

Virtual patients in training against medical error: student experience of working with paediatric cases



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TRAINING AGAINST MEDICAL ERROR

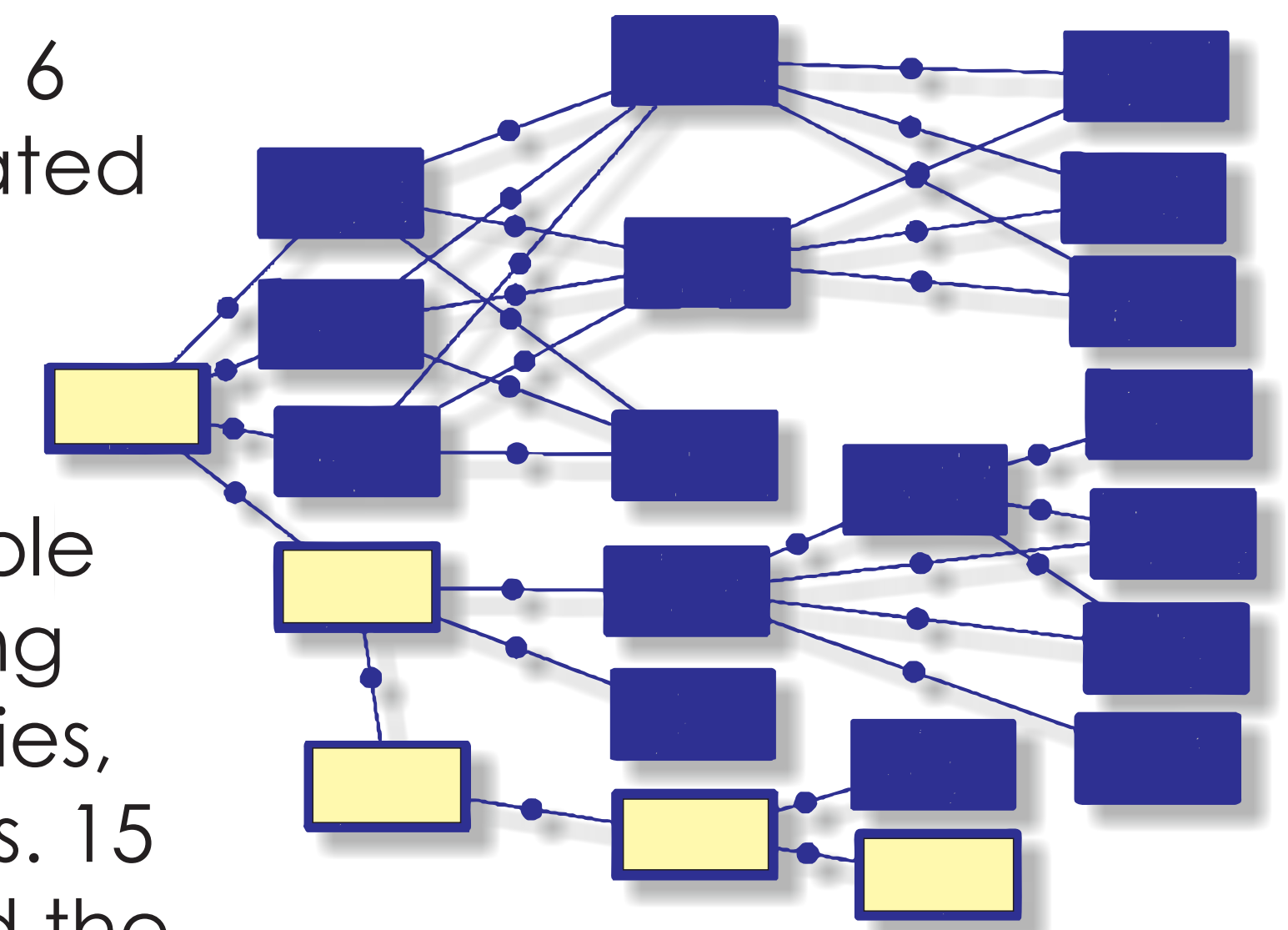


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Survey item		1. Perceived ability	2. Positive experience	3. Mental stress & negative emotions	4. Positive emotions
Rate how certain you are in doing the following tasks both before and after having completed the case:					
Ability before the case	Select the most appropriate patient management options in this patient case	0,72	0,13	-0,21	0,10
	Predict the most likely errors made in this patient case	0,80	0,09	-0,11	0,08
	Make appropriate decisions in other similar patient cases	0,81	0,11	-0,20	0,07
	Identify the most likely situations in which errors can occur in clinical practice	0,85	0,07	0,00	-0,05
	Take necessary measures to avoid making errors in my own practice	0,82	0,17	-0,04	0,05
Increase in ability after the case	Spot and identify errors when reviewing other people's practice	0,85	0,07	0,05	-0,04
	Understand the common causes of errors in practice	0,81	0,17	-0,06	0,11
	Select the most appropriate patient management options in this patient case	-0,54	-0,12	0,06	-0,15
	Predict the most likely errors made in this patient case	-0,76	0,01	0,00	-0,04
	Make appropriate decisions in other similar patient cases	-0,59	0,06	0,26	0,01
Increase in ability after the case	Identify the most likely situations in which errors can occur in clinical practice	-0,67	0,09	-0,12	0,17
	Take necessary measures to avoid making errors in my own practice	-0,69	-0,09	-0,03	-0,04
	Spot and identify errors when reviewing other people's practice	-0,77	0,04	-0,13	0,12
	Understand the common causes of errors in practice	-0,67	-0,10	0,08	-0,15
Describe your experience of using the patient scenario/case:					
Working through the case, I felt myself:	I felt I had to make the same decisions a doctor would make in real life	-0,03	0,80	0,12	0,00
	I felt I were the doctor caring for this patient	0,08	0,85	0,04	-0,01
	I was actively engaged in gathering the information (e.g. history questions, physical exams, lab tests) I needed to characterize the patient's problem	0,05	0,81	0,10	0,15
	I was actively engaged in revising my initial image of the patient's problem as new information became available	0,11	0,86	0,06	0,05
	I was actively engaged in thinking about which findings supported or refuted each diagnosis in my differential diagnosis	0,09	0,85	0,08	0,02
	I felt that the case was at the appropriate level of difficulty for my level of training	0,16	0,71	-0,03	0,06
	The questions I was asked were helpful in enhancing my diagnostic reasoning in this case	0,10	0,87	-0,02	0,09
	I feel better prepared to confirm a diagnosis and exclude differential diagnoses in a real life patient with this complaint	0,08	0,87	-0,10	0,07
	I feel better prepared to care for a real life patient with this complaint	0,05	0,86	-0,08	0,10
	Overall, working through this case was a worthwhile learning experience	0,06	0,80	-0,16	0,13
Mentally strained	Mentally strained	-0,10	-0,02	0,35	0,17
	Upset	-0,05	-0,02	0,90	0,09
	Hostile	-0,02	-0,01	0,87	-0,02
	Alert	-0,03	0,09	0,85	-0,08
	Ashamed	-0,06	0,07	0,89	-0,03
	Nervous	-0,04	0,00	0,90	-0,01
	Afraid	-0,07	-0,07	0,85	-0,03
	Inspired	0,05	0,10	0,05	0,62
	Determined	0,19	0,07	0,10	0,76
	Attentive	0,02	0,14	0,03	0,80
	Active	-0,02	0,11	-0,09	0,82

Background. Karaganda State Medical University (KSMU) leads the consortium on Training Against Medical Error (TAME) co-funded by EU Erasmus+ Programme, including 10 universities in UK, Greece, Czech Republic, Sweden, Vietnam, Ukraine, Kazakhstan, and providing research evidence addressing the most common medical errors in training of future physicians using virtual patients (VP).

Summary of work. KSMU administered 6 adapted VP cases in paediatrics created by St. George's University of London in linear and branched versions. The students surveyed after each case generated 255 responses out of possible 384 (66%). The survey aimed evaluating personal experience, perceived abilities, mental effort and emotional reactions. 15 interviews and 3 focus-groups clarified the survey findings.



Summary of results. Factor analysis confirmed the 4 factor-model: perceived ability (22,7% of variance), positive experience (20,2%), negative (14,4%) and positive (7,2%) emotions. MANOVA of factor scores produced no significant differences between cases and their types (branched/linear). Post-hoc analysis revealed differences in negative emotions between one branched case and some other cases; the increase in perceived abilities for linear cases after case 3; higher positive experience for branched cases; more positive emotions for linear cases.

Discussion. No direct experimental evidence favoured branched or linear cases. In interviews and focus-groups, students protected the VP method they experienced. In their opinion, linear cases provide safer environment and more discussion, while branched cases provide accountability for their actions. Focus-groups highlighted that continuous individual experience, residual effect of the previous case, tutor professionalism, and group dynamics were not initially taken into account.

Conclusion. The research evidence for the best practices in TAME is not conclusive. The students seem to enjoy VPs, but the long-term effects are yet to be studied. Study limitations should also be accounted for.

Take-home Message:

VPs in training against medical error seems to be a promising technology. More research is certainly needed into specific properties of VP case that make it effective.

