

IMPACT OF CLINICAL PATHWAY APPLICATION ON IMPROVING NURSES' PRACTICES OF POSTPARTUM CARE

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Abstract: Clinical Pathways (CP) are one of the main tools used to manage the quality of health care concerning the standardization of care processes. It is proven that their implementation reduces the variability in clinical practice and improves outcomes. **Aim:** The study aimed to investigate the impact of clinical pathway application on improving nurses' practice of postpartum care. **Method:** A quasi-experimental design (pre-post for maternity nurses and study/control for postpartum women) was implemented to establish the study. **Settings:** This study was conducted at gynecology and obstetrics departments affiliated to University Hospital and Shebin El-Kom teaching hospital, Menoufia Governorate, Egypt. **Sample:** A purposive sample of 50 maternity nurses and 200 postpartum women were recruited in this study. **Five instruments were used for Data Collection:** A structured interviewing questionnaire related to the maternity nurses, a structured interviewing questionnaire related to the postpartum women, an observational checklist for maternity nurses, an observational checklist for postpartum women and numeric pain intensity scale. **Results:** The study revealed that there were statistically significant differences between pretest and posttest after implementation of the clinical pathway manifested by higher knowledge and practice score for maternity nurses. In addition, post-partum women in study group had less pain and better postpartum and neonatal care. **Recommendations:** Application of the clinical pathway for maternity nurses and women during the postpartum period to improve their knowledge and practice. Also, facilitations and barriers of the application of clinical pathway should be analyzed to ensure an effective patient outcome.

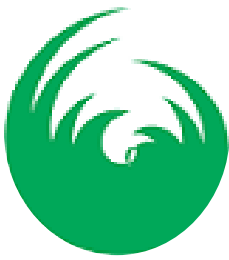
Keywords: Clinical pathway application, Nurses practice, postpartum care

1. INTRODUCTION

A clinical pathway, also known as care pathway. Clinical pathways were introduced in the early 1990s in the United Kingdom (UK) and the United States of America (USA), and are being increasingly used throughout the developed world. A clinical pathway is one of the main tools used to manage the quality in health care concerning the standardization of care processes. It has been shown that their implementation reduces the variability in clinical practice and improves outcomes. Clinical pathways are structured, multidisciplinary plans of care designed to support the implementation of clinical

guidelines and protocols. Clinical pathways aim for greater standardization of treatment regimens and sequencing as well as improved outcomes, from both a quality of life and a clinical outcomes perspective ⁽¹⁾.

The postpartum period includes the time from birth until approximately six to eight weeks after delivery ⁽²⁾. World Health Organization (WHO) states that postpartum care should respond to the special needs of the mother and newborn during this special phase and should include the prevention, early detection and treatment of complications and diseases, the provision of advice and services on breastfeeding, birth spacing, immunization



and maternal nutrition. The eight specific WHO maternal postpartum needs are identified as: information and counseling on care of the newborn and breastfeeding, what happens with and in their bodies, self-care, sexual life, contraception and nutrition, support from health care providers and family/partner, health care for suspect or manifest complications, time to care for the newborn ⁽³⁾.

The postpartum nursing care pathway has been developed to facilitate the assessment and documentation of pertinent information about mothers in a structured, logical and standardized manner. It is a form to facilitate consistent and complete documentation, communication and continuity of care among health care providers and provides a guide for evidence-based postpartum care ⁽⁴⁾. The postpartum nursing care pathway identifies the goals and needs of postpartum women ⁽⁵⁾.

The primary responsibilities of the nurses in the postpartum period are to assess the postpartum women, provide care and teaching, and if necessary, report any significant findings. Postpartum nurses are essentially detectives searching for findings that might lead to negative outcomes for patients if left unattended. Thus, it is imperative for the nurses to distinguish between normal and abnormal findings and to have a clear understanding of the nursing care necessary to promote patients' health and well-being. Many nurses find it useful to use the acronym BUBBLE-LE to remember the necessary components of the postpartum assessment and teaching topics. These include: breasts, uterus, bowel function, bladder, lochia, episiotomy/perineum, lower extremities and emotions ⁽⁶⁾.

Nursing staff should be included in the development, implementation, and continual evaluation of any pathway. The nurses need to understand their roles and be sure that best practices and good patient care are incorporated into clinical pathways. Nurses have a key role in all aspects of clinical pathway use participating in the development of the pathway is the first step. Nurses possess a unique perspective in how health care systems work to enhance

or impede the delivery of care. Nurses are also responsible for initiating the pathway on appropriate patients and ensuring that the various events occur as planned ⁽⁷⁾.

1.1. Significance of the study

There are limited data on early postpartum care specifically for postpartum care pathway. In addition to harmful health care practices are still prevalent and contribute to mortality. For example, care providers or institutions may not promote, protect and support early initiation of breastfeeding and they may even delay or discourage breastfeeding, thus undermining successful exclusive breastfeeding. More than half of infants are not exclusively breastfed, contributing to malnutrition and infections ⁽⁸⁾.

Clinical pathways optimize clinical outcomes whilst maximizing clinical efficiency. It has been demonstrated that the use of pathway decreases duration of patient stay, enhances patient knowledge and self-awareness. It represents a new approach to patient care, fulfilling many of the demands of clinical practice and its improvement ^(9,10). Post-partum clinical care pathway provides a guide for evidence-based postpartum care which improves quality of postpartum care and reduce maternal and neonatal complications and mortality ⁽⁴⁾.

Despite the importance of clinical pathway especially during the postpartum period, limited studies have done regarding the impact of clinical pathway application on women and newborn care during the postpartum period. Therefore, the researcher tried to fill in such a spot of data by conducting this study.

1.2. Definitions:

Clinical pathway theoretically defined as way of setting out a process of best practice to be followed in the treatment of a patient or client with a particular condition or with particular needs ⁽¹¹⁾. Also, it is defined as a multidisciplinary management tool based on an evidence-based practice for a specific group of patients with a predictable clinical course, in which the different tasks



(interventions) by the professionals involved in the patient care, which are defined, optimized and sequenced and outcomes are tied to specific interventions ⁽¹²⁾.

A clinical pathway was operationally defined as a care plan in which an intervention which based on best practice took place (detailed instruction of the best practice on postpartum nursing intervention given to the maternity nurses; assessment of women and her newborn, application of postpartum nursing procedure and providing education) with monitoring outcomes ⁽¹³⁾.

1.2. Aim of the Study

The aim of this study was to investigate the impact of clinical pathway application on improving nurses' practices of postpartum care.

1.3. Research Hypotheses:

- Maternity nurses will have higher knowledge and practice score regarding the postpartum clinical pathway after the intervention than before.
- Postpartum women who receive postpartum clinical pathway will have higher knowledge score regarding the postpartum nutrition, activity, measures to prevent elimination discomforts and family planning methods than those who do not receive.
- Postpartum women who receive postpartum clinical pathway will have higher practice score regarding neonatal care, breastfeeding than those who do not receive.
- Postpartum women who receive postpartum clinical pathway will have less postpartum pain than those who do not receive.

2. METHOD

2.1. Research Design:

A quasi experimental design (pre-posttest for maternity nurses and study/control for postpartum women) was utilized in this study.

2.2. Research Settings:

This study was conducted at gynecology and obstetrics departments affiliated to University Hospital

and Shebin El-Kom teaching hospital, Menoufia Governorate, Egypt.

2.3. Sample:

A purposive sample of 50 maternity nurses worked in the previous settings and 200 postpartum women were recruited in this study. Postpartum women were divided into two identical groups, one group (study group) received postpartum clinical pathway and the other group (control group) exposed to routine hospital care. **Under the following inclusion criteria:**

- Postpartum women after normal labor.
- Free from any complications during labor.
- Mother – newborn pairs

Calculation of the Sample Size: In order to calculate the required sample size, the researchers used the Epi statistical program from the Open Source Statistics for Public Health. The assumptions were: a two sided confidence level of 95% = $1 - \alpha$; a power ($1 - \beta$) or (% chance of detecting) of 80%; ratio of sample size, unexposed (control) / exposed (study group) = 1% of unexposed with outcome = 5%.

2.4. Data collection instruments:

Data were collected through using the following instruments:

- **Instrument (1):** A structured interviewing questionnaire related to the maternity nurses, It was developed by the researchers after reviewing of related literature, it was divided into two parts:

Part 1: It contained personal characteristics of the study subjects such as age, education, occupation and years of experience.

Part 2: Likert scale to assess knowledge of the maternity nurses regarding postpartum clinical care pathway. It contained questions about postpartum clinical care pathway, such as definition, importance, components of postpartum clinical pathway and nurses' role in the postpartum clinical pathway application.

Scoring system:



Score	Maternity nurses' knowledge regarding postpartum clinical care pathway.
1	Correct answers
0	Incorrect answers

- Instrument (II): An observational checklist for maternity nurses , It was developed by the researchers after reviewing of related literature, It included two parts:

Part 1: Likert scale to assess the maternity nurses' practice regarding postpartum maternal care before and after clinical pathway application. It consisted of thirteen items such as vital signs, pain, abdomen/funds, lochia, perineum, breasts, elimination, healthy eating, activity/rest, attachment/bonding, emotional status /mental health and family planning.

Scoring system

Score	Nurses' practice regarding postpartum maternal care before and after clinical pathway application
2	Adequate done
1	Inadequate done
0	Not done

Part 2: Likert scale to assess maternity nurses practice toward postpartum newborn care before and after clinical pathway application. It consisted of vital signs, newborn metabolic screening, physiological health and behavioral assessment.

Scoring system

Score	Nurses' practice regarding postpartum newborn care before and after clinical pathway application
2	Adequate done
1	Inadequate done
0	Not done

-Instrument (III): A structured interviewing questionnaire related to the women: It was developed by the researcher after reviewing of related literature. It was divided into two parts:

Part I: Socio- demographic data: it included data about age of the women, education level and income.

Part 2: Assessment of the impact of postpartum clinical pathway on the mother's knowledge regarding adequate nutrition and activity, measures to prevent the discomforts and family planning methods.

Scoring system:

Score	Mother's knowledge
1	Correct
0	Incorrect

Instrument (IV) : An observational checklist for postpartum women (mothers) . It was developed by the researchers after reviewing of related literature, It included two parts:

Part 1: Likert scale to assess the impact of clinical pathway on the mother's practice toward breastfeeding and newborn care.

Score	Mother's practice
2	Adequate done
1	Inadequate done
0	Not done

Part 2: Likert scale to assess mother and infant degree of attachment, it was done through observation of mothers behavior that indicated positive attachment as touching, holding, cuddling and kissing and also through observation of mothers behavior that indicated mal attachment as refusing to look at the newborn, refusing to touch or hold the newborn, refusing to name the infant and negative comments about the infant .

Scoring system:

Score	Degree of attachment
1	Positive attachment
0	Mal-attachment

Instrument (V): Numeric Pain Intensity Scale. This 0 to 10 pain scale is commonly and successfully used to assess the degree and severity of pain ⁽¹⁴⁾.

Scoring system

Scoring	Intensity of postpartum pain
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system	
1 – 3	Mild pain
4 – 6	Moderate pain
7 – 10	Sever pain

2.4.1 Validity & Reliability

The instruments (I-IV) were reviewed and tested for content validity by 5 experts in the obstetrical nursing, modification were done accordingly to ascertain relevance and completeness. Test-retest reliability was used. The internal consistency of the instruments was calculated using Cronbach's alpha coefficients. Study instruments revealed reliable at Cronbach's alpha 0.861 for instrument (I), 0.742 for instrument (II) , at 0.82 for instrument (III) ,at 0.628for instrument (IV) .

2.5. Administrative design:

An official letter requesting permission to conduct the study was obtained before embarking the study from the Dean of the Faculty of Nursing, Menoufia University to the Directors of each study setting. This letter was included the aim of the study in order to get the permission and help for collection of data.

2.6. Ethical considerations:

According to the Faculty of Nursing Ethical Research Committee, the researchers got the maternity nurses and women consent before conducting the study. Assured them about confidentiality, safety and privacy of data obtained.

2.7. A pilot study:

The pilot study was conducted on 10% (5 nurses and 20 postpartum women) from the total sample in order to ensure the clarity, applicability of the instruments and the time needed to be completed. According to the results obtained from the pilot study, the required modifications were performed.

2.8. Procedure for Data Collection:

The researchers reviewed the current local and international related literature to be more acquainted with

the problem, to design the study instruments, and also to finalize them by using books, articles, magazines and internet. The actual fieldwork was carried out from beginning of December, 2018 up to the end of August, 2019. The researchers were available in the study settings three days/week, at the morning shift from 8.00 Am to 2.00 Pm. The researchers introduced themselves to the medical and nursing staff members in the previously mentioned settings. The researchers explained the nature and the purpose of the study and asked for cooperation.

The researchers performed the research in the following phases:

2.8.1. Assessment phase:

-The researchers met each maternity nurse collected their socio-demographic data and assessed their knowledge level and practice of postpartum clinical pathway steps before the intervention.

-The researchers met each postpartum women individually, introduced themselves to the women, and obtained their consent to be recruited in the study after explaining the purpose of the study and collected their socio-demographic data.

2.8.2. Planning phase:

- The researchers prepared an educational materials about postpartum clinical pathways included: definition, importance, components and nurse role.

- The researchers developed clinical pathway design covering the phases of care introduced to the maternity nurses. It included immediate postpartum phase (first 2 hours of care) and discharge phase.

Clinical pathway included:

- Mother care: It included physical and psychological assessment, application of postpartum nursing procedures, e.g. (uterine massage, perineal care), education e.g. (activity, nutrition, rest) and discharge plan.
- Newborn care, which included assessment of vital signs, breastfeeding practices, newborn metabolic screening, physiological health, behavioral assessment and discharge plan.



2.8.3. Implementation phase:

- The researchers provided two educational session (each session took 45 minutes) about postpartum clinical pathways for maternity nurses using booklet included: definition, importance, components and nurses role.
- The researchers explained the clinical pathway step by step assisted by using educational videos as teaching methods via sessions; each sessions include 5 maternity nurses as those responsible for providing care to the women during post-partum period .
- The researchers applied postpartum clinical pathway on 25 postpartum women in front of maternity nurses; 2 maternity nurses for each women after taking women consent. (these women excluded from the women sample).
- After that, the maternity nurses applied all steps of clinical pathway for the study group of postpartum women and their newborn, which included:
 - Assessment of vital signs, uterine contractility, lochia, episiotomy, perineum, breast, activity level, mental and emotional health, presence of postpartum pain and its degree. In addition, newborn assessment that included Apgar score, weight, presence of jaundice and assessment from head to toe to exclude any complications or abnormalities and behavioral assessment.
 - Application of comfort measures to the postpartum women in the clinical pathway group which included warm fluids, breathing exercises, relaxation, perineal care, changing position, use ice packs for relieving episiotomy edema and use of good body mechanic during breast feeding, measures to relieve after-pains, measures to relieve urinary retention.
 - Application of postpartum nursing procedures e.g uterine message, perineal care according to women conditions.
 - Application of newborn care and taught the mothers how to perform It.
 - As a part of clinical pathway application, the maternity nurses provided an education to the postpartum women

about uterine involution & message, perineal care, healthy eating, activity /rest, breast care, breast feeding technique, measures to prevent elimination problems, measures to reinforce positive maternal and infant attachment (breastfeeding, skin-to-skin, care, bathing, infant massage, talking, singing to newborn), measures to improve emotional status and mental health (verbalization of feelings and needs, promoting support, discuss normal postpartum adjustments, explore ways to maximize rest), family planning and sexuality.

- Beside that, each mother received brochure with the information needed to facilitate the learning and its application in order to improve mothers' knowledge and practice.

- Maternity nurses documented all nursing intervention done to the postpartum women

- Regarding to the postpartum women in the control group, they received only routine hospital care.

- Evaluation phase:

- The researchers evaluated the level of maternity nurses' knowledge and practice post clinical pathway application.

- The researchers evaluated the outcomes of clinical pathway on the study group (postpartum clinical pathway group) and compared them with the control group (routine care group) who received routine hospital care.

2.8. Data Analysis

The collected data were organized, reviewed, coded, tabulated, analyzed and presented using descriptive statistics in the form of frequencies and percentages for qualitative variables. Test of significance was used for comparison between the study and the control groups.

Where:

- $P > 0.05$, no statistically significant difference.
- $P < 0.05$, statistically significant difference.
- $P < 0.01$, highly statistically significant difference.
- $P < 0.001$, very highly statistically significant difference.

3. RESULTS

3.1. Part I: Nurses

Academic Journal of Nursing and Health Education

An official Publication of Center for International Research Development

Double Blind Peer and Editorial Review International Referred Journal; Globally index

Available @ cirdjournals.com/AJNHE; E-mail: ajnhe@cirdjournals.com



Table (1) represented distribution of the maternity nurses according to their socio-demographic characteristics. As inferred from the table, 52% of the maternity nurses' aged 20-29 years and 48% had a bachelor degree in nursing education. Regarding their years of experience, 38% of them had 5-<10 years of experience.

Table (2) showed an improvement in the nurses' knowledge regarding all items of postpartum clinical pathway (definition, importance, components, nursing role) after the intervention than before the intervention which is statistically significant ($p=.000$). As inferred from the table higher percentages of nurses answered correctly all items post intervention (92%, 94%, 98 & 96% respectively).

Figure (1) displayed an increase in the total score of nurses' knowledge regarding postpartum clinical pathway after the intervention than before the intervention as 94% of the maternity nurses had satisfactory knowledge after the intervention compared to 0% before the intervention.

Table (4) showed that the highest percentages of nurses adequately done all items of newborn care post clinical pathway application (84%, 100%, 60%, 82%& 96%, respectively) than pre-clinical pathway application (4%, 14%, 2%, 14% & 24%, respectively).

Figure (2) showed that 90% of the maternity nurses competently practice maternal care after clinical pathway application compared to 6% before clinical pathway application and 84% of the maternity nurses competently practice newborn care after clinical pathway application compared to 14% before the clinical pathway application and this difference was highly statistically significant ($p<.001$).

3.2. Part II: Women (Mothers)

Table (5) displayed that there was no statistically significant difference between clinical pathway group and routine care group regarding the socio-demographic characteristics.

Table (6) displayed the pain intensity among postpartum clinical pathway and routine care groups. As regards the

intensity of pain, it showed that 76% of the postpartum women suffered from mild pain in a clinical pathway group compared to 45% of women in the routine care group and this difference was statistically significant ($p=.000$).

Table (7) displayed that, the higher percentages of women joined the clinical pathway group as manifested by good knowledge regarding adequate nutrition and activity, measures to prevent elimination discomfort and family planning methods (85%, 93% & 87%, respectively) compared to 23%, 30% & 25% respectively in the group of women received routine care only. This difference was statistically significant ($p=.000$).

Table (8) showed statistically significant difference regarding women practice of breastfeeding and newborn care among postpartum clinical pathway and routine care groups. It revealed that 83% in the routine care group breastfed their newborn. Meanwhile, 54.2% of them practice it correctly compared to 95.8 % in the clinical pathway group. In addition, the same table revealed that 36.0% of women adequately practice newborn care in the routine care group compared to 97% of women in the clinical pathway group.

Table (9) revealed that, there was no statistically significant difference between clinical pathway group and routine care group regarding mother and infant pattern of attachment. As displayed from this table 95% of mother had a positive attachment with their newborn in the clinical pathway group compared to 93% in the routine care group.

Part I: Nurses

Table 1: Distribution of maternity nurses according to their socio-demographic characteristics (N= 50)

Items	The study participants (N= 50)	
	No.	%
Age / years		
-20 – 29	26	52
-30 – 39	17	34



-40 – 49	5	10	- Master Degree.	2	4
-50 – 60	2	4	- Doctorate Degree.	0	0
Educational level			Years of Experience		
- Secondary school (diploma).	16	32	-<5	15	30
- Technical Institute of Nursing.	8	16	-5-<10	19	38
- Bachelor degree.	24	48	- 10-15	11	22
			More than 15 -	5	10

Table (2): Maternity Nurses' knowledge about postpartum clinical pathway pre and post intervention (N= 50)

Items	The study participants (N= 50)				χ^2	P value
	Pre No=50		Post No=50			
	No.	%	No.	%		
Definition of postpartum clinical pathway					88.67	.000
Correct	0	0.0	46	92.0		
Incorrect	0	0.0	1	2.0		
Don't know	50	100.0	3	6.0		
Importance of postpartum clinical pathway in maternal and newborn care					96.07	.000
Correct	0	0.0	47	94.0		
Incorrect	0	0.0	2	4.0		
Don't know	50	100.0	1	2.0		
Components of postpartum clinical pathway					138.62	.000
Correct	0	0.0	49	98.0		
Incorrect	2	4.0	1	2.0		
Don't know	48	96.0	0	0.0		
Nurses' role in postpartum clinical pathway application					100.02	.000
Correct	0		48	96.0		
Incorrect	2		2	4.0		
Don't know	48		0	0.0		

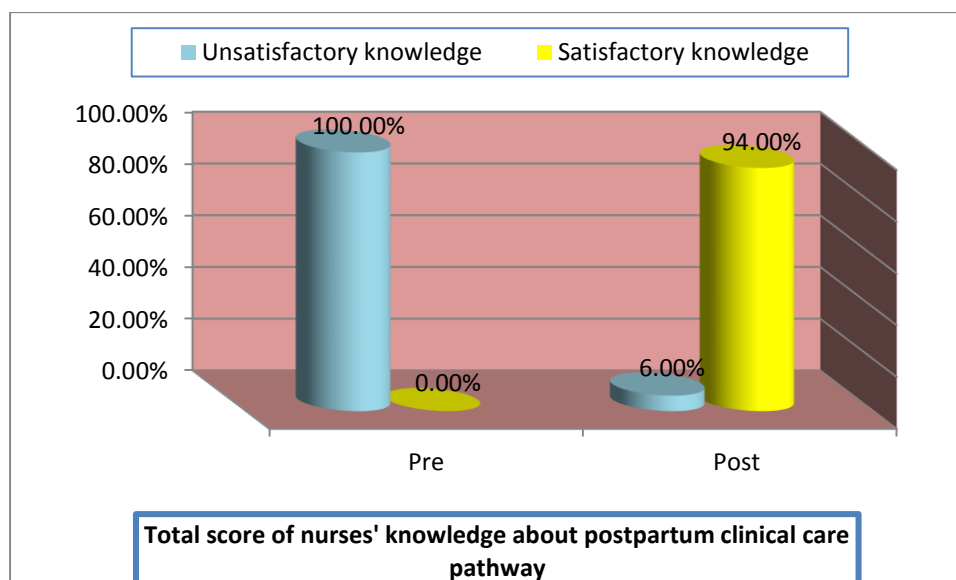


Figure (1): The Difference between total knowledge scores on the pretest and posttest regarding postpartum clinical pathway among the studied nurses

Table (3): Maternity nurses' practice regarding the postpartum maternal care before and after clinical pathway application.

Items	Before						After						χ^2	P value
	Adequately Done		Inadequate Done		not done		Adequately Done		Inadequate Done		not done			
	No	%	No	%	No	%	No	%	No	%	No	%		
Vital signs	4	8.0	46	92.0	0	0.0	48	96.0	2	4.0	0	0.0	77.56	.000
Pain	2	4.0	48	96.0	0	0.0	42	84.0	8	16.0	0	0.0	64.93	.000
Abdomen/fundus	2	4.0	48	96.0	0	0.0	44	88.0	6	12.0	0	0.0	71.01	.000
Lochia	3	6.0	47	94.0	0	0.0	43	86.0	7	14.0	0	0.0	64.41	.000
Perineum	2	4.0	20	40.0	28	56.0	46	92.0	3	6.0	1	2.0	78.03	.000
Breasts	5	10.0	10	20.0	35	70.0	49	98.0	0	0.0	1	2.0	77.96	.000
Breast feeding	7	14.0	43	86.0	0	0.0	50	100.0	0	0.0	0	0.0	75.43	.000
Elimination	5	10.0	45	90.0	0	0.0	47	94.0	3	6.0	0	0.0	70.67	.000



Healthy Eating	8	16.0	21	42.0	21	42.0	47	94.0	3	6.0	0	0.0	62.15	.000
Activity /rest	10	20.0	30	60.0	10	20.0	45	90.0	2	4.0	3	6.0	50.54	.000
Attachment/Bonding	0	0.0	10	20.0	40	80.0	35	70.0	10	20.0	5	10.0	62.47	.000
Emotional status /mental health	0	0.0	0	0.0	50	100.0	28	56.0	12	24.0	10	20.0	66.67	.000
Family planning/sexuality	2	4.0	4	8.0	44	88.0	32	64.0	10	20.0	8	16.0	56.07	.000

Table (4): Maternity nurses’ practice toward newborn care pre and post clinical pathway application

Items	Before						After						χ^2	P value
	Adequately Done		Inadequate Done		not done		Adequately Done		Inadequate Done		not done			
	No	%	No	%	No	%	No	%	No	%	No	%		
Vital signs	2	4.0	48	96.0	0	0.0	42	84.0	8	16.0	0	0.0	64.93	.000
Breast Feeding	7	14.0	43	86.0	0	0.0	50	100.0	0	0.0	0	0.0	75.43	.000
Newborn metabolic screening	1	2.0	2	4.0	47	94.0	30	60.0	12	24.0	8	16.0	61.92	.000
Physiological Health	7	14.0	40	80.0	3	6.0	41	82.0	5	10.0	4	8.0	51.45	.000
Behavioral assessment	12	24.0	20	40.0	18	36.0	48	96.0	2	4.0	0	0.0	54.40	.000

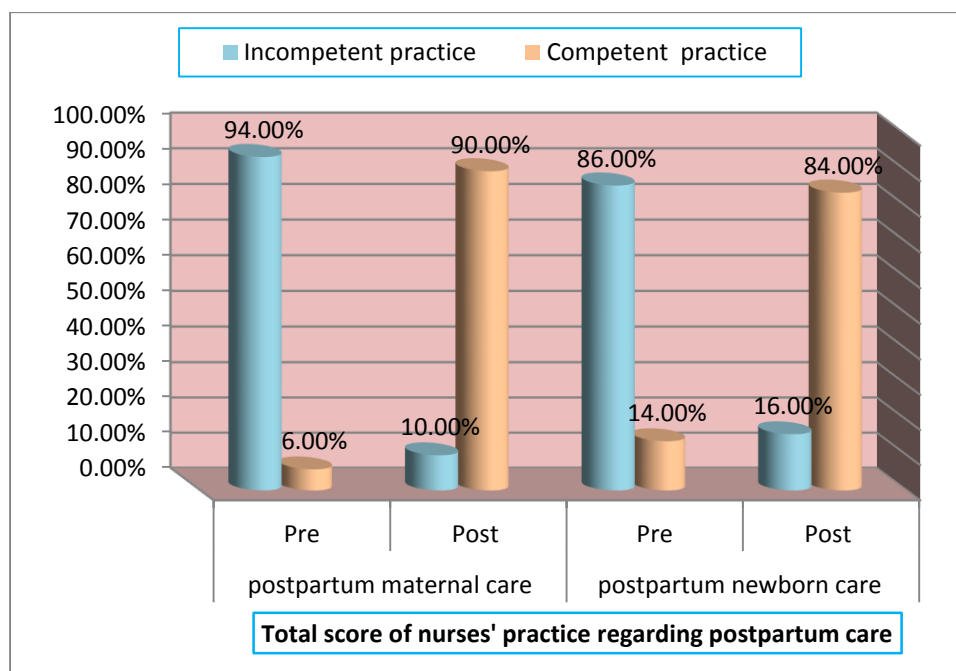


Figure (2): Total score of maternity nurses' practice regarding postpartum maternal and newborn care pre and post clinical pathway application

Part II: Women (Mothers)

Table (5): Distribution of women according to their socio-demographic characteristics (N=200)

Items	Clinical Pathway group (N=100)		Routine Care group (N=100)		χ^2	p-value
	No.	%	No.	%		
Age / years.						
-20 – 25	42	42	34	34	1.58	4.21
-25 – 30	28	28	37	37		
-30 – 35	20	20	24	24		
-35-40	9	9	5	5		
-40-45	1	1	0	0		



Educational Level.							
Read and write	17	17.0%		21	21.0%		.589
Secondary	53	53.0%		46	46.0%	1.059	
University	30	30.0%		33	33.0%		
Income							
Enough	53	53.0%		74	74.0%	8.68	.003
Not enough	47	47.0%		26	26.0%		

Table (6): Distribution of women according to their intensity of pain among post-partum clinical pathway and routine care groups

Items	Clinical pathway group (N=100)		Routine Care group (N=100)		χ^2	p-value
	No.	%	No.	%		
Intensity of pain						
Mild	76	76.0%	45	45.0%	30.21	.000
Moderate	22	22.0%	27	28.0%		
Severe	2	2.0%	28	27.0%		

Table (7): Distribution of women knowledge among postpartum clinical pathway and routine care groups

Items	Clinical Pathway group (N=100)		Routine Care group (N=100)		χ^2	p-value
	No	%	No	%		
Adequate nutrition and activity					79.16	.000
Good	85	85.0%	23	23.0%		
Average	9	9.0%	27	27.0%		
Poor	6	6.0%	50	50.0%		
Measures to prevent elimination discomforts					84.06	.000
Good	93	93.0%	30	30.0%		
Average	3	3.0%	42	42.0%		
Poor	4	4.0%	28	28.0%		
Family planning methods					83.71	.000



Good	87	87.0%	25	25.0%		
Average	11	11.0%	26	26.0%		
Poor	2	2.0%	49	49.0%		

Table 8: Distribution of the women practice toward breastfeeding and newborn care among postpartum clinical pathway and routine care groups.

Items	Clinical Pathway group (N=100)		Routine Care group (N=100)		χ^2	p-value
	No.	%	No.	%		
Breast feeding						
Yes	72	72.0%	83	83.0%	3.47	.063
No	28	28.0%	17	17.0%		
If Yes					34.32	.000
Correct	69	95.8%	45	54.2%		
Incorrect	3	4.2%	38	45.8%		
Newborn care					83.51	.000
Adequate	97	97.0%	36	36.0%		
Inadequate	3	3.0%	64	64.0%		

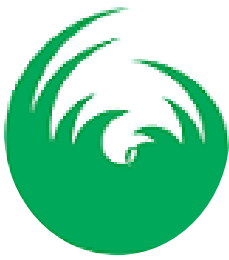
Table 9: Mothers and infant pattern of attachment among postpartum clinical Pathway and routine care group.

Items	Clinical Pathway group		Routine Care group		χ^2	p-value
	No	%	No	%		
Positive attachment	95	95.0%	93	93.0%	.355	.552
Mal attachment	5	5.0%	7	7.0%		

4. Discussion

Creation pathways support continuity of care between care providers by promoting consistencies in assessment and documentation, thereby reducing the variation in practice. It provides the nurse, caring for the

mother and newborn with evidence-based knowledge and references related to expected normal assessment findings and care practices that signal mother/newborn readiness for discharge. Variances from the expected normal serve as key decision points for the nurse related to care options



and interventions ⁽¹⁵⁾. This study aimed to investigate the impact of clinical pathway application on improving nurses' practices of postpartum care.

The findings of the current study verifying the hypotheses and showed that there was a statistically significant improvement in nurses' knowledge and practice regarding all items for postpartum clinical pathway care after intervention. This improvement in nursing care was reflected on women knowledge and practice during the postpartum period.

According to the current study findings, assessment of nurses' knowledge and practice regarding postpartum clinical care pathway has revealed that there was a significant improvement in nurses' knowledge regarding all items of postpartum clinical care pathway (definition, importance, components, and nursing role) at post intervention than pre intervention. This reflected the success of the study in teaching maternity nurses all items of clinical pathway. This current study findings come in agreement with **Elbaz (2017)** ⁽¹⁰⁾, who studied the outcomes of clinical pathways and stated that it's very important for the nurses to become oriented with postpartum clinical pathway where clinical pathways are one of the main tools used to manage the quality in health care concerning the standardization of care processes. It is proven that their implementation reduces the variability in clinical practice, less complication and improves outcomes .

The current study displayed that there was a statistically significant difference regarding the maternity nurses' practice of postpartum care, pre and post clinical pathway application as the majority of the nurses adequately done all items of postpartum maternal care post clinical pathway application. Also, the findings of the study showed that the majority of maternity nurses competently practice newborn care after clinical pathway application than before the application and this difference was highly statistically significant.

These current study findings supported by **Berens,(2018)** ⁽⁴⁾ & **Derricott, B,(2016)** ⁽⁶⁾ who stated that it is very important for postpartum nurses to assess postpartum patients as primary responsibilities in the health care settings, provide care and teaching, and if necessary, report any significant findings, and added that postpartum nurses are essentially detectives searching for findings that might lead to negative outcomes for post partum women if left unattended, Thus, it is imperative for nurses to distinguish between normal and abnormal findings and to have a clear understanding of the nursing care necessary to promote patients' health and well-being.

Also, This current study finding supported by the **Perinatal Services BC (2011)** ⁽¹⁶⁾ which reported that the postpartum nursing care pathway assumes that informed decision making is used when care is offered . Nurses provide sufficient, specific, evidence-based information in a timely and appropriate manner, advocating for clients to acquire the desired information from others and assisting clients to understand the information provided.

According to women's socio-demographic characteristics the current study displayed no statistically significant difference between clinical pathway group and routine care group regarding maternal age and educational level as nearly half of women in both groups had a secondary level of education and had enough income. This result comes in agreement with **Barbara, 2012** ⁽¹⁷⁾ who investigated improving quality and efficiency of postpartum hospital education and stated that there are no statistically significant differences between study and control groups regarding the socio-demographic characteristics.

Regarding intensity of pain during postpartum period. The study findings showed that most of postpartum women suffering from mild pain in a clinical pathway group compared to nearly half of women in the routine care group and this difference was statistically significant.



This important indicator denote to the effectiveness of clinical pathways for postpartum women.

This result comes in agreement with **Derricott et al., (2016)** ⁽⁶⁾ who stated that clinical pathways are tools used to guide evidence-based healthcare that have been implemented internationally, so that during the postpartum period, it is very important that healthcare providers continually assess women for pain, taking into account the women acceptable pain levels. They should look for pain in all areas of the body, including the head, chest, breast, back, limbs, abdomen, uterus, perineum and extremities. positioning during labor may cause muscular discomfort. Inadequate pain control can affect the women care for her newborn . Women should also be assessed for emotional pain and treated accordingly. Care providers teach non-pharmacological methods of pain relief to the women and her family. Some of these methods include the application of hot or cold packs, massage and progressive relaxation.

The current study displayed that the majority of women in the clinical pathway group had good knowledge regarding adequate nutrition and activity, measures to prevent elimination discomfort and adequate family planning methods compared to nearly one third in the routine care group. This difference was statistically significant.

This study finding supported by **WHO (2013)** ⁽³⁾ which reported that “postpartum care should respond to the special needs of the mother and her newborn during this special phase and should include the prevention, early detection , treatment of complications and disease, provision of advice and services on breastfeeding, birth spacing, immunization and maternal nutrition.

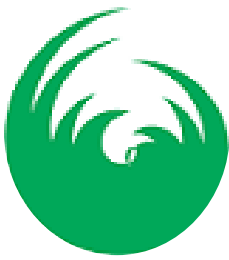
The findings of the study showed statistically significant difference regarding women practice of breastfeeding and newborn care among post-partum clinical pathway group and routine care groups. It revealed that although 83% in the routine care group breastfed their newborn, only 54.2% of them practice it

correctly. While in the clinical pathway group, 72% breastfed their newborn and nearly two thirds of them practiced it correctly. This result comes in agreement with **Barbara (2012)** ⁽¹⁷⁾ who investigated improving quality and efficiency of postpartum hospital education and found that women believe that having more individual time with the nurse during their postpartum hospitalization would better prepare them for caring for themselves and their newborn at home. Also, women found that it is beneficial when nurses remained with them during breastfeeding, offering guidance and answering questions in addition to using various teaching materials. Interacting with new mothers by demonstrating how to care for themselves and their newborn during hospitalization may reinforce understanding and confidence.

Also, the study revealed that only one third of women adequately practice newborn care in the routine care group compared to the majority of women in the clinical pathway group. **Weiss and Lokken (2009)** ⁽¹⁸⁾ reported similar findings in their study about predictors and outcomes of postpartum mothers’ perceptions of readiness for discharge after birth. The study stated that more than half of the mothers in this study had more knowledge and confidence in their ability to care for themselves and their newborns. New mothers’ ability to care for themselves, newborn, and family following discharge increased when they received more information than they perceived.

5. CONCLUSION

The use of clinical pathways showed an improvement in the maternity nurses' knowledge regarding all items of postpartum clinical pathway (definition, importance, components and nursing role) after the intervention than before the intervention which is statistically significant ($p=.000$). Also, there was an increase in the total score of nurses' knowledge about the postpartum clinical pathway after the intervention than before the intervention as 94% of the maternity nurses had good knowledge after the intervention compared to 0% before the intervention.



Meanwhile, the majority of nurses adequately done all items of the postpartum maternal and newborn care after clinical pathway application. This supported the first research hypothesis.

The study findings displayed that the majority of women in the clinical pathway group had good knowledge regarding adequate nutrition, activity, measures to prevent elimination discomfort and family planning methods compared to nearly one third in the routine care group and this difference was statistically significant. This supported the second research hypothesis.

Regarding intensity of pain, the study findings showed that more than three quarter of the postpartum women suffered from mild pain in a clinical pathway group compared to less than half in the routine care group and this difference was statistically significant. This supported the third research hypothesis.

The study findings also showed that there was statistically significant difference regarding the women practice of breastfeeding and newborn care among post-partum clinical pathway and routine care groups. It also revealed that there was no statistically significant difference between clinical pathway group and routine care group regarding the mother and infant pattern of attachment. This supported the fourth research hypothesis.

6. RECOMMENDATIONS

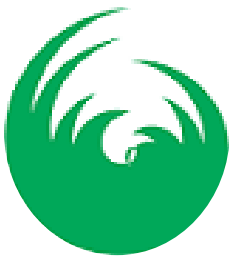
From this study, we can recommend that:

- Application of the clinical pathway for maternity nurses', women during the postpartum period to improve their knowledge and practice.
- Clinical pathway should be applied as a routine nursing care in the hospitals.
- Ongoing in-service training programs should be designed and implemented in the postnatal ward to improve nurses' practices on the basis of nurses' actual needs.
- Further studies should be conducted to apply and demonstrate the research on a larger population for generalization of the results.

- Facilitations and barriers of the application of clinical pathway should be analyzed to ensure effective patient outcome.

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