Increasing Empathy for Children in Dental Students Using Virtual Reality

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Conclusions

empathy, self-perceived comfort and

ability at managing children in dental

students. However, they should be

encouraged to revise using it to

maintain this effect.

VR could be used to improve

Background

Virtual reality (VR) can be used to simulate the viewpoint of a child to allow dental students to experience what a child experiences during a dental visit.1

This study evaluated the effect of VR simulation on the empathy and comfort managing children among dental students.

Design

Sixty dental students experienced a VR scenario created for the study. Empathy levels were examined using the Jefferson Scale of Empathy (JSE)2. A selfadministered questionnaire collected information on self-perceived ability, comfort, and impact of the intervention.

Materials

A VR scenario depicting the point of view of a 4-yearold boy visiting a dentist for a first visit examination and prophylaxis was created for the study. Scriptwriting was undertaken by a paediatric dentist (HS) and reviewed for content by another (BL). There were 2 parts to the scenario, consisting of a negative example followed by a positive example.

(https://www.youtube.com/watch?v=oz4dm45Imkw)

Results

There was a significant (p=0.004) increase (indicating greater empathy) in JSE scores between Pre-intervention (112.35±9.34) and Post-intervention (117.64±10.03), which returned to baseline 3 months later (112.72±10.36).

Dental students perceived themselves to be more confident at communicating (6.45±1.64 Vs 5.75±1.71, p=0.011) and interacting (6.63±1.44 Vs 6.00±1.78, p=0.046) with children after intervention. (Table 1) All (100%) felt that the VR scenarios helped them better empathize with children. (Table 2)

Table 1 Self-perceived comfort and ability in managing paediatric dental patients

	s			
Questions	Pre- intervention (n=60)	Post- intervention (n=60)	Post-clinical (n=53)	p-value†
How much do you like interacting with children (aged 3-8 years old)?	6.52 ± 2.02°	6.87 ± 1.69°	6.11 ± 1.94°	0.080
How confident are you at communicating with children (aged 3-8 years old)?	5.75 ± 1.71°	6.45 ± 1.64 ^b	6.06 ± 1.50 ^{sb}	0.030*
How confident are you at interacting with children (aged 3-8 years old)?	6.00 ± 1.78°	6.63 ± 1.44 ^b	6.04 ± 1.52°	0.045*
How confident are you doing dental procedures on children (aged 3-8 years old)?	4.67 ± 1.63°	5.50 ± 1.57 ^b	5.21 ± 1.71 ^b	0.018*

they are not significantly different (p>0.05) with the Mann-Whitney U test

Only 30% revised with the scenario and they were significantly more likely (p<0.001) to find it helpful for actual clinical sessions. (Table 3) A keyword analysis³ (Figure) illustrates what the dental students felt were the "greatest takeaway from the VR experience". The most commonly cited words include: "Child", "Understand", "Experience (feel)" and "Perspective (see)".

Table 3 Comparison between the dental students who used the VR scenarios for revision and

Dental student scores/perceived ability (mean ± SD)			
Survey questions	Used VR for revision (n=16)	Did not use VR for revision (n=37)	p-value†
Jefferson scale of empathy score	114.75 ± 11.95	111.84 ± 9.80	0.357
How much do you like interacting with children (aged 3-8 years old)?	6.56 ± 1.75	5.92 ± 2.01	0.167
How confident are you at communicating with children (aged 3-8 years old)?	6.50 ± 1.32	5.86 ± 1.55	0.145
How confident are you at interacting with children (aged 3-8 years old)?	6.63 ± 1.09	5.78 ± 1.62	0.082
How confident are you doing dental procedures on children (aged 3-8 years old)?	5.63 ± 1.67	5.03 ± 1.72	0.157
The VR scenario helped prepare me for the actual clinical session.‡	4.56 ± 0.51	3.68 ± 0.63	>0.001*

[†] Mann-Whitney U test except Jefferson scale of empathy (T Test)

	Num	Number of subjects (%)		
	Definitely	Neutral†	Definitely	
Questions	negative†		positive†	
The VR scenario has helped me better empathise with	0 (0)	0 (0)	60 (100)	
children's fear of the healthcare setting.				
The VR scenario made me more comfortable in	2 (3)	10 (17)	48 (80)	
communicating with children.				
The VR scenario has improved my overall confidence in	1(2)	10 (17)	49 (81)	
interacting with children.				
The VR scenario has improved my confidence of doing	2 (3)	27 (45)	31 (52)	
dental procedures on children.				

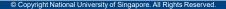
†Definitely negative (strongly disagree = 1, disagree = 2), Neutral (neutral = 3), Definitely positive (agree = 4, strongly agree = 5)

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References

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[†]Krushkal-Wallis one-way analysis of variance

abeValues demarcated with the same lowercase superscript letters in the same row indicate that

^{\$}strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5