

The Effect of Clinical Pathway Implementation on Nurses' Performance and Maternal Outcome among Postnatal Mothers with Vaginal Delivery

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Abstract

Background: A clinical pathway is an integrated care plan designed with the required and time-bound care by the multidisciplinary team to shorten the period of hospitalization, for example, enhance cost-effectiveness, patient outcome, and degree of satisfaction. **Aim:** To assess the effect of clinical pathway implementation on nurses' performance and maternal outcome among postnatal mothers with vaginal delivery. **Design:** The study was conducted using a quasi-experimental pre-post-test and post-test design with one group. **Settings:** This study was applied in the postnatal department affiliated with Zagazig University Hospital. **Sample:** This study involved a purposive sample of 100 postnatal mothers and 50 maternity nurses. **Data collection tools:** Demographic data assessment sheet for the nurses, Assessment knowledge questionnaire of nurses regarding clinical pathway and clinical pathway checklist, complication assessment rating scale, satisfaction rating scale. **Results:** Maternal nurses' knowledge of all components of the postpartum clinical pathway improved after the intervention, as evidenced by higher knowledge and performance scores for nurses' improvement than pre-intervention. This difference between pre and post-implementation of the clinical pathway was statistically significant. In addition, the postnatal mothers with vaginal delivery satisfaction have improved in the clinical pathway group compared to the control group. **Conclusion:** it was concluded that using clinical pathways had a positive impact on maternity nurses' performance and the satisfaction of postpartum mothers who had vaginal deliveries post-implementation compared to pre-implementation. **Recommendations:** To enhance nurses' performance, a postpartum care training program for maternity nurses should be implemented, based on the clinical pathway.

Keywords: Clinical pathway implementation, Maternal outcome, Nurses' performance, Postnatal mothers, Vaginal delivery

Introduction:

All of us hope to experience pregnancy at least once in our lifetimes. It is a time of hopeful waiting. Concerns regarding postpartum care and increased rates of delivery interventions are being expressed widely in the western world. A clinical pathway is an integrated treatment plan that is timed and framed with the essential care by a multidisciplinary team to shorten the period of

hospitalization, say, improve patient outcomes, and be more cost-effective. To raise the degree of satisfaction and assess the mother's result, a clinical pathway to support the postnatal period through important therapies with a set of timely, structured care is necessary (Busse et al., 2019).

The practice of midwifery involves providing care to women who are anticipating children throughout their pregnancy, labor, and postpartum time. They also help the

mother breastfeed and care for the newborn. Menopausal care, annual gynecological exams, family planning, basic care, and well-woman care associated with reproductive health should be made available to women in addition to providing treatment for pregnant and postpartum women (Abd El-Hay, 2019).

Women who gave birth naturally typically stayed in the hospital for one day after giving birth, while those who gave birth using an instrument stayed for one to two days and those who gave birth via cesarean section stayed from two to four days. 14% of women also underwent episiotomy (2004-2006). As a result, encouraging a natural style of birth can shorten the time that laboring women must stay in the hospital. The midwives' postpartum care includes teaching women about genital hygiene, breastfeeding, caring for babies, and healthy eating habits for moms to 24.3%, 16.2%, and 29.7% of postpartum women (United Nations Transforming our world, 2018). It is essential to create standards of care and suitable evaluation methods for the nurses to ensure that the professional components of assurance and attention will be given to each client's particular requirements and answers. Standards of care are divided into two categories: internal standards and external standards. One type of internal standard in this is the clinical pathway, which can be designed in accordance with institutional (Abd El-Razek, 2018).

An integrated treatment plan called a clinical pathway is developed by a multidisciplinary team with the necessary and prompt care to, for instance, decrease hospital stays, improve patient outcomes and level of satisfaction, and analyze maternal outcomes. The clinical pathway idea was introduced by Zander and Bower in 1985 at the New England Medical Center in Boston, USA. Clinical pathways arose as a result of the Standard Operating Procedures (SOPs), which are used in industrial quality control, being modified to have a high level of resource efficiency and to end at a particular time. A study on the assessment of care of clinical pathways was carried out by De Luc

(2001). inside the British National Health Service Trust using a quasi-experimental design. This article compares the clinical treatment provided and patients' both pre to (the control group) and following the introduction of the two paths, as well as the opinions of the staff members engaged in the pathway's development and management. These two clinical clients were hospitalized, and their levels of satisfaction were determined before and after the application of the approach. It demonstrates the rise in client satisfaction following the difficulties with pathway implementation (Abd El-Razek, 2018).

During the clinical exposure, the researcher studied the obstetric customers' existing nursing practices during their prenatal, intranatal, and postnatal phases. The nursing care was not prompt, which the researcher found to be the cause of the mothers' puerperal difficulties while they were hospitalized. As a result, the researcher was drawn to the idea of creating a clinical pathway for the postnatal period that included prompt treatment to avoid nurse-related pain points and interventions (Abd El-Hay, 2019).

For high-risk care, clinical pathways are more frequently employed to improve maternal and newborn outcomes. A maternal and newborn clinical pathway in the United States enhanced interprofessional collaborative methods for reviewing treatment, but it did not affect stay length or cost. Clinical pathways—also referred to as Critical routes, interdisciplinary pathways, collaborative paths, or care maps—are a method for applying evidence-based practice to good care tracts to create standards for protocols and best practices. Clinical pathways are commonly considered as offering important information about particular patient types and their care, as well as offering practical advice for clinical practice. Clinical pathways reportedly exist among 80% or more of hospitals (Kinsman et al., 2017).

Nurses benefit from the use of clinical pathways as a tool for socialization and treatment process evaluation (Wijayanti et al, 2016). Any pathway's planning,

implementation, and ongoing review should involve nursing professionals. The nurses must be aware of their responsibilities and make sure that clinical routes reflect best practices and excellent patient care. Sharing in the formulation of the clinical pathway is the first step in the nurses' significant role in all elements of the pathway. Also, nurses are in charge of starting the pathway on the right patients and making sure that all of the anticipated events take place (Evans et al., 2014).

Significance of the study:

Clinical pathways are useful methods for minimizing clinical practice variability, maximizing patient outcomes, and increasing therapeutic efficacy. By providing recommendations for a given condition's local applicable therapy, they can provide secure, evidence-based care (Busse et al., 2019). The staff nurse is a key player in the success of clinical care pathways implementation, but the best organizing and implement clinical pathways can increase the quality of nursing care by boosting nurses' knowledge and practice with the specific team about patient management (Abd El-Hay, 2019). There is a dearth of literature on clinical routes in maternity care, most of which are opinion pieces and descriptions of how these pathways are implemented. There are also relatively few primary research investigations (Abd El-Razek, 2018).

In the current healthcare environment, the majority of patients rely on their insurance or their healthcare benefits from accredited organizations. In Tamil Nadu, a large number of hospitals work in tandem with insurance companies to treat patients using insurance. For insurance companies to prevent malpractice, procedures, and schedules are evidence. Clinical Pathway assists in minimizing variation enhancing the standard of care and defending institutions and practitioners in malpractice lawsuits. Hence, the researcher aims to shorten the duration of stay by delivering care correctly after delivery, and enhances the degree of satisfaction and mother results by framing the clinical Pathway (Kinsman et al., 2017). Here

the researcher developed the research to assess the effect of clinical pathway implementation on nurses' performance and maternal outcome among postnatal mothers with vaginal delivery.

Operational Definitions

Effect:

Effect in this study refers to the variation in knowledge and practice scores between the pre-test and post-test for the study group of nurses (the control group) and the group of postnatal moms who gave birth vaginally (the study group). By contrasting the control and clinical pathway groups, the effect is also assessed through the outcomes for the mothers concerning their length of stay, the avoidance of problems, and their satisfaction.

Clinical pathway:

It is an algorithm created by the researcher that the nurse would use as a reference for giving mothers postnatal care from one hour to 48 hours following vaginal birth. Theoretically, complicated involvements with the finest recommendations and evidence for a certain circumstance were described as clinical pathways. In the meantime, It is a multidisciplinary care plan that outlines the steps to take in what sequence and when to achieve the intended patient outcomes and organizational goals for quality, cost, patient happiness, and efficiency. (Lin et al., 2019).

Postnatal mother

For 48 hours after giving birth to a live infant naturally through labor and delivery with assistance, a mother is considered to be a postnatal mother.

Vaginal delivery:

Refers to the delivery of the placenta and the delivery of the fetus via the vagina with spontaneous rupture of the membranes, full cervical dilatation (10 cm), and strong contractions either naturally or with assistance using forceps and suction.

Knowledge:

The researcher used a structured knowledge questionnaire on the clinical

pathway to assess the level of nurses' knowledge and awareness of the clinical pathway for postpartum moms who give birth vaginally.

Practice:

It is nursing care given by nurses to postpartum moms, and the researcher assesses compliance with the clinical pathway using a clinical pathway practice checklist.

Clinical pathway for postnatal mothers:

It includes a collection of activities developed by the researcher based on Hedersinberg's 14 fundamental needs, such as immediate assessment, oxygenation, nutrition, urination, position, rest, comfort, regulatory functions, safety, communication, spirituality, activity, Diversional needs, health teaching, and discharge planning to provide nursing care for postpartum mothers who had vaginal deliveries between one hour and 48 hours after delivery (De Bleser, 2016).

Outcome

The length of hospital stays, complications avoided, and mothers' satisfaction with nursing care both before and after the clinical pathway are all discussed in this study.

Aim of the study:

To assess the effect of clinical pathway implementation on nurses' performance and maternal outcome among postnatal mothers with vaginal delivery

Study Hypotheses:

- After the intervention, maternity nurses will be more knowledgeable about the postpartum clinical pathway than they were before.

After the intervention, maternity nurses will be better able to provide postpartum care utilizing a clinical approach.

- Postnatal mothers who will receive postpartum treatment in accordance with the clinical pathway will be happier than those who would receive standard care.

Patient and Methods

Study Design:

The study was conducted using a quasi-experimental pre-post-test and post-test design with one group.

Study Settings:

This study was conducted in the Zagazig University-affiliated postnatal department. These locations were chosen because they serve the largest region of the population across all areas and have a high prevalence of postnatal mothers

Sample:

The study's sample size was 50 nurses who had previously worked in the environment, and it used non-probability to enroll 100 postpartum mothers. Following the following inclusion criteria, postnatal mothers were divided into two equal groups, one of which (the study group) got postnatal clinical pathway care (50 postnatal mothers), while the other (the control group) merely received regular hospital care (50 postnatal mothers).

- No difficulties for the mother or the fetus.

- Women who give birth vaginally normally.

- Accept the study's invitation to participate.

A sample size

With 80% power, a significance threshold of 0.05, and a 95% confidence interval, the sample size was calculated using the two-proportion formula. Assuming a 30% non-response rate, a minimum sample size of 50 nurses and 100 **postnatal mothers** was predicted to be necessary. To choose samples for this investigation, systematic sampling was done with a ratio of 1:2 using the formula: Sampling fraction = $n/N = 100$.

Independent variables:

The postnatal mothers' clinical pathway for vaginal birth served as the study's independent variable.

Dependent variables

The outcome of the postnatal mothers and the nurses' knowledge and practice were the dependent variables in this study.

Data collection tools:

Tool I: Demographic data assessment sheet for the nurses

Demographic data for nurses include age, educational status, residence, years of experience, and previous information regarding the Clinical pathway.

Tool II: A structured interviewing questionnaire for the postpartum mothers' Demographic data for postnatal mothers

Part (1): Demographic data for postnatal mothers consisted of age in years, education, occupation, and residence.

Part (2): Obstetrical data for postnatal mothers

Obstetrical history among postnatal mothers includes gestational weeks at the time of delivery, mode of delivery, and complications during pregnancy.

Clinical Pathway Development: Henderson established 14 fundamental requirements for the patient, which make up the elements of nursing care. The following needs are some of these. Based on Henderson's premise of satisfying 14 fundamental needs, a clinical pathway was created for postnatal mothers. It covered the following topics: instant evaluation, oxygenation, nourishment, urination, the patient's position, sleep and rest, mobility and comfort, regulating function, personal hygiene, communication, activity, safety, spiritual needs, diverse needs, health education, and discharge plan. To offer care from one hour to 48 hours following vaginal delivery, the staff nurse was instructed to adhere to the clinical pathway for postnatal mothers. Experts in obstetrics and gynecology validated the provided clinical pathway to ensure its authenticity in terms of

content. According to the advice of the experts, the content was changed.

Tool III: Assessment knowledge questionnaire of nurses regarding clinical pathway for postnatal mothers with vaginal delivery

With careful consideration of the language, clarity, arrangement, and order of the items, a structured questionnaire was created. These are the options for the questions that were posed. It has 25 multiple-choice questions that test your understanding of clinical pathways, early and late postnatal care, neonatal care, and health education. Answers to queries with a single correct response are up to the nurses. Every right answer received a score of "1," whereas every wrong answer received a score of "0." Using a standardized questionnaire, a total score of 25 was obtained. Three degrees of knowledge were derived from the knowledge scores

Scores	Percentage	Interpretation
12.5	≤50%	Inadequate knowledge
12.6-18.75	51-75%	Moderately adequate knowledge
18.76-25	≥76%	Adequate knowledge

Tool IV: Clinical pathway practice checklist

It addresses the following topics: immediate evaluation, regulatory processes, oxygenation, nutrition, lochia nature, uterine involution, ejection, position, rest, comfort, personal hygiene, communication, activity, safety, various requirements, health education, and discharge plan with compliance and noncompliance levels.

Scores	Percentage	Interpretation
125	≤50%	Non-Compliant
125.01-187.5	51-75%	Partially compliant
187.51 -250	≥76%	Compliant

Tool V: Satisfaction rating scale:

It includes elements like the setting,

comfort, nursing attention, nutrition, elimination requirements, activity, rest, position, personal hygiene, safety, spiritual need, communication, family health education, and discharge plan. Ratings are given on a scale from low to high satisfaction.

Scores	Percentage	Interpretation
10		≤50%
11-15		51-75%
16-20	≥ 76%	Highly satisfaction

Tool IIV: Rating scale on maternal outcome

It includes controlling processes, nutrition, oxygenation, lochia nature, uterine involution, ejection, rest, comfort, position, personal hygiene, communication, activity, various needs, safety, health education, and discharge plan with various from slight issues to significant complications.

Scores	Percentage	Interpretation
14	≤50%	Major complication
14.01-21	51-75%	Minor complication
21.01-28	≥ 76%	No complication

Tool Validity:

Seven specialists in the field of obstetrics and gynecology were consulted to determine the content validity of the instrument. The clinical route checklist and rating scale received several specific improvement suggestions from the Validators. With the modification and advice of experts, the final version of the structured knowledge questionnaire for nurses regarding the clinical pathway of postnatal mothers who gave birth vaginally, the clinical pathway practice rating scale, and the rating scale to assess the level of satisfaction of postnatal mothers and their outcome were prepared. The specialists in the fields of nursing and

research were given clinical pathway tools, observational checklists, and knowledge questions for validation. Tools were adjusted based on the advice provided by experts.

Tool Reliability:

Using Pearson's correlation formula, the dependability was determined.

Nurses' structured knowledge test score: 0.87 (test-retest method)
 Low satisfaction
 Moderately satisfaction

The rating scale for postpartum mothers' satisfaction: 0.95 (test-retest method)

Clinical pathway practice checklist: 0.87 (inter-rater technique)

Maternal Outcome Rating Scale: 0.85 (test-retest method)

Administrative design:

Before beginning the study, a formal letter asking for approval from the Director of the study setting to the Dean of the Faculty of Nursing, Zagazig University, was received. This letter was part of the study's strategy to secure support and cooperation for data gathering.

Ethical considerations:

Before beginning the study, the researchers obtained approval from the postnatal mother and maternity nurse, according to the Faculty of Nursing Ethical Research Council. reassured them that the data acquired would be private, secure, and secret. They had the option to opt out of the study at any time and without providing a reason because participation was voluntary.

A pilot study:

To check for clarity, application of the tools, and time required for completion, the pilot study was carried out on 10% of the entire sample (5 nurses and 10 postnatal moms). The necessary alterations were made in accordance with the pilot study's findings. The study's

overall sample didn't include this pilot study sample.

Data collection procedure:

Following approval by the ethical committee, the researcher received the medical director's approval to carry out the study in the previously chosen location. By using a technique called participatory observation, records, and staff nurses, the researcher was able to gather data. From 7 am to 7 pm, nurses were observed for a total of 12 hours each day. March 19 to May 19 of 2022 served as the data collection period. Between one hour and 48 hours after delivery, the postnatal mothers were evaluated. A total of 50 nurses were chosen by purposive sampling after the researcher approached them in all postnatal wards and got their verbal consent to participate in the study. established a connection with the nurses and informed them of the goals of the research that will be done on postnatal women who had vaginal deliveries.

Using a standardized questionnaire, pre-test knowledge of the clinical pathway for postnatal moms who had vaginal deliveries was evaluated by the nurses. Purposive sampling was used to choose 30 postpartum women who had vaginal deliveries, and existing nursing procedures were observed. The following nursing actions were obtained from the mother's records and the night shift personnel during the researcher's daily 12-hour nursing practice, which took place from 7 a.m. to 7 p.m.

With a rating scale, determine the maternal outcome and the degree of satisfaction with the current nursing practice. With the teaching program, the nurses learned about the clinical pathway and a list of care for postnatal women who had vaginal deliveries, and they put the clinical pathway into practice. 30 postnatal mothers were chosen by the researcher through purposive sampling. The same nurses were given the post-test questionnaire by the researcher after seven days of clinical pathway implementation and instruction, and their knowledge was evaluated. checked the outcome for the mother and her level of satisfaction with the rating scale while observing the nurse's

practice. The clinical pathway practice checklist was used to track compliance, partial compliance, and non-compliance activities.

Statistical analysis

Descriptive statistics, such as the mean, median, frequency, standard deviation, and percentage, were used to describe the demographic characteristics of the nurses and the mothers, the obstetrical variables for the mothers, the knowledge questionnaire for nurses on the pathway, and to evaluate the level of satisfaction and maternal outcome of the postnatal mothers with normal vaginal delivery. Independent and paired t-tests are inferential statistics. The difference between the experimental and control groups' maternal outcomes as well as the nurses' knowledge levels at the pre-and post-test was analyzed using an independent t-test. The relationship between the demographic and the maternal outcome and level of satisfaction, as well as the relationship between the obstetric factors and the maternal result and level of satisfaction, were both examined using the paired t-test.

Results:

The mean scores for each item on the clinical pathway practice checklist are shown in the information in **table 1** portrays that 76% of the nurses were under 21 years old and had no prior knowledge of the clinical pathway. 64% of nurses have a nursing diploma as their highest level of schooling, and 50% of nurses had more than four years of experience.

According to **Table 2**, all of the mothers in the control group had undergrad degrees (60%) and were employed (20%). A sizable portion of mothers (46%) is in the 21–25 age range. Most of the mothers in the clinical Pathway group were not working (70%). A significant percentage of mothers had graduate and postgraduate (46%).

92 percent of the mothers in the control group experienced no complications., gave birth between weeks 38 and 39 (72%),

and had a typical vaginal delivery (60%), according to **Table 3**. The majority of mothers in the clinical Pathway group birth their babies between weeks 38 and 39 (60%). Ninety percent of the moms had normal vaginal deliveries without any problems (100%).

The information in table 4 shows that postpartum women in the clinical Pathway and control groups both had 100% compliance with the activities, however, there was a difference in confidence between these groups. Later, it was debated using a significance **table 4**.

According to **Table 5**, 90% and 96%, respectively, of the nursing practice in the control group is compliance activities on Days 1 and 2. On Days 1 and 2, the majority of nurses in the Clinical Pathway group engaged in compliance activities.

According to Fig. 1, the majority of nurses (64%) were prepared for the test. Following the post-test, 96% of the nurses had adequate knowledge.

According to **Fig. 2**, the majority of postpartum women in the control group (70%) were extremely satisfied with the nursing care. Of the moms in the Clinical Pathway group, most (88%) expressed high levels of satisfaction with their nursing

Table 6: Shows that in the control group, it was found that 94% of the mothers had no issues at all. Nobody's mother experienced any difficulties in the Clinical Pathway group (100%)

The knowledge mean scores of nurses were higher after the exam ($M=26.35$, $SD=2.67$) than it was before ($M=16.73$, $SD=4.22$), as shown in **Table 7**. The clinical pathway was effective in helping the nurses work with postpartum women who had vaginal deliveries since the degree of confidence was 99.9%.

According to **Table 8**, the mean scores of the nurses' knowledge on the pre-test were lower than on the post-test. Regarding the

Clinical route, the level of confidence was 99.9%. The effectiveness of the clinical pathway on nurses working with postpartum women who had vaginal deliveries is seen in the table below.

Table 9 shows that the mean scores of the nurses' practice were higher after the clinical pathway was provided ($M= 243.6$, $SD= 7.89$) than they were prior ($M= 215.8$, $SD= 2.7$). The 99.9% confidence level demonstrates the efficiency of the clinical pathway for nurses working with postnatal mothers who had vaginal deliveries.

Table 10 shows that the clinical pathway group's mean scores of postnatal mothers' level of satisfaction ($M= 75.47$, $SD=6.28$) are higher than those of the control group ($M=68.6$, $SD=11.75$). The degree of confidence was 99%, demonstrating the impact of the clinical pathway on postnatal mothers' levels of satisfaction.

Table 11. For oxygenation, comfort, rest, personal hygiene, safety, spirituality, activity, various support, and health education, the level of confidence was 99.9% ($P 0.001$), and for instant evaluation, nutrition, and regulation, it was 99% ($P 0.01$ level).

When compared to the Clinical Pathway group ($M= 19.89$, $SD= 1.77$), **Table 12** demonstrates that the degree of satisfaction with relaxation, in the control group position, personal hygiene, safety, and spiritual need was low ($M= 16.88$, $SD=3.22$). It is clear from the 99.9% confidence level that the clinical pathway helps raise postnatal mothers' levels of satisfaction.

The maternal outcome of postnatal mothers in the clinical pathway group ($M= 0.89$, $SD=1.67$) is low when compared to the control group ($M=3.44$, $SD= 3.78$), which shows the clinical pathway group of mothers has not had difficulties. This information is shown in **Table 13**. The level of confidence was 99%, demonstrating the influence of the clinical pathway on postnatal maternal outcomes.

Table 1: Frequency and Percentage Distribution of Demographic Variables of Nurses (n=50)

Demographic Variables	N0	%
Age (in years)		
21-24	35	70.0
25-28	10	20.0
29-32	-	-
>32	5	10
Years of experience		
≤1	15	30
2	10	20
3	-	-
≥4	25	50
Educational Qualification		
Diploma in Nursing	32	64
B.Sc Nursing	18	36
Previous information regarding clinical pathway		
Yes	12	24.0
No	38	76.0
Residence		
Urban	30	60.0
Rural	20	40.0

Table 2 Distribution of Demographic Characteristics in the Control and Clinical Pathway Groups of Postnatal Mothers with Vaginal Delivery

Demographic Characteristics	Control group(n=50)		Clinical Pathway group(n=50)	
	No	%	No	%
Age (in years)				
21-25	23	46.0	20	40
26-30	20	40	20	40
≥30	7	14.0	10	20
Educational Qualification				
Primary	5	10	3	6.0
Secondary	12	24.0	10	20.0
Graduate	30	60	20	40.0
Postgraduate	3	6.0	18	36.0
Occupation				
Working	10	20.0	15	30.0
Housewives	40	80.0	35	70.0
Residence				
Rural	30	60.0	28	56.0
Urban	20	40.0	22	44.0

Table 3: Distribution of Obstetric data in the Control and Clinical Pathway Group of Postnatal Mothers with Vaginal Delivery

Obstetric data	Control group(n=50)		Clinical Pathway group(n=50)	
	No	%	No	%
Gestational weeks at delivered				
≤35	-	-	-	-
36-37	9	18.0	10	20.0
38-39	36	72.0	30	60.0
≥40	5	10.0	10	20
Type of delivery				
Normal vaginal delivery	32	64.0	45	90.0
Assisted vacuum delivery	18	36.0	5	10.0
Complications				
Yes	4	8	-	-
No	46	92.0	50	100

Table 4: Distribution of Nurses Practice in Control and Clinical Pathway group of Postnatal Mothers with Vaginal Delivery

Items	Control group(n=50)		Clinical Pathway group(n=50)	
	No	%	No	%
Compliant	50	100	50	100
Partially compliant	-	-	-	-
Non-compliant	-	-	-	-

Table 5: Distribution of Practice Scores of Nurses in Control and Clinical Pathway group of Postnatal Mothers with Vaginal Delivery

Practice Scores	Non-Compliant		Partially Compliant		Compliant	
	No	%	No	%	No	%
(1hr-24hrs)	5	10.0	45	90.0	50	100
(2hrs-4hrs)	2	4.0	48	96.0	50	100

Fig.1 Distribution of Pre and Post-test Knowledge Level among Nurses in Clinical Pathway

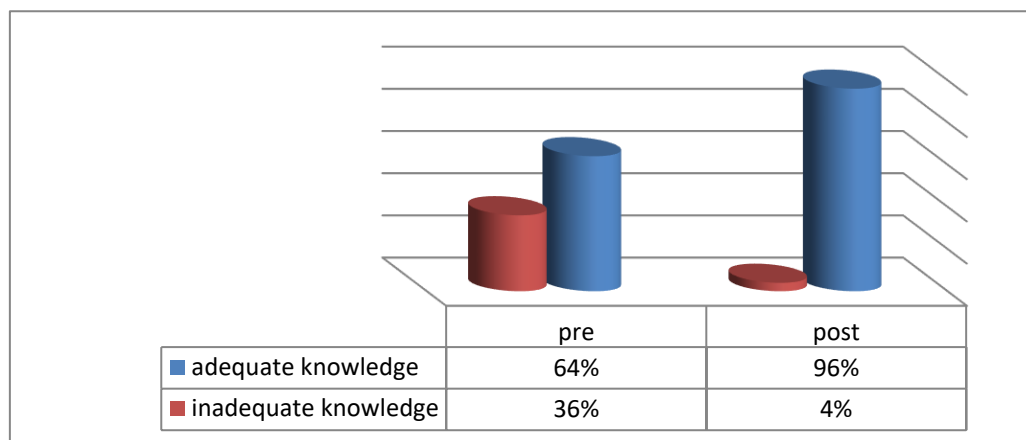


Fig.2 Distribution of Level of Satisfaction in Control and Clinical Pathway Group of Postnatal Mothers with Vaginal delivery

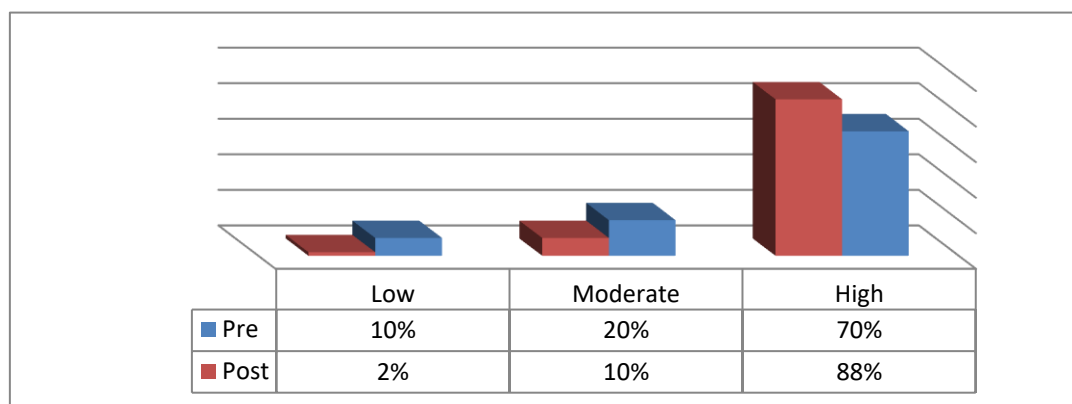


Table 6: Distributions of Maternal Outcome in Control and Clinical Pathway Group of Postnatal Mothers with Vaginal Delivery

Control group (n=50)			Clinical Pathway group (n=50)		
	no	%		no	%
Maternal outcome					
No complications	47	94.0	50	100	
Minor complications	3	6.0	-	-	
Major complications	-	-	-	-	

Table 7: Differences in Knowledge mean scores concerning Clinical Pathways for Postnatal Mothers with Vaginal Delivery

Knowledge scores	Mean	SD	't' value
Pre-test	16.73	4.22	13.79***
Post-test	26.35	2.67	

Table 8: Mean scores of Knowledge among Nurses regarding Various Aspects of Clinical Pathway on Postnatal Mothers with Vaginal Delivery

Knowledge Scores	Pre-test		Post-test		't' value
	Mean	SD	Mean	SD	
Clinical pathway	1.685	0.55	8.33	23.04	23.77***
Immediate and late postnatal care	7.84	0	10.44	0	4.658**
Newborn care	5.56	0.0001	7.6	0.567	0.324

Table 9: Comparison of Mean scores of Nurses Practice among Postnatal Mothers with Vaginal Delivery

Practice scores (1 hour -4 hours)	Mean	SD	't' value
Control group (n=50)	215.7	2.9	16.88***
clinical pathway group (n=50)	243.6	7.89	

Table 10: Comparison of Mean scores of Satisfaction Level in Control and clinical pathway Group of Postnatal Mothers with Vaginal Delivery

Satisfaction Level	Mean	SD	't' value
Control group (n=50)	68.6	11.75	3.069***
clinical pathway group (n=50)	75.47	6.28	

Table 11: Comparison of Mean Scores of Clinical Pathway on Various Dimensions of Nursing Care in Control and Clinical Pathway Groups of Postnatal Mothers with Vaginal Delivery

Clinical Pathway Components	Control Group(n=50)		Clinical Pathway Group (n=50)		't' value
	Mean	SD	Mean	SD	
Immediate Assessment	3	0	14.7	0.55	4.31**
Oxygenation	3.77	1.46	6.66	0.49	11.33***
Nutrition	8.5	0.83	8.7	0.6	5**
Elimination	3.87	0.79	5.66	0.43	0.89
Position	3.5	0.8	3.49	0.6	0.08
Rest	4	0.73	5	0	9.08***
Comfort	7.6	0.8	9.8	0.77	10.6***
Regulation	3.66	0.67	5	0	4.8**
Personal hygiene	6.88	0.66	8.7	0.56	18.6***
Safety	17.5	1.88	20.99	0.78	9.3***
Communication	6.4	0.62	60.66	0.59	0.66
Spiritual	3.07	0.22	4	0	9.8***
Activity	4.6	0.64	5.87	0.44	10.33***
Diversional Support	3.44	0.52	4	0	10***
Health Education	7.22	0.78	12	0	25.06***
Discharge plan	2.33	0.6	4	0	0.19

Table 12: Comparison of Mean Scores Satisfaction Level in Control and Clinical Pathway Group of Postnatal Mothers with Vaginal Delivery

Level of Satisfaction	Control Group (n=50)		Clinical Pathway Group (n=50)		't' value
	Mean	SD	Mean	SD	
Environment					
Comfort	15.93	3.77	18	1.44	2.88
Nursing Care					
Nutrition					
Elimination	16.3	2.8	17.67	2.03	2.4
Activity					
Rest, Position					
Personal Hygiene	16.88	3.22	19.89	1.77	3.43**
Safety, Spiritual need					
Communication					
Family Involvement	16.23	3.48	18.06	2.87	2.25
Health Education					
Discharge Plan					

Table 13: Comparison of Mean scores of Maternal Outcome in Control and clinical pathway Group of Postnatal Mothers with Vaginal Delivery

Maternal outcome	Mean	SD	't' value
Control group (n=50)	3.44	3.78	3.345***
Clinical pathway group (n=50)	0.89	1.67	

Discussion:

Concerns about the use of evidence-based medicine have given rise to a common response: the development of clinical pathways (**National Institute for health and care excellence, 2020**). Clinical pathways could be a method for sharing decisions and organizing care for a clearly defined group of patients over a clearly defined period to improve the quality of care by enhancing patient outcomes, fostering patient safety, raising patient satisfaction, and optimizing resource use (**Ismail, 2012**).

According to the study's findings, the majority of maternity nurses were between the ages of 20 and 29. They had experience ranging from 5 to 10 years, were qualified as bachelors (N) (50%) and much fewer of them had a diploma in nursing. This information demonstrates that nurses' ages are taken into account when giving care and that education has a clear impact on the nurses' ability to maintain good work habits. These findings were consistent with those of **Al-Taei (2016)**, who stated that the majority of nurses were under 35 years old and had a minimum of five years of experience. The present study's findings showed that nurses' knowledge of every aspect of the postpartum clinical pathway (definition, significance, components, etc.) had improved.

A statistically significant difference ($p=.000$) was found between the nursing role) before and after the intervention. These nurses' lack of ongoing education and lack of desire to stay current on their expertise may be the causes of their lack of clinical route understanding before intervention. The increase in maternity nurses' knowledge demonstrated the researchers' efficacy in educating maternity nurses about every aspect of the therapeutic pathway. **Bitew et al., (2015)** observed that nurses' knowledge levels were high in the post-test compared to the pre-test and came to the conclusion that the level of knowledge will rise when the unfamiliar idea is taught to The majority of the nurses (77.5%) were in the age range of 21 to 24 years, indicating that they know about caring for postpartum women who gave birth vaginally. The majority of nurses (60%) had a

B.Sc. (N) degree, whereas only a small minority (40%) obtained a diploma in nursing. This information shows that nurses' ages are taken into account when giving care.

The study conducted by **Rupp Wysong in 2008** stated that the age of the nurses contributes to nursing care because they are very interested in learning when they are young rather than the older with experience advance knowledge and practice supported there being a significant increase in information or knowledge about the clinical pathway among the B.Sc (N) qualified nurses. Which was even confirmed by **Hilda Mary, (2011)** study that found education to be a clear factor in a person's ability to maintain healthy professional practices? Based on this information, the researcher concluded that nurses who are knowledgeable about scientific care principles perform nursing tasks more effectively. Because they only expose students to clinical practice in the diploma program and not theory knowledge, that knowledge can only be acquired through the B.Sc. (N) degree.

The majority of nurses in this study (77.5%) had no prior knowledge of the clinical pathway before the administration, suggesting that they may not have the necessary skills to provide postpartum moms with prompt care to avoid difficulties. **MgZwakhaleh et al. discovered in (2007)** that the job experience was evaluated and handled concerning views about pain. The majority of nurses (95%) had adequate knowledge of the clinical pathway in the post-test compared to the pre-test (62.5%), demonstrating that **Das (2017)** supported both the nurses' practices and their level of knowledge. The researcher found that the knowledge level was low while comparing the pre-test and post-test.

Significantly more moms in the experimental group (40%) than in the control group (46.7%) was between the ages of 21 and 25; this suggests that the general population was sufficiently informed about the ideal window for conception. This point was made by **Hamilton (2002)** in their study, which found that the average mother's age at the time of her first kid increased from 22.1 in 1970 to 24.6 in

2000., the average age of mothers at the time of birth climbed from 24.6 in 1970 to 27.2 in 2000. As the majority of the mothers in the experimental group (63.3%) were housewives, they were able to get enough rest throughout pregnancy and avoid feeling stressed, which is crucial for supporting both maternal and fetal well-being.

The majority of the mothers in the control and experimental groups were attending four or fewer antenatal appointments, were between 38- and 39-weeks gestation at the time of delivery (73.3%, 63.3%), and were only a small percentage (20%) of the time beyond 40 weeks gestation. This proves that frequent prenatal checkups, healthy delivery of the child at the appropriate time without resulting in post-term labor, and a decreased risk of preterm labor and maternal issues. The **Heimstad et al. (2006)** study at the Department of Obstetrics and Gynecology and National Center for Fetal Medicine, Norway, indicated that maternal difficulties were at their lowest at 39 weeks of gestation without preterm and post-term labor, so confirming this assertion.

Moreover, the study's results agreed with those of The present study's findings regarding maternity nurses' use of the postpartum clinical pathway showing that there was an improvement in their use of all items in the postpartum clinical pathway after the intervention compared to before the intervention, which is statistically significant ($p=.000$), demonstrating the efficacy of the postpartum clinical pathway training sessions in enhancing maternity nurses' practice. These results are consistent with those of **Devi et al., (2012)** who found that nurses' practice scores were higher after the clinical route administration ($M= 232.8, SD= 7.88$) than they were before it. Also, according to **Mahmoud and Abd- ElSadik (2013)**, nurses play a crucial part in all facets of clinical pathway practice because they start and end the process.

Also, **Das (2017)** reported that a comprehensive training program designed to enhance the facility nurses' knowledge of labor practices resulted in a considerable increase in the adoption of necessary delivery-related

practices and a decrease in unnecessary/harmful ones. program and noted that educating patients on what to expect from each day of their hospital stay helps patients feel less anxious about being ill and being admitted.

Furthermore, according to **Zachary et al. (2013)**, many pregnant women may be lacking crucial knowledge that could promote a healthy pregnancy, such as guidance, exercise, and diet during pregnancy. The title of the study was "Counseling on Gestational Weight Gain and Healthy Lifestyle during Pregnancy." In their study "Maternal comprehension of fetal movement in third trimester: a strategy for fetal monitoring and minimizing stillbirth," **Olagbuji et al. (2013)** discovered that "Maternal educational level is an essential variable in the early detection of anomalies of fetal movement." The low knowledge and poor perceptual behavior of the respondents highlight the need for guidelines, especially during postpartum care, on information and management of aberrant fetal movement to prevent needless stillbirth.

Ranger et al., (2016) research on "Comparison of the mother experience and duration of the second stage of labor comparing two upright delivery positions" supports these findings. In their words, "antenatal preparation and workshops include knowledge on the labor process, option for medicines based on pain management." Results of **Eriksson et al., (2016)** study, "Content of childbirth associated dread in Swedish women and men analysis of an open-ended question," also confirm this. They stated that a fundamental source of knowledge is the companion's embodied knowledge, which serves as the first educator and reliable source of data. These results may be explained by the fact that postpartum lessons improve awareness of clinical pathway interventions.

The 99.9% confidence level demonstrates the efficiency of the clinical pathway for nurses working with postnatal mothers who had vaginal deliveries. The researcher deduced from this result that when the unknowledgeable notion is taught to

develop knowledge and practice, the level of knowledge will rise.

The findings of this study showed that, in terms of maternal satisfaction with postpartum care, the difference between the clinical pathway group and the regular care group was statistically significant ($p < .000$). This may be explained by the fact that levels of satisfaction are influenced by the care being provided, which demonstrated how the clinical pathway affected postpartum women's levels of satisfaction. This study's conclusions agreed with those of a study by (Atiya, 2016),

The experimental group's mothers reported higher levels of satisfaction than the control group's mothers ($M=67.5$, $SD=10.73$), according to (Bitew et al., 2015). According to Huang, et al., (2015) research revealed, the clinical pathway's implementation will shorten patients' stays on average and boost their satisfaction. The results of the current study were also supported by research projects carried out by Atiya, (2016), published in Sulaimani Teaching Hospital, "Maternal satisfaction on the quality of nursing care during labor and delivery" in other developing countries," which discovered that mothers were happy with their carers. Moreover, Khammamy et al. (2017) investigated "Delivery care satisfaction."

The results of the current study validated the study assumptions and showed that following the intervention, nurses' knowledge and practice regarding all components of the postpartum clinical pathway care had improved statistically significantly. Women's knowledge, practice, and satisfaction throughout the postpartum period were all affected by this improvement in treatment.

Conclusion:

Based on the present study findings, it was concluded that using clinical pathways had a positive impact on maternity nurses' performance and the satisfaction of postpartum mothers who had vaginal deliveries post-implementation compared to pre-implementation. Also, there was an improvement in the maternity nurses' practice

regarding postpartum clinical pathway post-implementation than pre-implementation which is statistically significant ($p=.000$). The study findings also showed that there was a statistically significant difference regarding postpartum mothers' satisfaction towards postpartum care between the control group and clinical pathway group. The research hypotheses were supported by these study results.

Recommendations:

Based on the findings and analysis of the current study, the following suggestions can be made.

- To enhance nurses' performance, a postpartum care training program for maternity nurses should be implemented, based on the clinical pathway.

- The clinical pathway should be applied to women during the postpartum period to improve their knowledge and practice. Also, to improve their satisfaction, reducing complications and reducing the duration of hospital stay.

- For the results to be generalized, more research should be done on a wider population.

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