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Improving Medical Students Preparedness for Post-graduate Practice: A Supplementary Teaching Programme

A Case of Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)

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A Study Evaluating the Awareness of International Medical Students About the Evolution and History of Medical Terminologies

First International Conference on RASopathies in Asia: Advances in RASopathies and Neurofibromatoses and in Identification of New Therapeutic Targets
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 students1 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 students2 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 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, 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 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. The spectrum of the pediatric population, being defined as birth to 21 years of age 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 behavior towards children and gaining their trust the use of age-specific strategies and techniques how to perform an efficient organ system-directed PE and how parents can play a positive role during the PE.

### Baseline Characteristics
<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
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<tbody>
<tr>
<td><strong>Baseline Characteristics</strong></td>
<td>Total N</td>
<td>Count</td>
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<tr>
<td><strong>Age</strong></td>
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<td>24  23  26  29</td>
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<tr>
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</tr>
<tr>
<td></td>
<td>Female</td>
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</tr>
<tr>
<td><strong>Number of siblings</strong></td>
<td>1  0  3</td>
<td>1  0  6</td>
</tr>
<tr>
<td><strong>Previous encounters with pediatric patients</strong></td>
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<td>9</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>18</td>
</tr>
<tr>
<td><strong>Level of relaxation during PE (1-10)</strong></td>
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<td>3</td>
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<td><strong>Pediatrics as specialty</strong></td>
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<td></td>
<td>Yes, specialty</td>
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<tr>
<td></td>
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<tr>
<td><strong>Pediatrics as subspecialty</strong></td>
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<td>24</td>
</tr>
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<td>Yes, subspecialty</td>
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</table>
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 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.

References:


The World Journal of Medical Education & Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. It aims to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The journal intends to encourage the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting-edge technology and those who need to innovate within their resource constraints. It is our hope that this interaction will help develop medical knowledge & enhance the possibility of providing optimal clinical care in different settings all over the world.