

# **Does Clinical Training in Pediatrics Improve Med III Students' Approach to Children? A Cohort Study**

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## Does Clinical Training in Pediatrics Improve Med III Students' Approach to Children? A Cohort Study

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### Abstract

**Background & Objective:** Physical examination is the cornerstone for correct patient diagnosis. Examination of a pediatric patient requires additional skills related to patient-doctor interaction. Therefore, performing an accurate and complete physical examination of a child may be a challenging if not an impossible mission for unexperienced medical students during their pediatric internship. Having a pediatric-adjusted clinical approach might be the solution.

**Methods:** A Cohort study was done in our university hospital "Notre Dame des Secours". All Med III students<sup>27</sup> received a supplementary 3-hours presentation with instructional videos regarding pediatric physical exam (P/E) approach. This was followed by a Q/A session with a pediatric attending and 1-week rotation on the pediatric floor and pediatric ER. Pediatric residents supervised them during daily rounds and staff meetings. Students were afterwards asked to fill a questionnaire focusing on different pediatric physical exam skills. The same questionnaire was filled by the same medical students at the completion of their pediatric Med III scheduled rotation. The control group consisted of the Med III students<sup>29</sup> - who did not receive the supplementary presentation - after completing their pediatric rotation. Control group was asked to fill the same questionnaire. We used the "Statistical Package for the Social Sciences" (SPSS) version 22 as a statistics analysis tool.

**Results:** After comparing the two groups, 19.6 % and 39.3% OF Med III students in intervention group felt respectively that "if a child cries it is their fault ( $p=0.023$ ) and that "the child's mother is always right until proven otherwise" ( $p=0.000$ ) vs 7.1% and 14.3 % in controls. Regarding the child's comfort, the intervention group learned that "if the child is ticklish, their own hands can be used to palpate the abdomen" ( $p=0.000$ ). However, questions regarding starting with ENT exam and using firm tone or skipping parts of examination were not significant ( $p=0.063$ ;  $p=0.150$  respectively). Intervention group medical students learned that using gowns and explaining all PE steps to the child may be a solution for better interaction ( $p=0.007$ ). In addition, leaving the child's underwear on or asking parents to leave the room ( $p=0.025$ ) can optimize intimacy. They can just observe their gait and musculoskeletal status in case of noncooperation ( $p=0.030$ ), and finally letting a child play with their medical tools can help gain their trust ( $p=0.003$ ). The rest of the results was not significant: "child is not a small adult" ( $p=0.237$ ), Adults and children should not be examined the same way ( $p= 1.000$ ). "Trying to estimate a child's age" ( $p=0.073$ ) and "commenting on their choices of clothing" ( $p=0.055$ ). "Parents should not intimidate their children to answer questions nor answer for them" ( $p=0.087$ ).

**Conclusion:** We conclude that our supplemental training program did improve some aspects of student's pediatric PE skills. Students learned to implement new techniques to relax children and comfort them. The primary results are promising. A larger scale study should be done to better assess the advantages of implementing such a change in the Med III curriculum.

### Key Words

Physical Examination; Clinical Formation; Pediatric Approach; Pediatric Population

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### Introduction:

Physical examination (PE) is the cornerstone of correct patient diagnosis. It is a priceless tool that all medical students must master. During the average student's internship, the adult physical

examination is repeated numerous times, giving an opportunity to be learned and mastered. On the other hand, the pediatric physical examination is frowned upon and regarded to be hard without proper training.

Examination of a pediatric patient requires students learning additional skills related to pediatric patient-doctor interaction. Therefore, performing an accurate and complete physical examination of a child may be a challenging if not an impossible mission for inexperienced medical students during their pediatric internship.

Furthermore, a general course with topics handling clinical skills prior student's rotations enhances comfort levels among students before beginning rotations<sup>1</sup>, providing a needed boost for the student's performance.

In general, medical students are trained to use a "head to toe" technique, applicable for an adult physical examination, and are under the impression that this approach is age-independent. Having a pediatric-adjusted clinical approach training might be the solution.

### Materials and Methods:

We conducted a cohort study at our university hospital "Notre Dame des Secours" in Lebanon. All Med III students<sup>27</sup> received a supplementary 3-hour PowerPoint presentation with instructional videos regarding pediatric physical exam approach, covering topics such as starting with the "invasive" parts of PE while the child is still calm<sup>2</sup>. The spectrum of the pediatric population, being defined as birth to 21 years of age<sup>3</sup> is broad. Developmental stage-specific techniques could be implemented to tackle the first few challenging stages of life being newborns, infants, and children. Strategies covered students' general approach and adaptation to different situations<sup>4,5</sup> behavior towards children and gaining their trust<sup>4,5</sup> the use of age-specific strategies and techniques<sup>4,5,6</sup> how to perform an efficient organ system-directed PE<sup>4</sup> and how parents can play a positive role during the PE.

Baseline Characteristics		Med III Students									
		Intervention					Control				
		Mean	Min	Max	Total N	Count	Mean	Min	Max	Total N	Count
Age		23	22	25	27		24	23	26	29	
Gender	Male					14					16
	Female					13					13
Number of siblings		1	0	3			1	0	6		
Previous encounters with pediatric patients	No					9					0
	Yes					18					29
Level of relaxation during PE (1-10)		3					3				
Pediatrics as specialty	Peds not a possible specialty					21					25
	Yes, specialty					6					4
	Yes, subspecialty					0					0
Pediatrics as subspecialty	Peds not a possible subspecialty					24					26
	Yes, subspecialty					3					3



This presentation was followed by a one-hour Q/A session with a pediatric attending and 1-week rotation on the pediatric floor and pediatric emergency department. Pediatric residents supervised them during daily rounds and staff meetings. Students were afterward asked to fill a questionnaire focusing on different pediatric physical examination skills. The same questionnaire was filled by the same medical students at the completion of their pediatric Med III scheduled rotation. A control group consisting of Med III students (29) - who did not receive the supplementary presentation after completing their pediatric rotation, filled the same questionnaire. With a 95% confidence interval and 5% margin of error, we used the "Statistical Package for the Social Sciences" (SPSS) version 22 as a statistical analysis tool.

We used an Analysis of variance (ANOVA) to compare the two groups. Correlations were explored using Spearman's, Pearson's and McNemar correlations when fitting.

#### **Results:**

After comparing the two groups, 19.6 % and 39.3% of Med III students in the intervention group felt respectively that "if a child cries it is their fault" ( $p=0.023$ ) and that "the child's mother is always right until proven otherwise" ( $p=0.000$ ) vs 7.1% and 14.3 % in controls. Regarding the child's comfort, the intervention group learned that "if the child is ticklish, their own hands can be used to palpate the abdomen" ( $p=0.000$ ). However, questions concerning starting with ENT exam and using firm tone or skipping parts of examination were not significant ( $p=0.063$ ;  $p=0.150$  respectively). Intervention group medical students learned that using gowns and explaining all the PE steps to the child may be a possible solution for better contact ( $p=0.007$ ). In addition, leaving the child's underwear on or asking parents to leave the room ( $p=0.025$ ) can optimize intimacy. They can just observe their gait and musculoskeletal status in case of noncooperation ( $p=0.030$ ), and finally letting a child play with their medical tools can help gaining their trust ( $p=0.003$ ). The rest of the results was not significant: "child is not a small adult" ( $p=0.237$ ), Adults and children should not be examined the same way ( $p=1.000$ ). "Trying to estimate a child's age" ( $p=0.073$ ) and "commenting on their choices of clothing" ( $p=0.055$ ). "Parents should not intimidate their children to answer questions nor answer for them" ( $p=0.087$ ).

#### **Discussion:**

A published article by Soares *et al*<sup>8</sup> concluded that a medical student's exposure to pediatric topics in the preclinical period, especially in students with little to

no experience with the pediatric population, can boost their confidence and comfort levels, leading to a more relaxed approach in performing a pediatric physical examination during clinical pediatric clerkships. We can argue that a relaxed medical student, will be able to perform a thorough physical exam which would optimize his diagnostic potential. If the medical student successfully won the trust of the child he is examining, the child may be more cooperative.

A limitation of this study is the small population size and the monocentric approach.

The focus of this study is to assess the importance of a preclinical teaching program in pediatrics. Students acquired new knowledge regarding children's behavior, and appropriate strategies allowing them to handle different situations.

The study confirmed that almost everyone agrees that a child is not a small adult and should not be treated as one and that an adult approach, which a student is comfortable performing, cannot be applied to a child. Students did learn some key techniques in handling hard situations such as measures that can be taken to gain a child's full cooperation before starting the physical examination, and how to make a child more comfortable during a physical examination. Students also learned strategies to implement for the child not to feel neither exposed nor vulnerable. They also learned about the positive role that parents can play during their child's physical examination, and what they should do in case the child was uncooperative during a physical examination.

This training program could be essential in handling the pediatric population, alongside practical clinical experience, but the final goal is to efficiently implement this training in the medical curriculum, in a way to achieve all the learning outcomes.

#### **Conclusion:**

We conclude that our supplemental training program did improve some aspects of student's pediatric PE skills. Students learned to implement new techniques to make children relaxed and comfortable. The primary results are promising. A larger scale study should be done to better assess the advantage of implementing such a change in the Med III curriculum.

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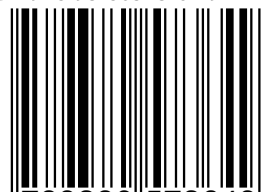


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