

Evaluation of students' feedback after neonatal immediate care and basic resuscitation cooperative learning course

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BACKGROUND: Cooperative learning (CL) is an educational model that could improve students' knowledge and their psychomotor skills due to its innovative nature that allows students to realistically integrate all the components of the desired skills prior to patient interaction. The aim of this research was to evaluate the students' feedback after using CL in teach neonatal resuscitation course, and to present their opinions about knowledge and psychomotor skills acquisition and retention, teamwork, stress, and personal improvements.

METHODS: A total of 27 third midwifery students were taught neonatal resuscitation using cooperative instructional methods and strategies as follows: The Theoretical Part was taught in the classroom using Interactive

Lecture strategies. The skills was taught in Nursing College skills laboratory using active learning strategies Peyton's Four Steps of demonstration, team pair solo technique, moderate fidelity simulation and peer evaluation. Upon completion, all students requested to evaluate their experience.

RESULTS: The students' essays were aggregated into the following five themes using the deductive content analysis approach : The Cooperative learning (CL) benefits, Cooperative Learning (CL) Impacts on students' personal development, Cooperative Learning strategies influence on students learning, Cooperative Learning disadvantage, Recommending of using Cooperative learning (CL) in other courses.

CONCLUSION: Neonatal Immediate Care Unit (NICU); Cooperative learning; Students feedback; Resuscitation

Key words: Neonatal Immediate Care Unit (NICU); Cooperative learning; Students feedback; Resuscitation

INTRODUCTION

Current midwifery practice necessitates preparation of new-graduate midwife who are ready to safely and effectively care for mother and neonate as soon as they enter the workforce [1,2]. Increased patient acuity, load, and the new technology require midwives who are able to conduct fast and correct assessment of a clinical situation and prioritize their actions properly, specifically during neonatal resuscitation (NR) [3]. Neonatal resuscitation is essential skills in midwifery practice [4]. It is widely used because of the large total number of births [5]. NR defined as a set of interventions at the time of birth to support the establishment of breathing and circulation, ensure the safe and healthy transition of the neonate from the intrauterine environment to extra-uterine life [6]. The scope of interventions is broad, it includes essential care needed by all neonates such as drying, stimulation, initiate breathing, airway clearance, provide warming and placing skin-to-skin with the mother, initiate breastfeeding, protection from infection and observation of breathing, heart rate, activity, and color. In the other hand; it may be extended to full cardiopulmonary support including the following four categories in sequence: first; basic steps including: rapid assessments and initial steps of stabilization, second; ventilation (bag and mask or endotracheal tube), third; chest compressions and the fourth is administration of medications such as epinephrine or fluid volume expansion [5-7].

To determine whether resuscitation is required, all neonates required initial assessment at birth, and should include assessing physiological adaptation into extra-uterine life, airway, breathing, heart rate, skin color, muscle tone and warmth. The initial examination should be done within the first hour of life in order to identify the neonate health status and need for resuscitation [7]. If all characteristics at initial assessment are present then the neonate does not need resuscitation and need only an essential care. If any of these assessment characteristics is missing, the neonate should receive one or more of the four categories of neonatal resuscitation [5-7].

Fortunately, the majority of neonates (90%) are born in excellent condition. They complete transition from intrauterine to extra-uterine life successfully

without requiring any special assistance; all they need are essential, routine care. Approximately 10% of neonates face difficulties to adjust to this transition and require some assistance to begin breathing. And about 1% needs extensive resuscitative measures [5,6].

Neonatal resuscitation is a complex procedure, requires specialized knowledge and skills. It necessitate team include physicians, midwives and neonatal nurses. To maintain and improve neonatal care in the delivery rooms proper education and training in midwives basic resuscitation skills is crucial [8]. To ensure the appropriate preparation of new-graduate, the midwifery educators work meticulously to locate innovative teaching models to engage students in active learning. Cooperative learning (CL) is an educational model that could improve students' knowledge and their psychomotor skills due to its innovative nature that allows students to realistically integrate all the components of the desired skills prior to patient interaction [9].

Cooperative learning has wide variety of teaching strategies. It was developed by Johnson and Johnson in the 1960's and still broadly used today [10]. Cooperation is a structure of interaction where students are responsible for their own actions, learning and respect the abilities and contributions of their peers. Cooperative learning is a method of teaching and learning which students in a dedicated small group or team of 4 to 6 students with heterogeneous capacities to complete a task, solve a problem, analyse a case scenario, complete an in-depth project, they work, learn together and benefit of each other's expertise to achieve a common goal on clearly defined tasks. The students are individually accountable for their work, and the work of the group as a whole.

Cooperative learning is based on the theories of cognitive development, behavioural learning and social interdependence. It consists of five basic elements: positive independence, individual accountability, appropriate use of interpersonal and social skills, face to face interaction, group processing, self and peer evaluation [11-14].

There are several methods and activities developed in cooperative learning and widely used in teaching. Most of these have been developed by Kagan and Kagan. The most common strategies are : the jigsaw technique,

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assignments that involve group problem solving and decision making, laboratory or experiment assignments, think-pair-share, three-step interview, round robin brainstorming, three-minute review, circle the sage, numbered heads together, peer evaluation, and team pair solo [15] In this study the researcher used the following teaching methods, instructional strategies, learning techniques and activities: interactive lectures [16,17], Peyton's four-step approach [18-20], simulation (neonate and mother manikin) [20-22], team-pair-solo [23] and peer evaluation [24] to conduct the research.

In the theoretical part interactive lectures strategies were used. It is hybrid lectures with workshops. It is an active involvement and participation by the students, it involves an increased communication (a two-way interaction) between teachers and students, it refers to increased discussion among the students, and their involvement with the material or the content of a lecture. Simply it engages students, build memory, and deepen comprehension [16,17]. In Interactive lecturing there are many common interactive techniques can be used.

The following were used in the current research study:

- 1) Think-Pair-Share: it involves a three step cooperative structure. During the first step students think silently about a question posed by the teacher, then each two pair up and exchange thoughts, finally the pairs share their responses with other pairs, other teams, or the entire class [25].
- 2) Questioning the student: questions can stimulate interest, arouse attention and serve as an ice breaker, and provide valuable feedback to the teacher and the students [26].
- 3) Using films and videotapes of neonatal resuscitation: it can be used as a trigger to promote discussion or to stimulate student thinking. Most often, the objective is to elicit an emotional as well as a cognitive response in the viewer and to trigger meaningful discussion [27].
- 4) Multimedia presentations and computer assisted learning [27].
- 5) Using effective presentation skills: such as eye contact with the students, the physical setting and voice tone [28].

In lab training the following cooperative instructional strategies were used:

- 1) **Peyton's four-step approach:** It is a widely used method for skills-lab training in undergraduate education and has been shown to be more effective than standard instruction. It consists of four clearly defined instructional steps: Demonstration: the teacher demonstrates the skill at his normal pace without any comments.
- 2) **Deconstruction:** The teacher repeats the procedure, this time describing all necessary sub-steps. Comprehension: the student has to explain each sub-step while the teacher follows the student's instructions. Performance: the student performs the complete skill himself on his own [18-20].
- 3) **Simulation:** A learning environment created to represents (mimic) reality of the clinical area, it was designed to allow students to practice, learn, gain understanding, and demonstrate procedures without harming real patient. Simulation provides opportunity for active learning, making mistakes and learns from their errors, repetition of procedure till mastering it while the teacher provides immediate feedback on the students' progress. It promotes decision making and clinical thinking and can be used as an evaluation tool. Simulation has degrees of reality referred to as level of fidelity, it ranged from no, low, and moderate to high fidelity. In this study a moderate fidelity plastic mannequin that has the same size and shape of a newly born neonate, and a mannequin that simulated a mother in delivery were used [20-22].
- 4) **Team-pair-solo:** The students work together as a team to accomplish the task, practice skill. Next they split into pairs again practice same task, skill and finally they work individually (Solo) on the same task, skill. It is based on the assumption that students can solve more problems with help than they can alone [10,15,23].
- 5) **Peer assessment or evaluation:** It allows students to provide constructive feedback to team members. It is defined as a teaching strategy that involves active participation of a student in the formative evaluation of another student's work. It helps students identify their strengths and weaknesses, develop and manage their learning processes, and work toward achieving the specified learning outcomes during the learning process itself. On note paper with

student's name written on it, members of the team write honest and constructive feedback for the team member whose name appears on the note. Team members give their observation papers to each other and engage in a process discussion about the successes and needs for improvements on the team [24].

Moreover; the curricula in CL should encompass a variety of educational resources that match teaching and instructional methods to be provided for students including written materials, videos, and recorded lectures. Course materials, textbooks, links to external sites, professional bodies' guidelines, and simulations labs [20-22,27].

MATERIALS AND METHODS

Before starting the research study, the following learning environment preparations were undertaken: The lab equipment's were checked by the researcher for availability and readiness to facilitate the study conduction and the students' training. The labs were divided into five stations resembling the delivery room setting; each station included all needed neonatal resuscitation equipment's, to allow each subgroup to practice as a team. The seats in the classroom were arranged in U- shape to suite the interactive lectures instructional methods.

Pre-test was done to assess Neonatal Resuscitation Knowledge. The students (n=27) were divided into five subgroups, three sub-groups contain five students and two subgroups contain six students. The sub groups were formed by the researcher to make teams heterogeneous in their academic ability level. Each team member assigned a role in the team. Before assigning the roles, a brief explanation was provided to the students [15].

The neonatal resuscitation taught using cooperative instructional methods and strategies as follows: first; The Theoretical Part was taught in the classroom using Interactive Lecture strategies. Where principles of neonate adaptation to extra uterine, neonatal immediate, essential neonatal care, dryness and stimulation, breathing, airway clearance, and warming), essential needs of neonate and basic neonatal resuscitation were discussed. The interactive lecture strategies were the following: Think-Pair-Share [25].

Questioning the students [26], Films and videos of real normal delivery that showed how the medical team applied the steps of immediate care for a normal neonate, Films and videos showed the resuscitation steps of sick neonate. In addition to several animated video clips showed particular steps of the resuscitation such as immediate dryness of neonate, suctioning, providing free oxygen, bag and mask were presented [27]. Multimedia and data show for presenting the lecture content [27].

Second; the Laboratory Learning Part: The lab learning was implemented in Nursing College skills laboratory. The training was two lab days per week for three weeks. Each lab day was five training hours. The students trained the neonatal immediate care and basic resuscitation procedure using active learning strategies as follows: Peyton's Four Steps of demonstration [18,20] team pair solo technique [10,23] moderate fidelity simulation [20-22] and peer evaluation [24]. The learning session was implemented using a plastic mannequin that has the same size and shape of a newly born infant, and a mannequin that simulated a mother in delivery.

The students' first evaluation was conducted immediately after the theoretical and training parts was completed, and second evaluation conducted at the end of the semester (after three months). The students' feedback was conducted by using Qualitative Feedback after the study was completed.

RESULTS

Students' personal and academic characteristics

The total number of students who took part in the study was 27, and the attrition rate was 0%. The students were homogeneous in terms of their personal and academic characteristics. They were all females and Jordanian. None of the students have previous neonatal clinical experience or education (Table 1).

Students' feedback on neonatal resuscitation cooperative learning

The students were given the chance to describe their perspectives on Cooperative Learning through using unstructured open-ended questions. The students' essays were aggregated into the following five themes using the deductive content analysis approach. This analytical procedure encompassed transforming narrative data into numerical ones. The following themes were emerging from the analysis of students' feedback.

1. **The Cooperative learning (CL) benefits:** There were various benefits

TABLE 1

Description of the students' personal and academic characteristics.

Variables	Categories	Students (n=27)	
		\bar{x}	SD
Age (years)	~	20.6	0.74
*GPA	~	73.5	9.6
Newborn care previous experiences	Yes	0	0.0%
	No	27	100%
Newborn previous courses	Yes	0	0.0%
	No	27	100%

*GPA = Grade Point Average

revealed by the students that reflect their points of views towards using CL strategies in neonatal resuscitation course. All students (100%) reported that CL provide effective way for knowledge and skills acquisition, and retention, facilitate time management and provide chances for making mistakes and practice skills until performed correctly, CL help them to apply theories in the lab. More than 80% of them indicated that CL promotes organized, safer practice due immediate, constructive feedback received from both their peers and the researcher. CL taught them how to treat patient with respects and maintain their privacy, CL enhance communication, participation and cooperation between students, CL taught them how to manage available resources, how to collect patient health information and correctly document and record nursing care. In addition CL provides a variety of learning styles and strategies which make it interesting and enjoyable. More than half of them stated that CL taught them quality of work, promote better memorization of information.

- Cooperative Learning (CL) Impacts on students' personal development:** In addition to the previous emerged benefits, students addressed a number of impacts of CL on their personal characteristics. All students (100%) reported that CL enhanced their self confidence and self-esteem; it taught them how to work within team, and how manage stress. More than 90% of them indicated that CL promotes their creativity, critical thinking, decision-making and problem solving skills. More than half of them stated that CL supported personal independence, reduced embarrassments from repeating questions, enhanced their initiatives and feeling of responsibility towards job.
- Cooperative Learning strategies influence on students learning:** All students (100%) illustrated that researcher explanation and working in teams were the most influenced strategies on their learning, followed by repeating skills and pair-based training (over 90%). More than half of them reported that Peers evaluation strategies helped their learning.
- Cooperative Learning disadvantage:** A number of disadvantages of CL were addressed by students. The most frequent disadvantage was that CL is time consuming (74.1%); the CL lab was noisy environment and the ratio of students' trainers is dreadful (over 50%).
- Recommending of using Cooperative learning (CL) in other courses:** The last theme emerged from students open-ended questions was the recommendation of CL for other courses. All students recommended CL for future courses. The vast majority of them (92.6%) recommended CL for courses with practical part.

DISCUSSION

The students' feedback on CL strategies in neonatal resuscitation was tremendously positive. They were satisfied and preferred it, as an active learning, over the traditional didactic lecture. They strongly recommended using CL for future courses especially for the courses with practical parts such as pediatrics, adult, neonatal courses, and all midwifery courses. Several researchers recognized enthusiasm and positive attitudes toward the learning experience and learning environment among their participants [20-23,29].

Students perceived CL as an effective and successful way to learn. It enhanced their knowledge acquisition, retention, and increased their mastery of skills.

In addition, to perceiving the value and capacity to transfer learned skills to the clinical setting. The students' feedback regarding CL strategies were confirmed by numerous researches used different types of CL instructional methods reported high level of knowledge and skills acquisition, retention and clinical preparation [17,20-23].

In line with previous researches [1-2,11-12,18,20], students in this study valued practicing skills in the lab without the risk of harming real neonate. They felt that it was acceptable to make mistakes while training on the mannequin and learn from these mistakes, because this eventually leads to safer patient care. Students appreciated the immediate, positive feedback received from both their peers and the researcher which enhanced their technical and communication skills. It supported and helped them to understand the consequence of their actions.

In addition to gaining knowledge and development of psychomotor skills, students pointed up the development of interpersonal skills, enhanced critical thinking, decision-making, problem solving skills, supported personal independence, encouraged creativity and initiative, enhanced feeling of responsibility towards learning, facilitated time and stress management, increased self-confidence, increased students' motivation, satisfaction and enthusiasm with the learning experience. Several researchers confirmed of growth interpersonal competences, social skills and responsibility in the provision of safe and effective patient care and accountability [9,11,12,14,16,24].

Consistent with students' feedback, several scholars emphasized effective communication, collaborative learning, sharing knowledge, active participation, leadership, management, and effective teamwork [12,14,21]. As well as, developing respects for human values, dignity, and privacy, in addition to accurately and completely gathered health information, documented and recording patient care and its outcomes; moreover they distinguished essential legal documentation, properly used and managed the available resources [20-29].

CONCLUSION

Although the students' evaluations of CL in the current study were extremely positive, few minor disadvantages were mentioned including: it was time consuming, the lab was noisy environment, and the student's ratio was large to trainer. These disadvantages mostly are due to the facilities structures rather than the feasibility of the program. Many researchers mentioned similar shortcoming of CL. They affirmed that sometimes the noise level may be higher than acceptable during CL activities, often some groups or group members may finish before others, some groups that don't get along; in addition that CL may require numerous preparations, equipment's, resources that could be expensive and require large funding

ETHICAL CONSIDERATIONS

The following ethical considerations were assured by the researcher during the study:

- Confidentiality and anonymity were secured by using identification codes. No information was shared with others for purposes other than the research purposes.
- The researcher treated all students with honesty, objectivity, respect for their intellectual property and moral, social responsibility, confidentiality, equitably and non-discrimination way.
- The researcher followed the Jordanian nursing codes and policies guidelines.

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