Benha Journal of Applied Sciences (BJAS) **print: ISSN 2356–9751**
Vol. (10) Issue (5) (2025), (11- 21) **online: ISSN 2356–976x**

http://bjas.bu.edu.eg
Medical and Health Science

Effect of Jigsaw learning Method on Theoretical and Practical Achievement of Technical Nursing Institute Students regarding the Second Stage of Labour

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Abstract

Background: Jigsaw learning Method affects theoretical and practical achievement**. Aim of the study:** Evaluate the effect of Jigsaw learning method on theoretical and practical achievement of technical nursing institute students regarding the second stage of labor. Setting: Technical Nursing Institute, Benha University. **Research design:** A quasi-experimental study was utilized to conduct the study. **Sample:** A systematic random sample included 60 nursing students was selected and divided equally into two groups control and study groups. **Tools of data collection:** three tools were used: **Tool (I)** A structured self- administrated questionnaire: part (1) General characteristics of the nursing students. Part (2): student's knowledge assessment questionnaire. **Tool (II):** Observational checklist. **Tool (III):** Cooperative Jigsaw Opinion Sheet. **Results**: The present study revealed that, after implementation of the Jigsaw learning method the mean scores of theoretical and practical achievements was finally higher in the study group compared to control group ($P \leq 0.05$). Also, the majority of the stud group were satisfied toward Jigsaw learning method. **Conclusion:** The Jigsaw learning method was more effective in improving theoretical and practical achievement of nursing students toward the second stage of labor. **Recommendations:** Integration of Jigsaw learning Method in curriculum development at obstetrics and gynecology field.

Keywords: Jigsaw learning Method, Second Stage of Labor, Theoretical and Practical Achievement. Nursing Students

1. Introduction

Normal labor refers to the natural delivery of a fully developed and healthy fetus from the uterus. The use of jigsaw learning techniques can help nursing students enhance ability to manage childbirth effectively. The fetus is delivered through the birth canal without interventions or complications for the mother or fetus, typically within 24 hours [1].

Labor is categorized into four distinct stages. The first stage begins with the onset of true labor contractions and continues until the cervix is fully dilated. During the second stage, once full dilation has occurred, the fetus is delivered through the birth canal. The third stage starts after the baby is born and concludes with the expulsion of the placenta and membranes. The fourth stage, known as the "early recovery stage," takes place within the first one to four hours after childbirth [2].

During the second stage of labor, the fetus is delivered, beginning with full cervical dilation and ending with birth. This stage typically lasts between one to two hours for primigravida and around 30 minutes to an hour for multigravida. It involves the sequential delivery of the baby's head, shoulders, and body [3]. As the fetal head moves through the birth canal, it undergoes several positional changes, including descent, engagement, increased flexion, internal rotation, extension for head delivery, restitution and external rotation. Following this, the posterior and anterior shoulders are delivered, followed by the rest of the body. These sequential changes, known as cardinal movements, describe the mechanism of delivery during childbirth [4].

Nursing students gain knowledge in various specialties through traditional teaching methods; however, Nursing students often struggle with essential skills such as analyzing, interpreting, evaluating, and effectively organizing new information. To overcome this challenge, universities, especially nursing faculties, should move away from rote memorization and emphasize the development of critical thinking and reasoning skills [5]. The Jigsaw strategy is a modern learning method based on cooperative learning. It is a collaborative approach that encourages teamwork and shared learning experiences [6]. This integrated learning strategy enables students to interact with one another, take responsibility for own learning, engage with course materials, lead discussions, present in peer groups and support each other's education [7].

The jigsaw approach beneficial for teaching complex clinical topics during internships, allowing students to learn new strategies from peers. It also helps develop critical thinking skills, enhances self-esteem and self-efficacy, strengthens leadership abilities, improves social communication and fosters creativity in learning [8].

The jigsaw learning method consists of five key components: positive interdependence, promotive interaction, individual accountability, the development of social and interpersonal skills and effective group processing. Working in collaborative groups has been shown to support the academic, social, emotional, and psychological development of nursing students [9].

One of the primary roles of nursing education is to facilitate the transfer of knowledge from educational settings to clinical environments and society, ultimately

aiming to achieve positive health outcomes. The objective of nursing education is to enhance students' academic performance by equipping with the skills to solve problems and think critically [10].

Nurse educators are also responsible for preparing students for clinical practice. Undergraduate nursing education emphasizes both theoretical knowledge and clinical practice, which play a vital role in enhancing students' satisfaction, self-confidence, and clinical skills. As a result, nurse educators must continuously explore, implement and assess teaching and learning strategies to ensure effective education [11].

Significance of the study

In 2017, about 295 000 women lost lives during and after pregnancy and childbirth, a rate of maternal mortality that is unacceptable. Most of these deaths might have been avoided and the great majority (94%) happened in environments with little resources [12].

Furthermore, a major factor contributing to complications for pregnant and laboring women and the subsequent rise in maternal mortality rates is the lack of knowledge and expertise among nurses regarding the second stage of labor [7]. Therefore, the use of qualified, competent and cooperative learning methods for nursing students is essential in providing high-quality maternity care. These students can play a crucial role in preventing harm to mothers and improving labor outcomes [13].

In faculty of nursing, Benha University there is insufficient application of new learning strategies in professional maternity course. Nursing students should be aware of all theoretical knowledge and practical skills of maternity course to provide competent and effective nursing care. This will lead to improvement of critical thinking skills, problem solving and decision-making skills. In addition to the lack of Egyptian studies that addressed Jigsaw Technique subject in maternity specialty. Since there are no studies on the Jigsaw learning method in Benha University's nursing faculty, this study will be carried out to assess impact on the theoretical and practical achievement of students at technical nursing institutes with regard to the second stage of labor.

Aim of the study

Evaluate effect of Jigsaw learning method on theoretical and practical achievement of technical nursing institute students regarding the second stage of labor

Research Hypotheses

H1- The Technical Nursing Institute students who would receive Jigsaw learning method would have higher theoretical achievement compared to students in the lecture group regarding the second stage of labor

H2- The Technical Nursing Institute students who would receive Jigsaw learning method would have higher practical achievement compared to students in the lecture group regarding the second stage of labor.

2. Methods

Research design: A quasi-experimental study design was used

Study setting: Technical Nursing Institute, Benha University.

Sample type: A systematic random sample.

Sample size: A 60 nursing students.

Sample technique: Every tenth of the 600 second-year nursing students who attended the first semester of the academic year (2023–2024) were selected. The names of the students are used to separate nursing students equally into two groups.

Tools of data collection: Three tools were utilized for collecting data.

Tool I- A structured self-administered questionnaire: -The researcher created the questionnaire and after studying the most recent research in the field. It contained the two sections listed below:

Part (1): General characteristics of the nursing students. The four items included: Age, gender, marital status and place of residence.

Part (2): Student's knowledge assessment questionnaire (pre-post-test): It was designed by the researcher after reviewing related literature [14, 15, 16]. It was composed of closed-ended questions in English and was intended to evaluate the theoretical knowledge of nursing students about the second stage of labor. It has two sections with 17 multiple-choice questions: -

Section (1): - knowledge regarding the second stage of labor which included 9 multiple choice questions.

Section (2): - knowledge regarding episiotomy which included 8 multiple choice questions.

Scoring system: Each question was given a score of (2) for a correct answer and a score of (1) for an incorrect answer. The total knowledge assessment score was determined by summing the scores of all questions, ranging from (1 to 34). The classification of the total knowledge assessment score was as follows:

- Adequate knowledge: ≥ 75 % of total score (25-34)

- In adequate knowledge: < 75 % of total score (1- 24)

Tool II: Observational checklist regarding nursing care students in the second stage of labor**:** The researcher evaluated the practical performance of Technical Nursing Institute students in the second stage of labor using the Obstetrics and Gynaecological Department checklist at Benha University. There were two procedures and 53 items on the observational checklist.

- **Procedures (1):** - checklist for handling which included 32 items.

-**Procedures (2):** - checklist for episiotomy which included 21 items.

Scoring system: Each item on the observational checklist was assigned a score of 1 for unaccepted practices and 2 for accepted practices. The overall practice score was determined by summing the scores for each procedure, ranging from 53 to 106. The total practice score was categorized as follows:

-Satisfactory practice: ≥ 75 % of total score (80-160).

- Unsatisfactory practice: < 75% of total score (53-97).

Tool III: Cooperative Jigsaw Opinion sheet: It was adopted from **[17]***:* To assess the study group's perceptions of the Jigsaw cooperative learning approach at the end of the study, a total of 14 statements were included.

Scoring system: A three-point Likert scale was used to rate each item: a score of three (3) indicated agreement, a score of two (2) indicated neutrality, and a score of one (1) indicated disagreement. The sum of all item scores was used to get the final scores, which varied from 1 to 42. A higher number denoted agreement. The overall score was categorized as follows:

- Satisfied: ≥ 75% of total score.

- Un satisfied: < 75 % of total score.

Validity of the tools: The data collection instruments were examined by three panels of obstetrics and gynaecological nursing specialists from Benha University's Faculty of Nursing in order to assess content validity. The questionnaire was updated in response to comments in order to improve sentence construction and guarantee that the content was appropriate.

Reliability of the tools: Using the Cronbach's Alpha coefficient test, reliability was assessed. Results indicated that the student knowledge assessment questionnaire had an internal consistency of 0.81, the observational checklist had an internal consistency of 0.84, and the cooperative Jigsaw opinion sheet had an internal consistency of 0.80.

Ethical considerations: The study approval was obtained from Scientific Research Ethical Committee at faculty of nursing in Benha University before starting the study (ethical code was 75). The researcher was clarified the aim of the study to each student nurse who participated in the study before applying Jigsaw learning method and starting data collection to gain confidence and trust. Oral consent was obtained from each student nurse before participate in the study. A letter of approval was sent to the director of Technical Nursing Institute, Benha University included the aim and the setting of the study. The study tools were ensuring that the study didn't touch participant's dignity, culture, traditional and religious aspects and didn't cause any harm for any participant during data collection. Also didn't include any immoral statements and respect human rights. All tools of data collection were burned after statistically analysis to promote confidentiality of the study.

Pilot Study: A pilot study was carried out on 10 % of the total sample size (6 students) to test the clarity, feasibility and applicability of tools. Also, assess study setting, availability of essential equipment and tools content validity according to statistically analysis of a pilot study and to estimate the time needed for data collection. According to results of the pilot study no modifications were carried out. Thus, students involved in the pilot study were excluded in the main study sample.

Field work: The researcher started by explaining the study's aim to the participants and giving the students the assurance that the information collected would be kept confidential. The following phases are used to finish the study: Preparatory phase, Interviewing and Assessment phase, planning phase, implementation phase and evaluation phase.

Preparatory phase: It was first phase of study and included reviewing current, past, local national and international advanced related literatures to be guided in the process of tools designing for data collection. Finally, the researcher conducted the pilot study to ascertain content validity of the tools.

Interviewing and Assessment phase:

-The study was conducted from the beginning of October 2023 to the beginning of January 2024 (three months).

-According to the second-year students' academic schedule table, the researcher visited the aforementioned location twice a week (on Saturday and Sunday) from 9 a.m. to 2 p.m.

-The researcher distributed a structured self-administered questionnaire (tool I-part 1) to assess the students' general characteristics. The researcher distributed student's knowledge assessment questionnaire (tool I- part 2 pre posttest) to evaluate the students' theoretical understanding of the second stage of labor at the Technical Nursing Institute.

Finally, observational checklists (tool II- pre posttest) was employed by the researcher to assess the practical performance of the students at the Technical Nursing Institute in the second stage of labor and the instruments were gathered at the end of the day.

Planning phase:

-The control group was taught "Lectures" using the traditional method. The researcher created a theoretical content "handout" that the students were to receive.

-It began by gathering all the facts about the jigsaw strategy concept, primary goal, and methodology. The study participants' goals in relation to the second stage of labor were established by the researchers.

-According to the results of pretest assessment of students' knowledge and practice related to second stage of labor, the sessions number and content were determined.

Implementation phase: Students in both study and control groups underwent a number of practical and theoretical sessions, with each session lasting from 60-90 minutes.

A- For the control group (lecture group) regarding theory:

-Over the course of a week, the researcher conducted two learning sessions for the control group, delivering lectures in power point presentations.

For control group regarding practice:

-The researcher presented the scientific content of the two procedures (handling and episiotomy) in the lab of the Technical Nursing Institute at Benha University using the required equipment.

-The students were divided into five groups of six students. Each group engaged in two practical sessions over the course of a week, for a total of ten sessions over five weeks.

B. For study group (Jigsaw group) regarding theory:

-Four learning sessions were conducted throughout the two-weeks (2 sessions per week) adopted from [18, 19]. as following:

Session 1: (orientation Session):

-. First, through a lecture using power point, the researcher presented the jigsaw as a learning method, including concept, objectives, steps and advantages.

-The researcher split the class into five groups, each with six students.

-A team leader from students was assigned to each group.

- There were six distinct subtopics within the second stage of labor lectures.

-. Each student of the jigsaw group was assigned for one sub-topic.

-After that, the students in each of the six jigsaw groups who were assigned to the same subtopics came together to create "expert groups."

- The groups were told to read extensively, prepare the topic thoroughly and read more than just the handout.

-Before students began discussing prepared subtopics in front of groups, the researcher made sure that all of the information was correct and could be clarified.

Session 2: (Expert groups discussion):

-The expert group worked together discussing topics.

Session 3: (jigsaw groups discussion):

- To introduce the subtopic to the other students, the students went back to the jigsaw group.

-To facilitate the entire procedure, the researcher moved between groups.

Session4: (cooperative learning):

- One student from each "jigsaw group" was chosen at random to teach a certain subject to the entire class during the most last session.

-The students were encouraged to ask questions.

For study group (Jigsaw group) regarding practice:

Session 1: (orientation Session).

-First, the researcher gave the students an oral presentation in which discussed the jigsaw as a learning approach, including its concept, goals, steps, and advantages.

"-" Both "handling and episiotomy" procedures were included in the clinical contents.

-Every member of the jigsaw group was given a subtopic.

-The students who were placed in each of the five jigsaw groups for the same subtopic gathered to create "expert groups."

"-" The groups were told to prepare for the procedures by viewing videos, and doing more reading than what was on the handout.

Session 2: (Expert groups discussion):

-The researcher made sure that every step of the student-prepared procedures was correct.

-The expert group demonstrated and redemonstrated the procedures and students took notes and asked the researcher any questions.

Session 3: (jigsaw group discussion):

- The students went back to jigsaw groups to demonstrate the process to other students.

-The researcher moved between groups and assisted with the procedure.

Session 4:

- One participant from each "jigsaw group" was chosen at random for the final session, and were instructed to carry out a specific procedure in front of the class.

-The researcher also answered any questions about specific phases in the procedures.

Evaluation phase:

-Using the tool (I) part two (students' knowledge assessment questionnaire) and tool II (observational checklist), all students in both groups were evaluated for theoretical and practical achievement related to the second stage of labor immediately after the study.

-The study group's opinions regarding the jigsaw approach as a learning strategy were finally evaluated by the distribution of the cooperative jigsaw opinion sheet (tool III).

Statistical design: Data were verified prior to computerized entry. The Statistical Package for Social Sciences (SPSS version 20.0) was used. Descriptive statistics were applied (e.g., mean, standard deviation, frequency and percentages). Tests of significance (chi square, fisher exact test, independent t test, Pearson correlation and coefficient test) was applied to test the study hypothesis.

- No statistically significant difference was considered as p-value > 0.05

- A statistically significant difference was considered as p-value $p \leq 0.05$

- A highly statistically significant difference was considered as p-value $p \leq 0.001$.

Limitation of the study:
The execution of sessions and the interviewing of nursing students were occasionally delayed since many nursing students were preoccupied with lectures during the data collecting period.

3. Results

Table (1): explains 63.3% of the control group, with a mean age of 19.36 ± 0.49 years, and 80.0% of the study group, with a mean age of 19.30 ± 0.70 years, were from urban areas; additionally, less than two thirds (60.0%) of the study group and less than three quarters (63.3%) of the control group were female.

Table (2): demonstrates that prior to adopting the Jigsaw learning strategy, there was no statistically significant difference between the mean scores of the two groups' total knowledge concerning the second stage of labor and episiotomy (P > 0.05). However, there was a statistically significant difference between the study and control groups following the Jigsaw learning method's use (P < 0.05).

Table (3): demonstrates that prior to utilizing the Jigsaw learning strategy, there was no statistically significant difference in overall handling and episiotomy procedure between the study and control groups (p > 0.05). However, following the implementation of the Jigsaw learning technique, there was a statistically significant difference between the study and control groups (P < 0.05).

Table (4): demonstrates that there was a highly statistically significant positive correlation between the overall knowledge score and the total practices scores in both groups before and after the implementation period (P < 0.001).

Figure (1): Illustrates that after using the Jigsaw learning approach, 90% of the study group scored higher overall on knowledge of the second stage of labor and episiotomy than the control group, which scored 70%.

Figure (2): clarifies that after using the Jigsaw learning technique, more than three quarters (86.7%) of the study group had satisfactory practice in terms of overall handling and episiotomy procedure, compared to the control group (66.7%).

Figure (3): Shows that 13.3% are dissatisfied with the study group, compared to more than three quarters (86.7%) are satisfied with the Jigsaw learning technique.

Table (1): Distribution of the studied sample in both groups according to general characteristics (n= 60).

General characteristics	Study group n=30		Control group n= 30		X2/FET	p-value
	No	%	No	%		
Age in (years)						
19-	24	80.0	19	63.3	5.63 €	0.072
20-	4	13.4	11	36.7		
21-	1	3.3	0	0.0		
22	1	3.3	0	0.0		
Mean ± SD	19.30 ± 0.70		19.36 ± 0.49		t= 0.426	0.671
Gender						
Male	١٢	٤٠.٠	١١	٣٦.٧	0.٠٧١	0.٧٩١
Female	١٨	٦٠.٠	١٩	٦٣.٣		
Marital status						
Un married	30	100.0	28	93.3	2.06	0.150
Married	0	0.0	2	6.7		
Residence						
Rural	8	26.7	12	40.0	1.20	0.273
Urban	22	73.3	18	60.0		

No Statistically significant (P>0.05)

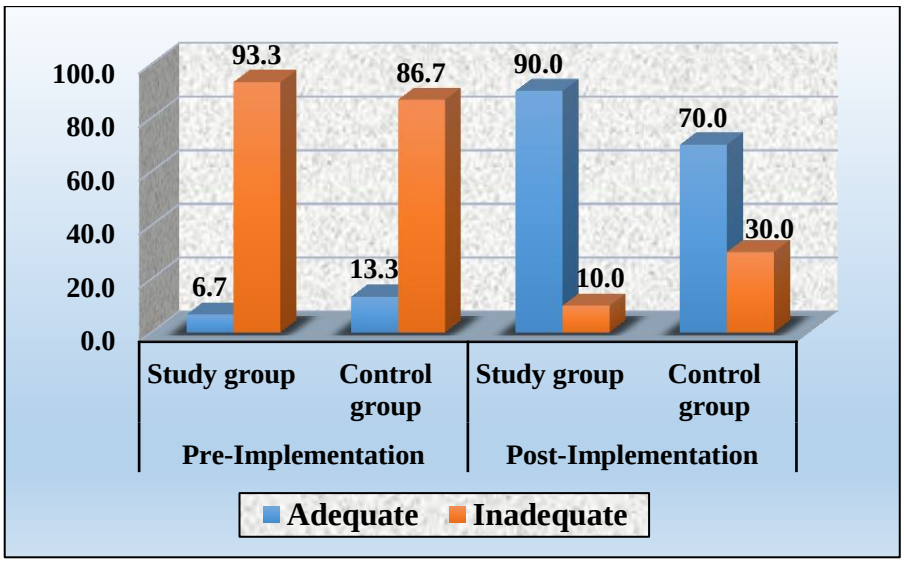

Fig. (1) Distribution of the studied sample in both groups according to level of total knowledge regarding the second stage of labor and episiotomy at pre and post implementation (n=60).

Table (2): Distribution of the studied sample in both groups according to level of total knowledge regarding the second stage of labor and episiotomy at pre and post implementation (n=60).

Knowledge sections	Pre-implementation					Post-implementation				
	Study group n=30		Control group n=30		X2 p-value	Study group n=30		Control group n=30		X2 p-value
	No	%	No	%		No	%	No	%	
Total knowledge score regarding the second stage of labor										
Adequate	3	10.0	2	6.7	0.218 0.640	27	90.0	21	70.0	3.75 0.05*
Inadequate	27	90.0	28	93.3		3	10.0	9	30.0	
Total knowledge score regarding episiotomy										
Adequate	4	13.3	3	10.0	0.162 0.688	26	86.7	19	63.3	4.35 0.03*
Inadequate	26	86.7	27	90.0		4	13.3	11	36.7	

No Statistically significant (P>0.05) ***Statistically significant (P≤0.05)**

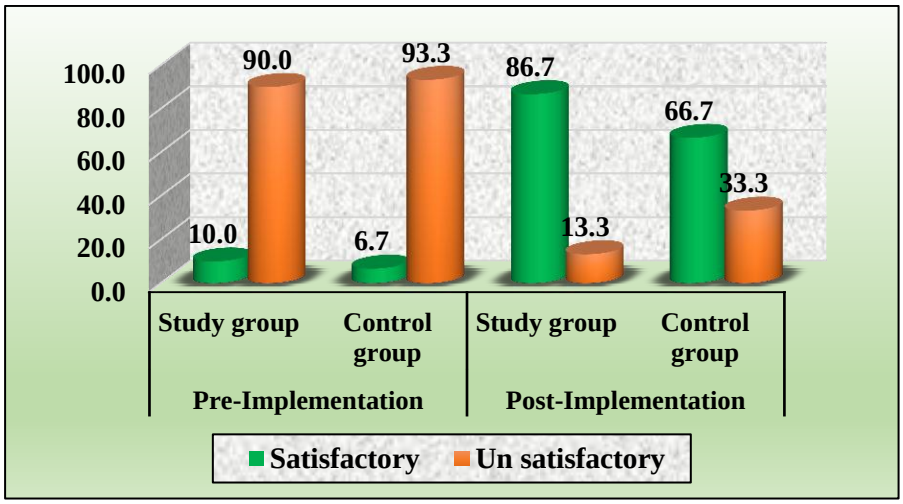

Fig. (2) Distribution of the studied sample in both groups according to level of total practices regarding handling and episiotomy procedure at pre and post implementation (n=60).

Table (3): Distribution of the studied sample in both groups according to level of total practices regarding handling and episiotomy procedure at pre and post implementation (n=60).

Practices sections	Pre-implementation					Post-implementation				
	Study group n=30		Control group n=30		X2 p-value	Study group n=30		Control group n=30		X2 p-value
	No	%	No	%		No	%	No	%	
Total practices score regarding handling procedure										
Satisfactory	1	3.3	2	6.7	0.351 0.554	28	93.3	21	70.0	5.45 0.02*
Unsatisfactory	29	96.7	28	93.3		2	6.7	9	30.0	
Total practices score regarding episiotomy procedure										
Satisfactory	3	10.0	2	6.7	0.218 0.640	27	90.0	21	70.0	3.75 0.05*
Unsatisfactory	27	90.0	28	93.3		3	10.0	9	30.0	

No Statistically significant (P>0.05) ***Statistically significant (P≤0.05)**

Table (4): Correlation coefficient between total knowledge and total practices scores in both groups at pre and post implementation phase (n=60).

Groups	Total knowledge score							
	Study group n= 30				Control group n= 30			
	Pre implementation		Post implementation		Pre implementation		Post implementation	
Variables	r	P-value	r	P-value	r	P-value	r	P-value
Total practices score	0.446	0.000**	0.501	0.000**	0.423	0.000**	0.489	0.000**

****A high statistically significant difference (P ≤ 0.001).**

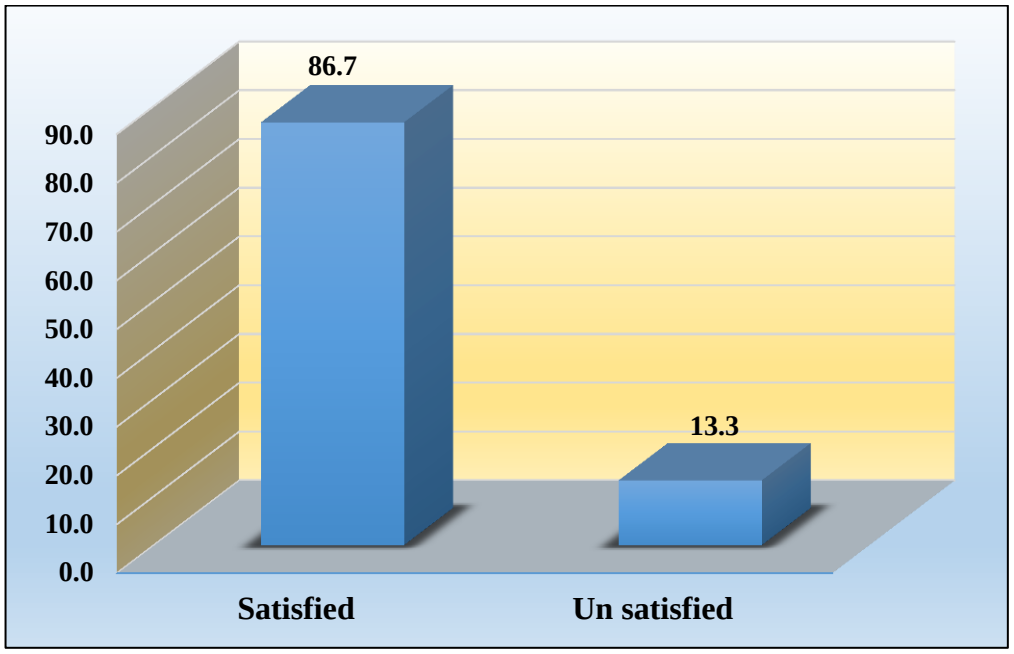

Fig. (3): Distribution of the students in study group according to total opinions regarding Jigsaw learning strategy (n=30).

4. Discussion

The second stage of labor, which lasts from full cervical dilation until fetus delivery, is when the fetus is evacuated. It includes the delivery of the head, shoulder [3].

The application of the Jigsaw learning method for nursing students during labour was expected to enhance labour consequences and increase nursing students' level of satisfaction, self-confidence, knowledge and practice. In addition, nursing is a stressful profession due to requirements of woman's care which requires a high degree of self-confidence and skills [20].

General characteristics of the studied sample, knowledge of the studied sample regarding the second stage of labor, practices of the studied sample regarding the second stage of labor, students' satisfaction with the Jigsaw learning strategy in the study group, and the correlation between the total knowledge scores and the total practices scores among the studied sample comprised the five main sections that presented the current study's findings.

Regarding general characteristics of the studied sample, the results of this study showed that over half of the sample was female, nearly three-quarters of the sample was from an urban region, and over two-thirds of the control group and over three-quarters of the study group were between the ages of 19, with mean ages of 19.36 ± 0.49 and 19.30 ± 0.70 years, respectively. Furthermore, no discernible change in general features was seen between the study and control groups.

This result is similar to a study performed by [17] who studied *"Utilization of Jigsaw Cooperative Learning Strategy on Maternity Nursing Students' Attitude and Achievement"* and showed that, there were no statistically significant differences regarding the sociodemographic traits of the groups under study ($P > 0.05$).

Regarding the study sample's knowledge of the second stage of labor in both groups before and after implementation, the current study's findings showed that there was no statistically significant difference between the study and control groups for any of the knowledge items pertaining to the second stage of labor prior to the Jigsaw learning method's implementation. Following the use of the Jigsaw learning approach, there was a statistically significant difference between the study and control groups in all knowledge items pertaining to the second stage of labor.

This result may be due to the learning sessions and the straightforward explanations provided to the students and nursing students were highly engaged.

The current finding was supported by the findings of [21] who studied "*Effect of Jigsaw learning Strategy on Maternity Nursing Students' Attitude and Achievement*" and reported that pre-intervention theoretical achievement did not differ statistically significantly between the control and study groups, but post-intervention exams showed a statistically significant difference between the two groups.

Also, this result is consistent with [22] who studied "Jigsaw Cooperative Learning Strategy: An Effective Tool for Improving Maternity Nursing Students' Achievement, Retention and Self Confidence" and found that the study group performed better than the control group on the midterm and final exams for maternity nursing in labour. However, a highly significant difference was obviously monitored involving the two groups in relation to knowledge score midterm and final exam.

According to the researcher opinion, these findings may be similar because students focused on creating lecture materials that prompted deep thought, increased inspiration, and made easier for students to reflect on understanding of maternity care.

Regarding nursing students' practice during second stage of labor, the results reveal that prior to the use of the Jigsaw learning method, there was no statistically significant difference between the study and control groups in terms of handling and episiotomy practices On the other hand, there was a statistically significant difference between the study and control groups based on handling and episiotomy behaviors following the Jigsaw learning technique Nursing students' enthusiasm for the training and the benefits of the Jigsaw learning approach may be the cause of this outcome.

This result is similar to [23] who studied *''Evaluating the impact of Jigsaw (Puzzle) cooperative learning model as a new model of education on clinical competency of nursing students''* The results revealed that Students' skills effectively improved with the Jigsaw learning method.

Regarding the study group's students' satisfaction with the Jigsaw learning strategy, the findings showed that over three-quarters of the study group were satisfied with the Jigsaw learning strategy, while less than one-quarter of the students were not. According to the researcher opinion, students who took part in the study found cooperative activities enjoyable as strengthened relationships with classmates, minimized group conflicts, boosted self-worth and made students feel less anxious and more motivated to learn.

This result agrees with [24] who studied "*The Development of Cooperative Learning Using Jigsaw Activities for Learning Achievement and Self-directed Learning Behaviors of Nursing Students*" and stated that Jigsaw improved teamwork, critical thinking, and peer interaction.

According to the current findings regarding the correlation coefficient between the two scores there is a highly statistically significant positive correlation between the total knowledge score and the total practices scores in both groups before and after the implementation phase. The high level of knowledge and practice had by the students who demonstrated a

high level of cooperative learning may be the cause of this. This result is similar with [18,19] who studied *"Effect of Jigsaw Learning Strategy on Maternity Nursing Students' Theoretical and practical Achievements"* on 150 students and revealed that total knowledge scores and total practices scores in both groups before and after the intervention showed a high statistically significant positive association ($P \leq 0.000$).

5. Conclusion

The present study's findings concluded that the Jigsaw learning approach was more successful than lectures in raising the theoretical and practical proficiency of technical nursing institution students with relation to the second stage of labor. Furthermore, based on overall perceptions of the Jigsaw learning approach, the majority of students expressed satisfaction. Consequently, the study's goal was accomplished and hypothesis was validated.

6. Recommendations

-Using the Jigsaw learning approach in the construction of curricula in the fields of obstetrics and gynecology.

- Further research is needed to study the effect of Jigsaw learning strategy on clinical achievement, also and to explore the obstacles hindering the implementation of the Jigsaw learning strategy in nursing education.

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