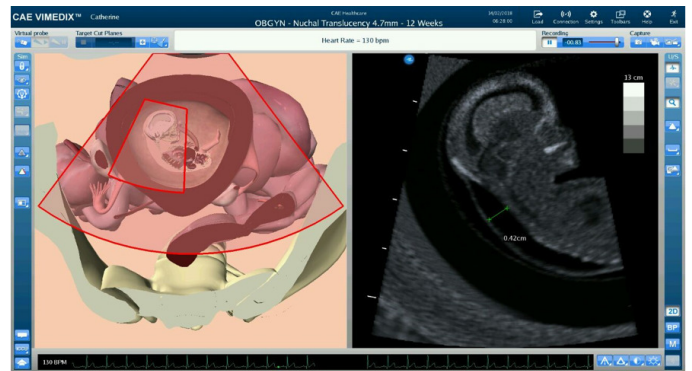
Our study is one of the first to examine skills transfer after simulation-based ultrasound training. It demonstrates that, compared with conventional training only, simulation-based ultrasound training during residency has a better immediate impact in training of residents for NT measurement. This can be attributed to decrease in the learning curve by early familiarization, faster acclimatization, exposure to different case scenarios, higher confidence level. Thus, use of simulation can have far reaching impact if integrated into the teaching curriculum to supplement the conventional training.



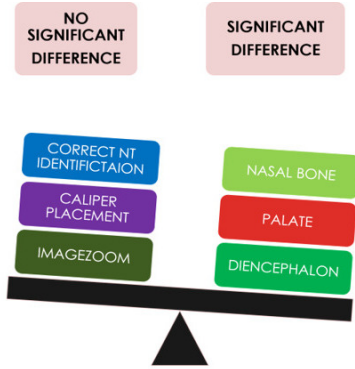
The Vimedix simulation monitor and Mannequin



Representative simulation image of normal NT scan in Vimedix



Representative simulation image of abnormal NT scan (4.2mm) in Vimedix



Shows the parameters with significant difference between the two candidates.

Overall mean scores of the participant 1 (trained in simulation) and participant 2 (trained in conventional method). P=0.09

Participant	Mean	STD	Wilcoxon Signed Rank Test (z value)	25 th	50 th	75 th
1 (Simulation)	8.9	2.2	2.609	7.00	8.50	11.25
2 (conventional)	4.4	2.6		2.000	4.0	7.0

Mean scores of individual parameters between the two participants 1= Candidate 1 2= Candidate 2

PARAMETER	Median	25 th CENTILE	75 th CENTILE	Wilcoxon signed rank test z value	p value
DIENCEPHALON					
1	1.00	0.75	2.00	-2.305	0.02
2	0.00	0.00	1.00		
HARD PALATE					
1	1.50	1.00	2.00	-2.428	0.01
2	0.50	0.00	1.00		
NASAL BONE					
1	1.00	1.00	2.00	-2.126	0.03
2	0.00	0.00	1.00		
CORRECT NT IDENTIFICATION					
1	2.00	1.00	2.00	-1.897	0.05
2	1.00	0.75	2.00		
CALIPER PLACEMENT					
1	2.00	2.00	2.00	-1.633	0.10
2	2.00	1.00	2.00		
IMAGE ZOOM					
1	2.00	0.75	2.00	-1.732	0.08
2	0.00	0.00	1.25		