Original Study

# High-Fidelity Hybrid Simulation: A Novel Approach to Teaching Pediatric and Adolescent Gynecology

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A B S T R A C T

*Study Objective:* To describe a hybrid simulation model for pediatric and adolescent gynecology (PAG) examination teaching, to evaluate if it would be feasible to be conducted as a part of the PAG training, and to find out how it would be perceived by the trainees.
*Design:* The development process and a 2-day workshop is presented.
*Setting:* An academic 2-day PAG simulation training at the Medical University of Lublin Centre of Medical Simulation.
*Participants:* Twenty-two obstetrics and gynecology and pediatric residents from various hospitals of the Lublin county region.
*Interventions:* Participants took part in a 2-day simulation-based workshop consisting of a theoretical part and 3 high-fidelity PAG simulation scenarios, followed by an anonymous feedback survey on their opinions about the hybrid model teaching strategy.
*Main Outcome Measures:* To describe and evaluate feasibility of a hybrid simulation model for PAG examination teaching and to report students' satisfaction and acceptance of this teaching modality; to share faculty experience and lessons learned during the development process.
*Results:* Of 22 initially enrolled residents, 16 of them completed the simulation-based session. All but 1 participant preferred a hybrid model to a task trainer as a teaching modality. The same number of surveyed residents stated that they learned more using the hybrid model. Qualitative feedback from the participants was overall positive.
*Conclusion:* A hybrid model for teaching PAG examination is feasible and greatly accepted by the trainees. We are convinced that such a model of training can improve trainees' skills and translate to PAG patients' comfort and safety. It could be potentially used in teaching more difficult procedures (eg, intrauterine device insertion or examination after sexual assault).
*Key Words:* Hybrid model, Simulation, Teaching, PAG pelvic exam, High-fidelity, Resident, Education, Pediatric and adolescent, Gynecology

## Introduction

Proper education in pediatric and adolescent gynecology (PAG) is a prerequisite to provide adequate care, improve outcomes, and decrease adverse long-term consequences.[1] In a few countries, PAG education is structured and performed within well designed postgraduate curricula. Examples of such curricula include a short and long PAG curriculum described and introduced by the North American Society for Pediatric and Adolescent Gynecology as a part of residency program as well as an Advanced Training Skills Module in PAG proposed by the Royal College of Obstetricians and Gynaecologists.[1–5] However, in many countries the degree of exposure to this discipline varies widely depending on residency curriculum and is often inadequate.[1]

A properly performed examination is essential for a correct diagnosis and management. Therefore, it is fundamental for a person working in PAG to acquire this competency. However, teaching how to perform a gynecological exam in a pediatric patient can be very challenging. First, a gynecological exam, even if it is only a visual inspection, can be very embarrassing to a PAG patient.[6,7] Second, a pelvic exam can be a very uncomfortable or even painful experience, particularly if performed by an unexperienced learner. Finally, obtaining patient and parent consent to an additional examination performed by a trainee can be difficult. Therefore, teaching in the clinical environment is often on the basis of observation and discussion of the cases.[8] An alternative way of teaching a PAG examination is the use of a pelvic trainer.[9] However, this modality, because of its low fidelity, might not be sufficient to master all required competencies, including interpersonal and communication skills, which are indispensable during a gynecological examination of a child or an adolescent. In the authors' opinion, acquiring competencies in a PAG examination is one of the most important and fundamental parts of the PAG education. Therefore, the authors developed and implemented a high-fidelity hybrid model-based simulation workshop for teaching and learning a gynecological exam technique, which consisted of a pelvic trainer combined with a simulated patient (SP) and a simulated gynecology office.

This pilot study was performed to introduce a hybrid simulation model for teaching a PAG examination, evaluate its feasibility, and acquire the trainees' opinion about this learning experience. Our aim in presenting this report is to share the authors' experience and lessons learned, including the strengths and limitations of this teaching modality.

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## Materials and Methods

### Setting

The theoretical PAG content is included in the obstetrics and gynecology (OBGYN) residency curriculum in Poland, however, its execution varies widely across the country. What is more, most residency programs do not contain a structured training in PAG. The present study was a part of the project intended to standardize the teaching process of PAG and make it accessible and comprehensive in the Lublin region, Poland. The PAG workshop described in this report was offered to OBGYN as well as pediatric residents as an extracurricular activity, and was conducted at the Centre for Medical Simulation, Medical University of Lublin, Poland.

### Workshop Overview

A 2-day workshop was developed to teach technical and communication skills as well as attitudes necessary to perform a gynecological examination in a child and an adolescent. The workshop consisted of a theoretical part and a practical, simulated-based session.

On day 1, residents participated in a 2-hour lecture and a demonstration of the technical aspects of a gynecological exam in a prepubertal child with collection of the vaginal swabs and a pelvic exam of an adolescent. The presented lecture covered a theory of a PAG exam including technical and communication skills, and was supplemented with photos showing various elements and steps of the PAG examination. There was a sufficient time span between the theoretical and the practical parts, to reflect on the newly acquired knowledge.

On day 2, participants took part in 3 simulated scenarios. At the beginning of a practical part, key technical and communications aspects of the PAG exam were reviewed and the participants had the time to practice technical skills using the same low-fidelity trainers, subsequently used during scenarios.

### Scenarios and Educational Objectives

Three scenarios were created to present commonly encountered PAG problems. The main educational objective was to acquire technical and communication skills used in the PAG examination technique. The participants were informed about the objective and instructed not to take a full history from the patient. Patient history and symptoms had been presented to the participants ahead of each scenario by a confederate, who played a nurse. On the basis of this information, participants had to decide about the need and extent of the exam in each case. They were also advised that communication during the examination should concentrate on establishing rapport with the patient and the parent, acquiring consent, and providing information and support to the patient. Scenarios presented are described in Table 1.

The main expectation for each scenario was to perform a PAG exam in the correct way on the basis of the history of the patient, which was given ahead of time. In detail, each participant was required to greet the patient and her mother, ask the mother and the patient for consent to perform the examination, communicate with the patient and the mother in a professional and polite manner, avoid medical jargon, clearly explain the procedures that will be performed, maintain a gentle and empathetic approach, maintain eye contact, verbally support the patient, react to the patient's body movements and sounds suggesting discomfort and pain, perform inspection of the external organs using a proper technique, properly perform pelvic examination, avoid using the speculum in a virginal patient, and finish the exam with information about the findings and suggested tests if needed (eg, ultrasound examination).

### High-Fidelity Hybrid Model for PAG Examination

Scenarios were carried out in a high-fidelity simulation room equipped with an audio–video recording system and a control room with a 1-way mirror. The simulation room was prepared to resemble a gynecological office. Undersized pelvic trainers were used during the workshop to increase the fidelity of the PAG examination. A hybrid model was obtained by having an SP positioned on the gynecological examination chair with a low-fidelity trainer below the buttocks and between the thighs. The legs of the SP remained bare to increase fidelity of the scenario and the rest of the body was covered with the drape (Fig. 1). The catheterization trainer (Laerdal) was used instead of the pelvic trainer for scenario 3 and was connected to a Little Anne manikin to increase the fidelity. The SP's mother took part in every scenario. The environment of the scenario is shown in Figure 2.

**Table 1**
Description of the Simulation Scenarios

| Scenario | Description |
|---|---|
| Scenario 1<br>Dysmenorrhea in a 12-year-old patient | The scenario presented a 12-year-old patient with the dysmenorrhea, which began approximately a year after her menarche. The girl had regular menses and her medical history was otherwise uneventful. |
| Scenario 2<br>Abdominal pain in a 15-year-old patient (ovarian cyst) | The scenario presented a 15-year-old patient with the abdominal pain lasting for 2 weeks. The girl had regular menses with cycles of 27 days on average, and no other ailments in her medical history. She had never experienced such symptoms before and denied any sexual activity. Her last menses was approximately 5 weeks before the visit. |
| Scenario 3<br>Vaginal discharge in a 5-year-old patient | The scenario presented a 5-year-old patient with vaginal discharge, which began approximately a week before and was accompanied with vulvar burning and pain. It was the first episode of such symptoms and the patient had no other ailments in her medical history except a food allergy. During that scenario the participant was able to practice collection of vaginal samples using 1 of the 3 previously presented methods.[9] |

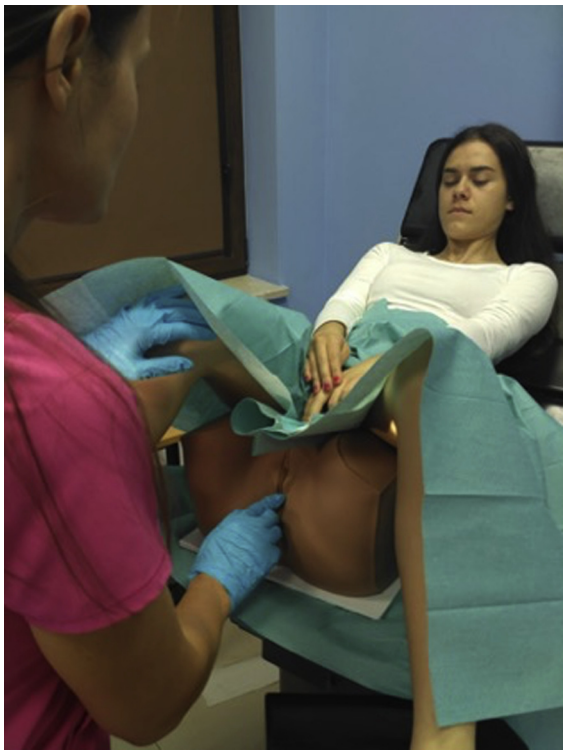

**Fig. 1.** The hybrid model consisting of the simulated patient 1 and the undersized pelvic trainer.

*Course of the Simulated Sessions*

Before the scenarios a prebriefing took place, during which participants were informed about the simulation environment, and shown the simulation room and the equipment. The participants were informed that they could touch legs, hands, and abdomen of the SP, but were not allowed to examine the breast and pelvic areas. Before each scenario the participants were introduced to the educational objective, the clinical case, and the patient history. They were informed that neither the patient nor the mother had yet consented to the exam, thus were instructed to concentrate on the exam itself and limit communication to issues connected with the examination. Ten minutes were allotted to the first and third scenario and 15 minutes to the second.

All scenarios were recorded and observed by faculty members (a PAG specialist and a communication specialist) from the control room. The objective structured clinical examination type checklist was used to record behaviors and activities required during the scenario.[10] The same checklist was used to provide individual feedback. The most commonly observed positive and negative actions were discussed during a group debriefing (formative assessment).

When all participants completed their tasks, a PAG specialist performed scenario 2 before she moved to do debriefing and evaluation of the activity. The participants observed the scenario from a control room and could reflect on their own performance. Allocation of the presentation at that specific time point reflected the learning theory used in the workshop called the discovery learning, which is a rising theory in simulation-based training on the basis of a constructivist paradigm. According to this method, participants use their previous knowledge for invention of their own approach to the task, which can be later modified when they receive feedback and reflection.

The presentation was succeeded by a group debriefing session that lasted 30 minutes and was carried out by a PAG

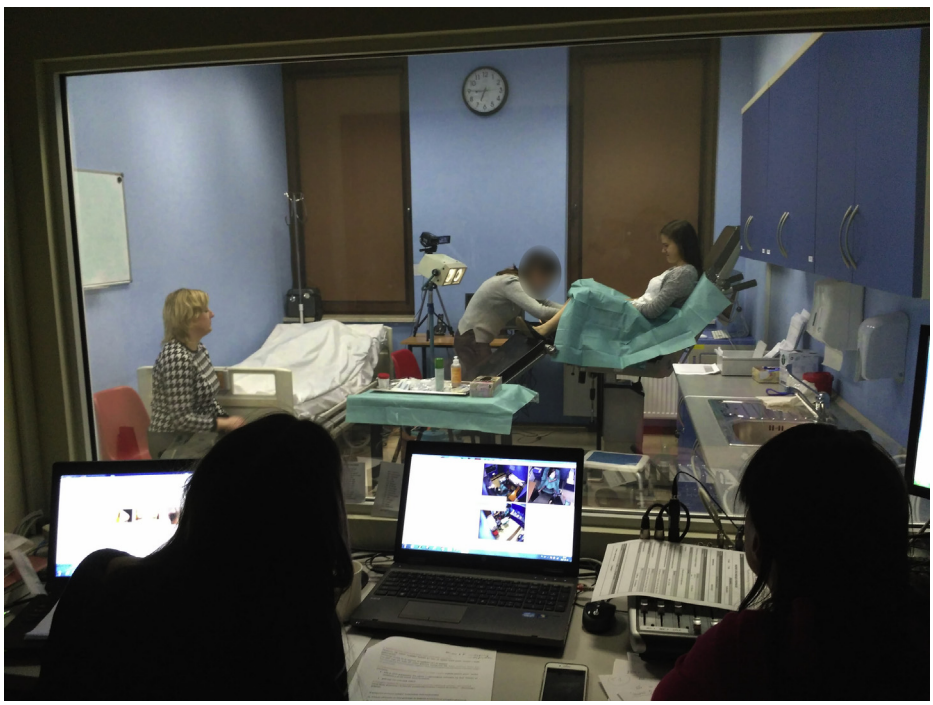

**Fig. 2.** The high-fidelity simulation scenario presenting (from the left) simulated patient parent, the participant, and hybrid model (simulated patient 2)—the control room view with instructors inside.

specialist and a communication specialist with the presence of an SP, who also contributed feedback. In addition, short (2-3 minutes), individual feedback was provided to each of the participants immediately after the scenarios.

*Participants*

Fifteen OBGYN residents and 7 pediatric residents initially enrolled in the workshop and attended a theoretical part (n = 22). After the theoretical part, 17 residents decided to participate in the simulation-based part (OBGYN, n = 11; pediatric, n = 6), but 1 withdrew during the first scenario. The reason for the withdrawal was a discomfort connected with the simulation environment, including being watched and recorded. Other residents who decided not to attend the practical part (OBGYN, n = 4; pediatric, n = 1) were not required to provide any justification for their decision, because the workshop was a facultative activity.

The OBGYN residency program in Poland lasts for 6 years. The gynecology residents attending the workshop represented various levels of advancement in their residency program, however, most of them were doing year 1 through 3. There were only 5 senior residents, doing years 4 through 6. Residency in pediatrics also lasts for 6 years, and the pediatric residents attending the workshop were doing years 2 through 4. Thirteen participants were female.

*Resources*

*Faculty*

Three faculty members and a simulation technician were involved in preparation and conducting of the workshops. The seminar and scenarios were prepared and carried out by A.T., who is a specialist in PAG (International Fellowship of Pediatric and Adolescent Gynecology trained) and a medical educator with experience in simulation-based medical education. M.H. is a psychologist and medical communication specialist responsible for preparation of SPs. The third faculty member (G.W.) is a specialist in simulation-based education and was responsible for helping in logistical aspects of the workshops.

*SPs*

Five SPs were engaged in the workshop, 2 SP mothers, and 3 SPs, who rotated during sessions. All SPs were volunteers and obtained training provided by a psychologist (M.H.), who is also a specialist in medical communication. The training was on the basis of the SP scenarios prepared by A.T. and M.H. The SP mothers had had previous experience in simulation, because they were members of the formal SP program held at the Medical University of Lublin - Centre of Medical Simulation (Lublin) and were chosen on the basis of the age suitable for the scenario. The SPs, who played roles of PAG patients were volunteers recruited through the Centre of Medical Simulation Simulated Patient Program and were not paid. They were 19 years old, first-year medical students, whose appearance and posture resembled that of a 15- to 16-year-old girl.

The SP training was prepared and conducted according to the Association of Standardized Patient Educators Standards of Best Practice.[11] Education of the SPs (mothers and patients) included information on the clinical background, description of the procedures being conducted during the scenarios, and possible issues, which could arise during the scenario as well as possible answers they could use during communication with a resident. SPs were also instructed to initiate conversation in case the resident's communication during the encounter was insufficient (eg, the SP mother would ask: 'Doctor, can you please explain, what you are going to do … my daughter will have this kind of exam for the first time … I am worried …'). Training of the SP mothers required one 2-hour session conducted by a faculty member. Because the simulated PAG patients did not have any previous experience in simulation, their training required additional time and effort. It involved two 2-hour sessions and 2 faculty members simultaneously: an SP trainer and a PAG specialist. SPs were taught about phases of a gynecological exam and typical behaviors presented by PAG patients during the exams, including arm and leg movements, facial expression, resistance, and leg muscle tone. The training included mock sessions with a PAG specialist to acquaint the SPs with the lithotomy position and feeling of being touched on their legs and abdomen.

*Facilities and Equipment*

The facilities and equipment used during the workshop included a small lecture hall, a high-fidelity simulation room equipped to resemble a gynecological office (gynecological chair, lamp, and instruments), a debriefing room, and a small pelvic trainer (undersized). In addition, a catheterization trainer (Laerdal) was used for sampling of vaginal secretion and vaginal lavage, as the authors found, it provided better fidelity of labial traction because of the resilience properties of labia majora. The simulation room was equipped with 3 cameras, allowing observation and recording of the learners' actions from different angles at the same time.

*Participants' Feedback about the Workshop*

Directly after the workshop, the participants were asked to provide information about their previous experience with PAG and simulation-based education as well as to share written feedback on the workshop.

*Ethics Approval and Consent to Participate*

The Medical University of Lublin Ethical Committee approved the study design (KE-0254/47/2017) and all participants signed the informed written consent form. Signing of the consent was not obligatory to be enrolled in the workshop. SPs' written consent and the permission to put their image on the Internet were obtained for the purpose of the publication.

## Results

*Faculty Findings about Workshop Preparations and Lessons Learned*

It was found by the authors, that realization of the simulation session was feasible to be executed for 16

participants in 1 day. The workshop was conducted in 3 rounds, each lasting for 3 hours.

Residents were divided into 3 groups and were asked to come to the Simulation Centre at different times, which overlapped, so that each subsequent group was prebriefed and introduced to the equipment and simulation environment, when the previous group was being debriefed. Residents performed alternate scenarios. Scenarios 1 and 3 were performed simultaneously, therefore, there was down time in between.

The authors found that the time they allotted for each scenario was longer than the residents actually needed. All but 1 resident (who needed 11 minutes to complete scenario 1) completed all tasks in 6-7 minutes.

The authors also found that the mock session performed before the actual workshop was very helpful. First, it enabled precise time calculation, which resulted in modification of the assumed timetable. Second, it allowed choosing the most accurate and comfortable arrangement of an SP and the pelvic trainer on a gynecological chair. Third, during the mock session the authors discovered that SPs found it difficult to recognize proceedings performed by the trainees during key moments, because the lithotomy position and drapes rendered visualization of residents' hands impossible. It hampered adequate and immediate reactions and decreased the fidelity of the simulation. The authors managed to overcome that shortcoming by installing the mirror behind the back of the trainee, which enabled the visualization of his/her actions. In addition, the authors equipped the SP with an earpiece device, and advised her in real-time on proper behavior on the basis of the observed trainee's actions during the simulation. Another important issue encountered during the workshop was that some trainees, especially those with lack of or little experience with simulation-based education, found it difficult to immerse in the simulation scenario. It could, as a result, decrease the execution of learning goals and increase anxiety during the learning experience. In the case of one trainee, the anxiety connected with simulation *per se* was so high, that she resigned from participation in the exercise, the moment she entered the simulation room.

Total time involvement of the faculty needed for preparation and conduction of the workshop amounted to 64 hours and was devoted to preparation of the scenarios (15 hours for simulation scenarios and 30 hours for SP scenarios), training of the SPs (mothers, 2 hours; patients, 4 hours), lecture (2 hours), mock session (2 hours), and simulation sessions (9 hours).

**Table 2**
Qualitative Feedback Provided by Workshop Participants

| Question Asked | Participants Answers |
|---|---|
| What did you gain specifically by performing the scenario with the hybrid simulation model? | "It was easier to immerse in simulation"<br>"It allowed simultaneous training of technical and communication skills"<br>"I could better imagine a real situation"<br>"It allowed the nonverbal communication with the patient"<br>:It was a holistic experience"<br>"I was able to empathize with the patient"<br>"I was able to really imagine what I can expect during real encounter; how both the parent and the mother could behave"<br>"I had a chance to see both mother and the patient behavior"<br>"It helped me to acquire self-confidence in pelvic exam and communication with the patient"<br>"I was able to practice developing a rapport with the patient and continuous communication, while performing an exam at the same time" |
| How could this workshop be improved? | "I would add a history-taking part to the scenario"<br>"Nothing"<br>"No suggestions"<br>"Possibility of history-taking and performing general physical exam before the gynecological exam"<br>"I would like to have opportunity to instruct the patient how to take position on the gynecological chair—instead of having patient positioned ahead"<br>"More emotions from the SPs"<br>"I would like to have opportunity to repeat the scenario after debriefing"<br>"Nothing—the workshop was great" |

SP, simulated patient.

### *Feedback from Participants*

The analysis of the survey results revealed that only 6 residents had previous experience with simulation-based learning during their education. Nine participants had been previously trained using pelvic task trainers. Fourteen residents had heard about using SPs during medical training, however, none of them was ever taught with the use of an SP. In terms of their previous clinical experience in PAG, 4 participants had performed at least 1 pelvic examination in an adolescent, and only 1 examined a prepubertal patient.

The analysis of the questionnaires revealed that all of the participants would recommend training with a hybrid model to fellow residents. All but 1 participant preferred a hybrid model to a task trainer as a teaching modality, and the same number stated that they learned more using a hybrid model. Qualitative feedback from the participants was overall positive. The authors were happy to find out that the residents not only acknowledged the possibility of practicing technical and nontechnical skills simultaneously, but also the realism of the scenario enabling development of empathy and nonverbal communication, which are equally important aspects of medical education. The suggestions about how to improve the workshop included requests to add elements of history-taking and general physical examination. One participant thought that more drama and emotions from the SPs would improve the scenario (Table 2).

The survey also inquired how the PAG training should be designed. A large percentage (81.3%, 13 of 16 participants) of participants answered that the sequence should begin with

a task trainer followed by a hybrid simulation and then by a real patient; 12.5% (2 of 16 participants) thought that the use of a hybrid model followed by a real patient encounter would be sufficient. Only 1 participant excluded hybrid simulation from the learning sequence.

## Discussion

Simulation technology has been proven valuable as a teaching method in healthcare professions.[12] Primarily, used mainly for acquiring technical expertise, it was subsequently found extremely suitable for teaching and learning nontechnical skills by exposing trainees to complex tasks and working under pressure.[13]

Simulation has been successfully applied in adult OBGYN training, at an undergraduate and at the postgraduate level. Available literature about the subject, although quite ample, has been mostly limited to acute care situations including OBGYN emergencies and surgical procedures.[14–16] Only a few reports referring to simulation in PAG education were published.

One of the first studies incorporating simulation into postgraduate PAG teaching was presented by Loveless et al.[17] The authors of that study used a 4-part scenario, which consisted of a pediatric gynecologic examination, collection of microbial cultures, vaginal lavage with removal of a foreign body, and vaginoscopy under anesthesia. The roles of simulated parents and patients were played by faculty members. The results showed that residents exhibited significant improvement in the PAG skills after such a simulation training program. The comfort level with the PAG examination also increased after the training. In 2014 Dumont et al described a PAG simulation session, which was a part of the innovative postgraduate PAG curriculum at the University of Ontario. The session comprised four 45-minute stations including a patient counseling station, examination techniques, basic surgical procedures, and medium-level surgical procedures.[9] During the counseling station participants rotated to act as patients or physicians and procedures were performed using pelvic models. All 24 residents who participated in that simulation training stated that their self-perceived knowledge increased and their qualitative feedback was uniformly positive.[9] In a subsequent study, the same authors reported a significant objective improvement in the residents' PAG skills measured according to an increased mean objective structured clinical examination score before and after the curriculum.[18] In a recent study Damle and colleagues described development of a PAG simulation teaching curriculum as well as a pediatric mannequin with anatomic prepubertal genitalia for teaching examination skills. The authors reported that after completion of an interactive teaching curriculum incorporating simulation and a realistic pediatric pelvic model, residents performed as well as those with clinical experience, and even better compared with the control group.[19] Those few published reports seem to support the notion that simulation can be a valuable asset in teaching PAG.

The first reported SP-based training in PAG was described by Beyth and colleagues in 2009 and was limited to teaching communication skills.[20] The advantage of that study was the use of young adult actresses who were playing the roles of adolescent patients. A clear recommendation that emerged from that study was to expand SP-based programs for gynecologists and to include it as a core part in the PAG training curriculum. The authors were not able to find any further studies that would describe use of trained SPs in PAG education programs.

The novelty of the approach used in the presented study was the incorporation of a hybrid model into PAG simulation-based education aimed at increasing the fidelity and realism of the scenarios. The authors found that trained SPs physically connected to downsized pelvic models provided high-fidelity simulated examination experience for the learners. The participation of the simulated parent was an additional distraction and stress factor, which enabled practice of communication and interpersonal skills in a difficult under-pressure context of a pelvic exam in a child. The authors claim that such an immersive approach can increase the learning opportunities for the participants, who need to deal with the task of examining the pediatric patients at different levels, including cognitive, behavioral, technical, and emotional. SPs are taught to tailor their verbal and nonverbal reactions to participant's performance during the encounter. Therefore, in the authors' opinion, the scenario not only allows for hands-on practice, but it is also a form of feedback itself, allowing an insightful learner to reflect on his or her own performance on the basis of the reactions of the patient and the parent. With such understanding of the presented approach in mind the authors propose that it could be a good alternative for workplace-based teaching.

Utilization of hybrid simulation has been already described and has been found useful in birth simulation and other disciplines of medicine.[21–23] The superiority of hybrid simulation in teaching complex clinical procedures stems from the fact that it allows the learners to practice affective and procedural skills simultaneously. Such an approach can be particularly effective for teaching and assessment of skills in clinical situations that require a high degree of procedural accuracy and emotional sensitivity. A well trained, SP in the setting of hybrid simulation ensures that learning objectives are executed. What is more, simulations can be repeated and thus provide standardized educational experience for many participants, which increases the reliability and validity of this teaching modality.[11,24] There is, however, a need for further investigation, which would specifically inquire about participants' experiences with hybrid models compared with other ways of teaching PAG examination as well as the objective effect of this method on learning particular objectives.

During the development process of the presented hybrid model the authors needed to overcome several technical issues, for example, regarding the SP's comfort while having a pelvic trainer "attached," coordination of the SP's response to learner's actions, and the SP's acting abilities to mimic adolescent embarrassment and anxiety during the exam. The authors found that mock sessions were very helpful in detecting technical, logistic, and content flaws, and thus recommend including such sessions, preferably

with SPs and confederates, during the preparatory phase of any simulation-based teaching activity. The authors also strongly recommend familiarization of trainees with simulation technology, because it reduces anxiety, improves immersion in the simulated scenario, and increases likelihood of execution of learning objectives.

On the basis of the feedback from the participants the authors can report that the high-fidelity hybrid model was well received and highly rated. Moreover, all of the advantages of that approach assumed by the faculty, were also recognized and valued by the participants. Such findings are consistent with the previously mentioned studies, whose authors also reported high acceptance and satisfaction from simulation-based sessions.[9,17,19]

On the basis of the experience with development and implementation of the hybrid model, the authors of the study suggest that, despite additional workload for faculty as well as increased financial expenditure, it is worth incorporation in the existing PAG curriculum. They also claim that it would be particularly easy to handle in centers with active SPs programs and in countries where participation of children in such programs is allowed.[23] The approach presented in this report involved additional human resources and a high-fidelity simulation center. Being aware that not every PAG department has access to such facilities, the authors suggest that similar educational goals can be achieved with less advanced technologies (eg, using an outpatient office with an instructor observing from the inside of an examination room). What matters the most is careful preparation of the simulation and SP scenarios, high-quality of SP education, and an insightful debriefing performed immediately after simulation, preferably with feedback from SPs.[25,26]

The authors acknowledge that the presented study suffers from some limitations. First, the proposed educational approach, which was conducted within the facultative learning activity with a relatively small number of postgraduate learners, might limit the findings regarding its feasibility. Second, it was introduced in only 1 center. Third, the summative assessment was not introduced in the presented project, therefore it was not possible to objectively evaluate the influence of the intervention on the improvement of skills in PAG examination. These limitations will be considered in the authors' subsequent studies.

*Conclusions*

The hybrid model-based workshop aiming at teaching PAG examination is feasible to be organized. It was also well perceived by the trainees.

Future research is needed to objectively evaluate the extent to which the presented learning method improves the trainees' skills and translates to a better comfort and safety of PAG patients. Its utilization could also be investigated in teaching more difficult procedures that do not require general anaesthesia, like intrauterine device insertion or examination after sexual assault.

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