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MEETING ABSTRACTS

II International Conference "Medical Simulation-Practical Applications and Technologies"

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Polish Society of Medical Simulation
Polish Nurses Association

Medical simulation is a practical field of education. Its indirect goal is to inspire and connect specialists responsible for various roles in simulation centers. Medical simulation is a highly developed professional field which, along with the development of educational paths, has become a permanent part of the didactic process. Therefore, the audience of the conference consisted of everyone who starts or continues a career in the field of medical simulation.

"Science has no homeland because human knowledge covers the whole world."

Therefore, we should remember that everything we have learned and taught our students: professionalism, understanding, empathy, humanity, not only in medical areas, will be lost if we are not able to find application for this knowledge.

We are aware that the implementation of a medical simulation is a long process, often raising many questions and prompting all of us to make an effort that gives didactic and scientific satisfaction.

Taking into account this challenge related to the creation of Medical Simulation Centers in the disciplines of medicine, nursing, obstetrics and paramedics, dentistry, physiotherapy or pharmacy, we meet the needs of the teaching staff of our universities.

Sharing good practices and our own very valuable experience is principal goal for today and building a network of medical simulation centers mutually supporting this task for tomorrow and the nearest common future.

Therefore, the II International Conference "Medical Simulation-Practical Applications and Technologies" (11th–12th March 2022, http://medsim2022.bok-ump.pl) brings together enthusiasts of modern medical education and simulation, experts and specialists. The event is organized in Poznan at the Poznan University of Medical Sciences in close cooperation with

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the Pomeranian Academy in Slupsk, the Polish Nursing Society and the Polish Society of Medical Simulation. That meeting was dedicated such important issues as:

- New tools in medical simulation education
- Organizing the osce exam
- "in-situ" medical simulation
- Experiences and best practices

01. Basic practical skills teaching through low fidelity simulation-methods review

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Introduction: Fidelity in simulation has been shown as a key in matching of learning objectives and outcomes. Low fidelity equipment and tools are relatively easy to implement, transport, and less expensive than more sophisticated methods. In these simulations, students and teachers can obtain valuable feedback based on the results, especially when the gap between the ideal and the current level of advancement can be objectively assessed using electronic tools. In addition, the goal is to support participants precisely through simplicity and access to repetitive exercises.
Aim: The main goal is to show low-fidelity teaching tools from those known for decades to those consistent with the latest principles of adult learning.
Methods: Authors performed a non-systematic narrative review of the literature to identified all commonly used low fidelity tools and technics. Additionally, authors included all developed in their own practice authorship low fidelity learning methods.
Results: There is a wide range of low fidelity simulation methods (Table 1). From traditional workflow for training procedures uses a "See One, Do One" scheme, for more modern approaches in education identified in literature review, such as: Peyton's 4 Steps from 1998, George and Doto's 5 Steps, Practice while watching, "Peer-to-peer, Start-Stop-Continue, or Deliberate Practice." Moreover, during low-fidelity sessions at medical simulation centers in Słupsk, Poznań and Warsaw, we developed methods not previously described in publications on medical simulation, such as: "At the end of the queue", "Relay"-passing the task on, or "Mentor"-From the simplest activity with assistance.
The history of the method dates back to the creation of training systems for surgeons by Halsted (1904). There are reports suggesting that the safety of patients may be at risk because proficiency in complex procedures cannot be acquired after a single observation and practical trial. Therefore, the evidence-based medicine (EBM) learning cycle should be: "see a lot, learn from the result, do a lot under supervision".
Conclusions: In a wider understanding of the teaching process, the use of one outdated method is not in line with the latest principles of adult learning. Medical simulation allows a modern teacher implement many low-fidelity tools in any context, to increasing the level of students' skills and thus the safety of patients.

Table 1. Low fidelity tools.

Method	Description
See one, do one, teach one	The teacher demonstrates and describes the procedure, and then the students practice it. Halsted's See-One-Do-One-Teach-One SODOTO
Peytons' 4 steps	It consists of the following four steps: demonstration, deconstruction, understanding and execution.
George and Dotos' 5 steps	Conceptualization, Visualization, Verbalization, Practice, Correction and reinforcement, Skill mastery, Skill autonomy.
Practice While Watching PWW	In the first step, the video provides an overview of knowledge and skills. The second step is watching and performing simultaneously with the instructional video. The third step is to practice a larger set of activities, teamwork, the entire procedure after watching the movie.

Peer-to-peer	Students learn from each other in a shared and safe environment. After performing the activity, the learner receives feedback, then plays the role of an observer and gives feedback.
Start-Stop-Continue	Freeze scenario time to summarize specific parts or events during an ongoing simulation session.
Deliberate practice	The four conditions for purposeful practice are: Have an assignment with a well-defined goal. Stay motivated to improve. Get instant feedback. Provide yourself with a wide range of repetition and gradual improvement of your skills.
At the end of the queue	During the task, in the event of its improper execution, the activity is interrupted and the student goes to the end of the queue of people waiting for the possibility of redoing the activity.
Relay	While one learner is performing an assignment, the activity stops and a randomly selected learner continues with the rest of the procedure.
Mentor	From the simplest activity with assistance. In the case of complex procedures, the algorithm is executed by the teacher and the student is engaged to act from the simplest of elements and perform guided activities.

02. End of life-palliative care nursing-case report

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Introduction: Death is an inseparable aspect from human life, and therefore medical professions education in that subject should be very important. Palliative care in the nursing education provides a good background for addressing this subject.
Aim: The purpose of this paper is to include death subject into the didactic process with high-fidelity medical simulation techniques.
Case scenario: 67-year-old Mrs. Janina Kowalska, due to increased irreversible pain, stays in the palliative care ward. A year ago, she was diagnosed with laryngeal cancer. The first symptoms were: difficulty swallowing, obstruction in the larynx, persistent sore throat, cough, sudden weight loss of about 15 kg within 3 months. The patient had smoked cigarettes for 49 years and drank alcohol in large amounts occasionally. Over the last 6 months, Ms. Kowalska's condition has deteriorated significantly, she has experienced: severe, chronic pain-a transdermal analgesic system was used, the inability to take food orally-a G-Tube gastrostomy, difficulties in moving and inability to meet physiological needs-assumed Foley catheter 16 Fr. In connection with the respiratory failure tracheostomy was emerged. The family is aware of Mrs. Janina's health and reconciled with the impending dying process. Patient confirms that all their needs, including spiritual ones, have been met.
Results-goals: Student creates conditions for dying in human dignity; cooperates as part of an interdisciplinary team in solving dilemmas ethical in compliance with the principles of the professional ethics; shows empathy in the relationship with the patient, his family and colleagues; knows the procedure for handling the body of a deceased patient.
The different elements of the simulation session allow for a theoretical introduction to issues related to dying and create realistic conditions for passing away with dignity, establishing a relationship with the patient's family, communication within the interdisciplinary team, and handling the body of the deceased. During the course of the simulation, a two-phase approach is noted for students involved in the scenario. During the first part, the focus should be concentrated on the use of non-technical skills by the participants while during the second stage mainly on the execution of handling the deceased person's body procedure.
Conclusion: Appropriate preparation of the room, simulator, participation of the simulation distractor significantly influences the students' involvement, the course of the scenario, and later summaries of the session. The most important element of this process is debriefing during which the course of the simulation session should be thoroughly discussed. The process of dying affects all of us and is an inseparable element accompanying every medical profession. Thoroughly examining scenarios devoted to dying give a chance to respect human dignity in the declining moments of life in the real world.

03. Enteral nutrition intolerance-medical simulation scenario

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Introduction: Patients after gastrectomy are particularly exposed to the risk of malnutrition. After the surgery, patients are provided with enteral nutrition with the use of industrial preparations through an intraoperatively inserted nasointestinal tube below the anastomosis. It is important to follow the rules of diet administration and to monitor side effects, *e.g.*, pain, flatulence, diarrhea and the symptoms of peritonitis resulting from the displacement of the tube.
Aim: The aim of this manuscript is to present a scenario for a high-fidelity simulation class on complications of enteral nutrition in patients after gastric resection. That scenario was implemented in nursing students to improve students' clinical skills and social competences.
Method: Scenario was carried out by first-cycle, third-year nursing students at the Faculty of Health Sciences of Jagiellonian University Medical College at the Center for Innovative Medical Education in Krakow as part of the subject of surgery and surgical nursing.
Simulation case scenario: A 64-year-old patient, on the second day after gastric resection surgery, has an intraoperative enteral tube below the esophageal-intestinal anastomosis through which an industrial preparation is connected by gravity. Half an hour after connecting enteral nutrition: the patient reports malaise, abdominal pain, nausea, takes a bending position, groans.
First, the student immediately stops the supply of enteral nutrition, checks the condition of the dressing and the wound, performs a physical examination of the abdominal cavity, finds abdominal distension, and does not find any symptoms of "acute abdomen". They connect the patient to the cardiac monitor. Blood pressure-150/95 mm Hg, heart rate-110 bpm, fast, 16 breaths per minute, accelerated, oxygen saturation (SpO2)-96%. Then they report the situation to the physician. The physician confirms the absence of symptoms indicative of peritonitis and orders a break in feeding for about 2 hours, and then connecting the feeding through a peristaltic pump at a reduced rate of 25 mL/h. After reconnecting the nutrition as recommended by the physician, the student observes the patient for symptoms of intolerance. They ask the patient how they feel; the patient states that the symptoms have significantly decreased, almost gone. The student checks the parameters on the monitor: blood pressure-130/85 mm Hg, heart rate-88 bmp, well perceptible, 13 breaths per minute, audible, shallow, odorless, SpO2-98%. The student determines the patient's condition as stable.
Lack of student's intervention-the patient's condition worsens (after 10 minutes), the patient reports very severe abdominal pain, stays in a bent position, groans. Blood pressure-160/98 mm Hg, heart rate-115 bpm, fast, accelerated breathing-22 breaths per minute, SpO2-94%.
Results-goals: Task for the student was to recognize the symptoms of enteral nutrition intolerance and undertake immediate interventions.
The implementation of the case improves the skills of critical thinking and allows to acquire professional competences. Students pursuing practical classes or work placement in surgical departments do not always have the opportunity to look after the patient in the situation presented in the scenario. Students' opinions indicate satisfaction and the need to implement the above case study.
Conclusion: Implementation of the presented clinical situation in simulation conditions will facilitate the student's taking safe, repeatable and standard-compliant actions.

04. Medical simulation in the education of nursing students-the pilot study

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Introduction: Medical simulation is an important part of modern medical staff education. It is adapted at most universities in Poland and in the world. The medical simulation offers unlimited educational opportunities and allows to improve practical skills, from simple to very complex activities. In parallel the students' needs and expectations, regarding the quality of education and the effectiveness of achieving the assumed learning outcomes are also changing.

Aim: The aim of the study was to find out the opinions of third year nursing students on the subject of medical simulation education.
Material and method: It was a semi-continuous, pilot study conducted in 2019–2020 among third year students in the Department of Nursing at State University of Applied Sciences in Pila. 55 students participated in the study, including 26 students in the academic year 2019/2020 (Group I) and 29 students in year 2020/2021 (Group II). The study used a diagnostic survey method with a survey technique. The original survey questionnaire contained thirteen questions, regarding the students' opinions on the classes conducted by the method of simulation in the low-fidelity and high-fidelity room and the realized learning outcomes. A five-point Likert scale was used to assess opinions, with 2 being the lowest rating and 5 being the highest.
Result: Statistical analysis showed the significant differences between the groups in the use of the simulation method in acquiring practical skills. This was more appreciated in the Group II ($p = 0.0066$). Additionally, Group II students indicated that the skills acquired in the low reality classroom were more useful than the Group I students indicated (Median 4.36 *vs.* 4.27) Group II students declared more interest in the new method of practical skills training.
There were statistically significant differences between the groups and the increase in the number of hours devoted to classes conducted with the simulation method (Group I *vs.* Group II 34.6% *vs*. 65.5%; $p = 0.036$).
Students most often indicated the achievement of learning outcomes, such as:

- collecting information through interview, observation, measurement, physical examination, analysis of documentation in order to recognize the patient's health condition and formulate a nursing diagnosis;
- monitoring the health of the patient during his stay in the hospital or other organizational units of the health care system;
- administering drugs to the patient by various routes and calculating drug doses;
- use of selected models of organization of own and team work;
- diagnosis of complications after surgery, pharmacological, dietary and rehabilitation treatment;
- respecting patients' rights;
- caring for the patient, respecting the dignity and autonomy of people entrusted to his care, showing understanding for worldview and cultural differences, and showing empathy in relations with the patient and his family.

Conclusions: Students highly appreciate the involvement of academic teachers and education using the medical simulation method. Low and high reality simulation sessions provide good conditions for students to practice and acquire practical skills.
The organization of classes, their length, the way they are conducted are positively perceived by the respondents. It is necessary to enlarge the didactic base of Medical Simulation Centers. The results obtained in the study on the number of achieved learning outcomes in the field of skills, confirm the legitimacy of using simulation tools in the training of future nursing staff.

Keywords:
Student opinion; Medical simulation; Learning outcomes

05. Newborn resuscitation

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Introduction: Resuscitation is required when a newborn's circulation and/or respiration is impaired. Technical skills such as proper ventilation and high-quality chest compression are crucial for patients survival and better outcomes.
Aim: The aim of the study was to analyze the parameters of chest compression and airway ventilation during intrapartum resuscitation of the newborn. The effectiveness of the ventilation and chest compressions performed by the midwives were analyzed.
Material and methods: The study included a group of 190 midwives (work experience <5 years of work *vs.* >5 years of work), with mean age 34 (33.8 ± 12.9 years), who participated in the study carried out at the Natural and Medical Center for Innovative Research at the University of Rzeszów. The study was preceded by a monthly project preparation consisting in the analysis of ventilation parameters, chest compression and the selection of equipment for resuscitation on the Resuscitation assistant Baby QCPR New (Laerdal fantom). The material collected during the 2-minute intrapartum resuscitation of the newborn was statistically analyzed with a significance level of $p < 0.05$.
Results: The mean overall result of neonatal resuscitation in the midwives group was successful (75.0%). Midwives achieved the best results in the compression fraction (84.0%), slightly weaker in compressions (81.8%), and the weakest

in terms of ventilation (68.7%). The subjects performed an average of 121.9 chest compressions during a 2-minute cardiopulmonary resuscitation (CPR) with an average depth of 41.5 mm. The vast majority of compressions (97.4%) were performed according to the recommended hand positioning, of which 94.6% were sufficiently deep, 81.5% fully recoiled, and 38.9% were performed with the recommended frequency of 90 chest compressions per minute. The subjects performed an average of 45.3 breaths during a 2-minute session, with an average volume of 32.2 mL. The inhales of the recommended volume accounted for almost half (47.1%) of all performed ventilations, and the maximum volume of air pumped into the respiratory tract was obtained by every second (39.0%) midwife. The effectiveness of resuscitation analyzed in terms of seniority showed statistical significance in the fraction of chest compressions in the group of midwives with work experience up to 5 years compared with midwives working for over 5 years (87.4 ± 14.4 *vs.* 79.4 ± 15.9, $p = 0.000$).
Conclusions: Our research shows that midwives have the technical skills to carry out effective intrapartum resuscitation of the newborn, and that success includes the chest compression fraction and the proper ventilation.

06. Nursing students' opinions on medical simulation and its use within the course of Collaboration in health care teams

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Introduction: In recent years medical simulation has been widely applied in the professional education of not only physicians but also nurses and midwives. Studies have shown the high effectiveness of medical simulation, as well as the promotion of nursing students' confidence, performance, and overall satisfaction [1, 2].
The aim of the study and research hypotheses: The aim of this study was to find out the opinions of the second year first degree nursing students on the use of medical simulation in teaching.
Hypothesis 1.—Do nursing students in the second year of the first-degree program rate the use of medical simulation in nursing staff education as highly useful?
Hypothesis 2. —Do nursing students in the second year of the first-degree program positively evaluate the usefulness of medical simulation in the course of Collaboration in health care teams?
Method: The study was conducted in a group of 56 second year first degree nursing students who participated in a simulation class within the course of *Collaboration in health care teams*. In 2021 the method of medical simulation was implemented in this course in the number of 6 didactic hours (which meant 2 meetings). The surveyed students did not participate in indirect and high-fidelity simulation classes. The study employed the authors' survey questionnaire containing questions about socio-demographic data and students' opinions on medical simulation and its importance in teaching their profession.
Results: The majority of the study group was female (n = 53), male (n = 3). The average age of the examined students was 20.8 years, standard deviation (SD) 5.2 years. More than a half (55.4%) of the surveyed students believed that medical simulation makes learning more effective as compared to traditional methods. One third of the respondents had no opinion on this problem. In the opinion of the majority (69.7%) of students, classes conducted with the application of the simulation method facilitate the acquisition of practical skills. However, 21.4% of the respondents had a negative opinion on this method. The students were asked whether the simulation classes were useful in the course of Collaboration in health care teams. Almost half of the respondents felt that simulation classes were useful (48.7%), 21.2% had no opinion, and 30.1% felt that they were not necessary. According to the respondents, nearly half of the students surveyed that the most attractive aspects of the simulation classes were: practicing particular behaviors, role-playing opportunities, getting to know people in the group, the room and equipment, debriefing, and applying knowledge in practice.
Conclusions: According to the majority of the examined nursing students, medical simulation facilitates the acquisition of practical skills and makes it more effective to memorize knowledge as compared to traditional methods.
Implementing the simulation method in non-clinical subjects requires that the instructor should observe the students' work in class, discuss and modify the scenarios and should survey students' opinions.

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07. Anesthesiology and nursing in life-threatening situations. Planned cardioversion under general anesthesia-simulation case study

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Introduction: During first-cycle studies in Poland, nursing students realize learning effects in the field of anesthetic nursing and life-threatening conditions. The use of medical simulation in the implementation of these effects enables the practice and improvement of those activities.
Aim: The complex scenario including planned cardioversion under general anesthesia was carried out in a group of students of the last year of nursing studies.
Methods: Students were introduced to the equipment used in the simulation room. Then the participants of the scenario were divided into two teams: the team of the cardiology department- two students and an academic teacher (Cardiologist) and anesthesiology team-two students and an academic teacher (Anesthesiologist).
Simulation case scenario: The scenario assumed two basic goals to be achieved by students: assisting for cardioversion and assisting for anesthesia. The simulation lasted 20 minutes and assumed three scenario phases. In the first phase, the patient is anxious about the planned procedure. Vital signs are evidence of atrial fibrillation. During the second phase, the patient is placed under anesthesia, the saturation decreases, and ventilation is impaired. After cardioversion, the heart rhythm is stabilized. The third phase of the scenario includes awakening the patient from anesthesia and reassessing vital signs.
Results: Debriefing was carried out with using the "3D Model of Debriefing" method. In this scenario, the analysis phase identified three main objectives that were discussed. The first issue was pharmacotherapy and the overdose of the drug. The student made accurate conclusions on her own that there was no adequate description of the syringe with the filled drug, no identification of the error during anesthesia and no feedback loop in operation. Thanks to this situation, the role of communication in the therapeutic team and recording medical errors as a form of ensuring patient safety was discussed. Additionally, students reported deficits in pharmacology knowledge. The second issue was the safety of healthcare professionals during the cardioversion (one person did not hear that the shock was going to occur). The role of clear and loud messages from the person performing the cardioversion has been analyzed. An interesting element of the scenario was the participation of academic teachers as active members in the simulation scenario. While sharing their feelings, the students did not report the role of teachers as distractors.
Conclusions: That scenario covers the learning outcomes goals for the subject Anesthesiology and Life Threats very well, and the students themselves rate it as being well prepared in terms of both skills and soft skills.

08. Selected methods of determining tool validation in healthcare simulation

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Introduction: Medical students' assessment of skills (including technical and soft skills—*e.g.,* communication) during simulation classes should be carried out with standardized research tools. Their psychometric properties, such as validity and reliability should meet certain parameters. Only with the use of such tools the results will be reliable and the evaluation of full value. In 2013, Cook *et al*. published the results of the review of over 400 studies. It referred to the evaluation of various aspects of simulation [1]. The review indicates the deficiencies in the scientific reports related to the assessment based on medical simulation [2].
Aim: Presentation of selected methods of research tools adaptation, which are used in evaluation of the healthcare simulation method.
Material and methods: The analysis was based on a narrative review of the available literature from 2010–2022 using non-systematic review method, consistent with the purpose of the study.

Results: Reliability, which is an essential part of the statistical evaluation of the adaptation process, determines the measurement consistency and degree in which the specific tool produces always the same result [3,4]. The most commonly used coefficient, which represents the reliability index, is Cronbach's alpha [5,6]. Its value ranges from "0" to "1", where values equal to or higher than "0.7" indicate high reliability of the tool [7]. In turn, validity "refers to the degree in which the evidence and theory entitle to interpretation of test results in accordance with the test application proposed by the authors." It is not a homogeneous concept as the evidence areas may refer to various aspects. However, they do not represent separate categories of relevance [8]. Analysis of the collected material has shown that in healthcare simulation studies are using tools to evaluate students or their skills. While teacher is using a given tool and validating it, they should take into consideration the following issues: what requires measurement; what influences this assessment; what is needed; how the data will be used [9]. In literature, there are two ways to test the relevance of the simulation study tools: the Messick's structure (framework) and Kane's structure (framework). Both of them collect evidence to confirm or reject the hypothesis, which constitutes the validity/correctness of the tool (validity argument) [10].
Conclusions: There is a discrepancy between the need of appropriate simulation evaluation in medical education and the deficiencies in the application of the validation process of tools which enable such an assessment. As such brings an urgent need for intensive, further development in this area, especially in the Polish research community. As can be seen, the role of simulation research as a didactic method and its impact on participants (both students, teachers or people who are playing the role of simulated/standardized patients) will only be increasing as we are still at the beginning of developing recognized research tools packages, and the tradition of their application is only several years-old. Therefore, perspective directions of healthcare simulations development include not only increasing its diversity and didactic attractiveness, but also investing in correctly constructed or adapted research tools, achieving accepted indicators of accuracy and reliability, which testify to their correctness. They will allow us to objectify the assessments regarding important features of this method.

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09. Telehealth consultation of a primary care midwife in a postpartum woman with gestational diabetes-practical skills training of a student with a standardized patient and the use of Big Blue Button platform

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Introduction: Telehealth consultation is rather new concept in public health. It started to be very important during COVID19 (coronavirus disease) pandemic, where tele consultation were the first contact possibility in high epidemic risk. How to design a student learning process that will prepare the student to conduct safe and effective telehealth consultation despite the lack of direct contact with the patient?
Aim: The aim of this manuscript was to present the experience and preliminary results of implementing a telehealth consultation teaching strategy in undergraduate midwifery courses in a simulated setting using the BigBlueButton (BBB) webinar platform.
Material and method: The material for the qualitative analysis of the case study was obtained during observation of 22 third-year female students of obstetrics during practical classes at the Medical Simulation Center of the University of Warmia and Mazury in Olsztyn in the subject of Primary Health Care. The student's task was to perform a telehealth

consultation based on a case report of on postpartum day 13 in a mother with gestational diabetes (GDM). The patient reported the need for telehealth consultation due to distressing symptoms related to healing of the umbilical stump in her son. To evaluate the learning outcomes, 2 original checklists were prepared taking into account the current legislation on the Telehealth Consultation Standard and the principles of health services of the Primary Care Midwife. The lists included criteria for evaluating the correctness of health education and criteria for evaluating the safety and effectiveness of telehealth consultation. Students' opinions were taken into account in the evaluation of the classes. Patient contact took place via video call on the Big Blue Button (BBB) webinar platform.
Results: The most important results of the learning outcomes achieved: physical examination: despite efforts, the most difficult interview was for students to clarify the nature of changes in the perineal area and breast gland, 5 students did not ask about the values of blood glucose measurements; nursing diagnosis: 19 students correctly diagnosed the obstetric condition, 5 students did not diagnose the lack of blood glucose measurements, 17 students correctly diagnosed errors in navel care. In assessment of adequate form of health service and appropriate specialist author noticed: 4 students felt that failure to perform a physical examination of the perineum and mammary gland qualified the patient for an urgent inpatient appointment with a midwife. In quality and safety of education: 3 students incorrectly taught about the principles of umbilical stump management. All students benefited from counselling by members of the interdisciplinary team.
Conclusions: Evaluation of the telehealth consultation simulation on the BigBlueButton platform based on Strengths, Weaknesses, Opportunities, and Threats (SWOT) concept. Strengths-learning outcomes achieved the method increases students' attention to detail during the physical examination and good insight into the course of the advice given by the student. Weaknesses-varying levels of student with information technology. Opportunities-teleconsultation simulation exercises will be a standard in professional training, Threats: unintentional reinforcement of the attitude of instrumental approach to the patient.

10. The role of a medical simulation technician in functioning of Medical Simulation Center (MSC) -literature review

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Introduction: Medical simulation is a rapidly developing method of education in medical faculties, which uses modern technology and advanced IT equipment [1]. The demand for qualified staff has increased in recent years due to dynamic development of technology, thereby adding new equipment and devices (i.a. simulators, phantoms or trainers), including virtual simulations [2]. Thanks to the involvement of the entire staff, including simulation technicians, it is becoming a method of education available to both teachers and students of future medical personnel. Simulation technicians are indispensable for the functioning of MSC, because their experience, knowledge and commitment allow them to be effective in management of simulation centers, in both technical and administrative way [3].
Aim: The aim of this study is to present the role of a medical simulation technician in the Medical Simulation Center.
Materials and methods: Non-systematic review of literature, selection of documents in accordance with the purpose of the study for the period 2010–2022 in both Polish and English was performed.
Results: According to The Healthcare Simulation Dictionary, a technician is "an individual who provides technological expertise, instructional support, and advocacy in healthcare simulation" [4]. In turn, according to Crawford *et al*. definition, medical simulation technician is a person "(...) with a diverse set of skills and expertise both technical and administrative related to the operation, support, and delivery of healthcare simulation" [5]. It is worth noting that in literature on the subject "simulation technician" may also be called a simulation operations specialist, a simulation technology specialist and other similar titles [3]. The Society for Simulation in Healthcare (SSH) offers a certificate for simulation technicians entitled Certified Healthcare Simulation Operations Specialist (CHSOS). Depending on the medical faculty, the responsibilities and scope of their work may differ slightly. Nevertheless, there is a basic scope of them [2,3]. In 2015 Bailey's *et al.* survey on a group of 73 participants identified five basic medical simulation technician tasks [2]. A noteworthy obligation mentioned in the "Sim Tech" (Sim Tech, 2021) is also protection of electronic data and software which could be damaged due to a failure. According to the author of the above article, other tasks are consistent with the previously mentioned analysis. In 2016 in Ohio, a survey was carried out among medical simulation technicians. It concerned the newly established training center, which was created for them to train and improve their skills [6]. Over 90% of the respondents stated that it is an innovative and beneficial space for training of newly hired technicians, as well as for improving skills of more experienced ones.
Conclusion: The role of medical simulation technician merges technology with science by supporting teachers in the process of education in medical faculties. Person on this position plays an important role in the MSC functioning process, because the appropriate operation of simulators or audio-visual systems depends on their technical, as well as manual and

personal skills. It is difficult to clearly define the concept of "medical simulation technician' due to limited availability of studies/literature that would allow for a clear definition of the terms of recruitment, their role or educational needs. Therefore, this may result in a lack of satisfaction with the proposed definitions. The authors of this study hold the view that research related to the role and tasks of the MSC technician should be developed in Poland.

Keywords:
Simulation technician; Medical simulation center; Education

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