

Effect of Nursing Clinical Pathway on Self-Assessment of Fetal Well-being among high risk pregnant women

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Abstract: Applying the clinical pathway is a multidisciplinary management tool established on evidence-based practice for a particular group of patients with a standardized clinical course in which the different activities of "interventions" by the patient care staff are identified, coordinated and sequenced either by hour, day or visit. The aim: is to assess the effect of nursing clinical pathway on self-assessment of fetal well-being among high risk pregnant women. Design: Quasi-experimental study was used. Settings: Out clinics and inwards of University and Shebien ElKom Teaching hospital. Sampling: Convenience sample from 150 high risk pregnant women who fulfill the inclusion criteria. Instruments: The first is structured interviewing questionnaire, the second is daily fetal movement chart (DFMC) "count-to-ten" kick charts. The third is fundal height measurement (McDonald's Chart) and Apgar scoring. Results of the study: Total improvement regarding the previous items as good and more than good are in preclinical pathway intervention 4%,5%,3% and 5% and after clinical pathway intervention are 99.3%,98.7%,90% and 97.1% respectively. Total improvement regarding knowledge of daily fetal movement chart and practice of daily fetal movement chart as good and more than good are 96.6% after post clinical pathway interventions compared to 10% in preclinical pathway interventions. As noticed from table 6 there were statistically significance differences regarding Apgar scoring in first and fifth minutes ($p < 0.001$). There were decreased frequency distribution of fetal complications as it is only 3 (2%) cases needed to be ventilated and 8 (5.3%) need admission due to life threatened complications as need for ventilation and admission to neonatal intensive care unit. Conclusions: The study hypothesis was accepted as nursing clinical pathways improve knowledge and practice of high risk pregnant women scores about self-assessment of fetal movement. Nursing clinical pathways improve fetal outcomes interpreted in better apgar score and decreased incidence of complications. Recommendations: Applying nursing clinical pathways in routine nursing care for low risk and high risk pregnant women.

Keywords: Clinical Pathway, Self-Assessment, Fetal Well-being and high risk.

1. INTRODUCTION

Fetal well-being is a term that describes the fetus whose development is appropriate for gestational duration and which has normal form and structure. The primary objective of antenatal assessment is to recognize the well-being of the fetus and the fetus at risk of intrauterine injury so that intervention and timely delivery will avoid progression to the Clinical Practice Guidelines (2019). Antepartum fetal surveillance technique allows pregnancy to be identified at high risk before damage occurs. It is used to measure the fetus' well-being at risk of utero-related adverse reproductive result-placental insufficiency. Hypoxic and stillborn pregnancies can be covered by early diagnosis and response to fetal distress Devi & Kanika, (2015).

Mother's fetal movement monitoring is a tool used to determine fetal well-being and this unstructured screening lets the mother be confident of the fetus ' safety. More than 99 percent of women who gave birth to a healthy baby say it's so important for them to feel the movements of the baby every day McCarthy, Meaney, & O'Donoghue, (2016).

The counting of fetal movement is an assessment tool which quantifies the fetal movements that pregnant women feel. Fetus movements are specific to each fetus as are the mother's perceptions of those movements. F The amount of movement increases from 24 weeks until 32 weeks of pregnancy. Around 32 weeks onwards, the amount of fetal movements appears to become constant before labour begins. Normal fetal movements can be described in two hours as 10 or more movements, felt by a woman while lying on her side and concentrating on the movement that can be interpreted as any distinct jump, flutter, swish or roll. Fetal movements reinforce the stability of the central nervous and musculoskeletal systems Public Health Nursing Prenatal Practice, (2019).

Diminished activity alerts the mother to a worsening fetal condition. She can then bring this to the attention of health care providers, who can then assess and intervene to prevent fetal death if required. Because it can be performed on a daily basis, or multiple times daily, it has benefits over other fetal tests which are often not technically possible to perform this.

Women who show decreased fetal activity have a stillbirth incidence 60 times higher than women without this complaint. Although decreased fetal motion usually precedes fetal death, it does not necessarily indicate imminent fetal death. Several factors other than aggravating the fetal condition may influence the perception of movement, including maternal activity, environment, obesity, medication, gestational age, placental location and volume of amniotic fluid Clinical Practice Guideline for the Care of Women with Decreased Fetal Movements, (2016). Fetal activity often usually varies over the course of the day, peaking between 9PM and 1 AM when maternal glucose levels decrease. There is a risk of complications such as restriction of fetal growth and still-birth in women with reduced fetal movements. More females notice changes in fetal activity, speed and frequency Aida, (2018).

Factors such as gestational age, fertility, obesity and placenta localization influence the female's ability to perceive fetal movements. When the women lie down, the highest amount of fetal movements is observed, and a majority of women detect these movements in the late evening. Clinical approaches known as vital pathways, multidisciplinary pathways, integrated pathways, or treatment maps to use evidence-based practice and to apply it to standardized care documents to provide guidance on procedures and best practice. Often known as "essential pathways" and "integrated treatment pathways," the clinical pathways reflect "ideal" patient journeys. We state the specific care series, and log the care given. Recording is usually "per exception" (i.e., only if care deviates significantly from the pathway) Seham et al.(2019),.

Clinical pathways are widely considered to provide valuable knowledge about particular types of patients and their treatment, and provide basic guidance in clinical practice. Clinical pathways are more used to improve both maternal and neonatal outcomes in high-risk care. A maternal and neonatal health system in the United States strengthened inter-professional mutual treatment assessment procedures, but did not alter the length of stay or minimize costs[8]. Both mechanisms provide guidance to providers when designing a care plan for a patient and aid in assessing length of stay and outcomes. Clinical interventions were estimated to have been introduced in more than 80 per cent of hospitals in the United States Gurzick & Kesten, (2010).

Significance

Perinatal mortality and morbidity are a concern in all countries, or a critical aspect in any country. The perinatal mortality rate in developed countries accounts for about 90 percent of all fetal and infant mortality. The rate of neonatal mortality was estimated at 18 deaths per 100 live births worldwide, according to the WHO in 2018. According to the Egypt Demographic and Health Survey (EDHS, 2014), approximately 8, 90,000 perinatal deaths occur annually in Egypt, 15 fetal deaths are registered among 1,000 live births in rural areas and 18 deaths among 1,000 births in urban areas. (Inter-Agency Group for Child Mortality Estimation, 2014) . There is not enough evidence to support or reject the counting of organized fetal activity in either low-risk or high-risk females. The indirect evidence of systematic fetal movement capacity to classify fetuses at risk of intrauterine death has not been converted into reduced perinatal mortality. The lack of high-quality randomized trials for high risk group makes it difficult to draw definitive conclusions. Therefore the study aims to assess the effect of nursing clinical pathway on self-assessment of fetal well-being among high risk pregnant women.

Operational definition:

Effect: In this study, effectiveness refers to the changes in knowledge score of high risk mothers on self- assessment of fetal well-being as determined by the difference in pre and post- test knowledge scores.

Clinical pathway. In this study clinical pathways/care pathways are structured, plans of care designed to support the implementation of clinical guidelines of the women about care of fetal well-being.

Self -assessment of fetal well-being: It refers to the count to ten methods of self-assessing of fetal movement during pregnancy.

High risk pregnant woman: In this study, the term high risk is referred to threaten health or life of the pregnant women or her fetus.

Aim of the study: The aim of the study is to assess the effect of nursing clinical pathway on self-assessment of fetal well-being among high risk pregnant women.

Research hypothesis:

1- High risk pregnant woman will have higher knowledge scores about self-assessment of fetal well-being after application of clinical pathway with nursing intervention than before.

2- High risk pregnant woman will have higher practice scores about self-assessment of fetal well-being after application of clinical pathway with nursing intervention than before.

3- Nursing clinical pathway participants will have better fetal outcome.

Design: A quasi-experimental design.

Sampling : convenience sample 150 high risk pregnant women (The pregnant women were selected between 28-36 week antenatal visits and followed during labour for observed the affected of clinical pathway on the study group and the neonatal outcome.

Inclusion criteria of the sample:

- Any high risk pregnant woman
- Can read and write

Exclusion criteria:

- Normal Pregnancy with no medical or obstetric complications
- fetal with congenital malformation

Sample Size:

- , A sample of 150 high risk pregnant women were selected in obstetric out clinics and inwards of University and Shebien ElKom Hospital they are selected between 28 -36 weeks of pregnancy. "So as to figure the sample size, the researcher utilized the Epi factual program from the Open Source Statistics for Public Health. The suppositions were: a two sided certainty level of 95% = $(1-\alpha)$; a power $(1-\beta)$ or (% possibility of distinguishing) of 80%; proportion of test size, unexposed (control)/uncovered (study group) = 1% of unexposed with result (mindfulness) = 5%. Pregnant women were chosen by the accompanying criteria".

Research Setting:

- The study carried out in different selected setting : out clinics and inwards of University and Shedien ElKom Teaching hospital. These places are centers of a high flow rate of pregnant women who attend for follow up , obstetric ,delivery and genecological care .

Instrument of data collection:

Structured Interviewing questionnaire

Part I: Social characteristics. It is developed to identify age, educational of the mother, Education of the husband occupation, income and telephone number.

Part II : Knowledge of high risk pregnant women. It is used to assess knowledge of high risk pregnant woman on pre and post –test. It will include the main basic knowledge will be on definition of fetal wellbeing, importance, indications, methods.

Validity of the instrument:-

For validity purposes the researcher was conducted an extensive literature review and developed the questionnaire from previously used tools and reviewing pertinent review. The questionnaire formulated and crossed-checked for its content validity by five qualified experts (Two experts from Faculty of Nursing, two physician from obstetrics and gynecology department at the Faculty of Medicine) and the needed modifications were done.

Reliability of the tool:-

Reliability of the tool was applied by the researcher for testing the internal consistency of the tool, using Test retest reliability and these methods was done by administrating the same tool to the same subjects under similar conditions on one or more occasion

II- Daily Fetal Movement Chart (DFMC): “count-to-ten” kick charts adopted from Saastad, (2011). The daily movement chart is used for monitoring and recording daily movement of the fetus by the mother for three times in a day- one hour after breakfast; one hour after lunch; one hour after dinner. More than 10 kicks for 12 hours are considered to be normal.

Scoring System for knowledge about Daily Fetal Movement Chart:

Wrong knowledge	1
Good knowledge	2
More good knowledge	3

Scoring System for practice about Daily Fetal Movement Chart:

Not done	0
Done	1

III-Fundal Height Measurement (McDonald's Chart): It adopted from (Engstrom ,1993). It is used to assess fetal growth.

IV) Apgar score

This was taken from references. Apgar scoring assesses five physical signs, namely heart rate, respiration, muscle tone, reflexes, and color. Each item or signs is given a score of 0, 1 or 2. The total score ranges from 0 to 10 Apgar scoring was carried out at one and five minutes for each baby. If the infant score ranges from 10 to 7, this indicates good baby. If the infant score ranges from 6 to 4, this indicates moderate infant condition. If infant’s score from 3 to 0, this indicates very bad baby condition (Apgar et al., 1985) Casey, Brian, Donald. McIntire and Kenneth . Leveno (2001).

Apgar scoring procedure

This was provided by the nurse for all babies for four classes during the first and fifth minutes. Apgar scoring was performed immediately after receiving the newborn at the delivery room, on the servo. In each newborn all the signs of the Apgar scoring were assessed and reported in the Apgar Rating. The overall rating was determined to display the baby's condition within the first minutes of delivery. Then at the fifth minute measurement was repeated, and the cumulative score was recalculated to reflect the baby condition. This score showed that intensive care and/or referral to the incubator were appropriate for the baby's condition. Each baby took about 5 minutes for measuring Apgar scoring during the first and the fifth minute.

Pilot study

A pilot study was conducted to test the feasibility, applicability and understandability of the tools. It was conducted on 15 of the total sample according to selection criteria.

Study Period: The information was gathered through a time of November 2018-October 2019.

Ethical Considerations:

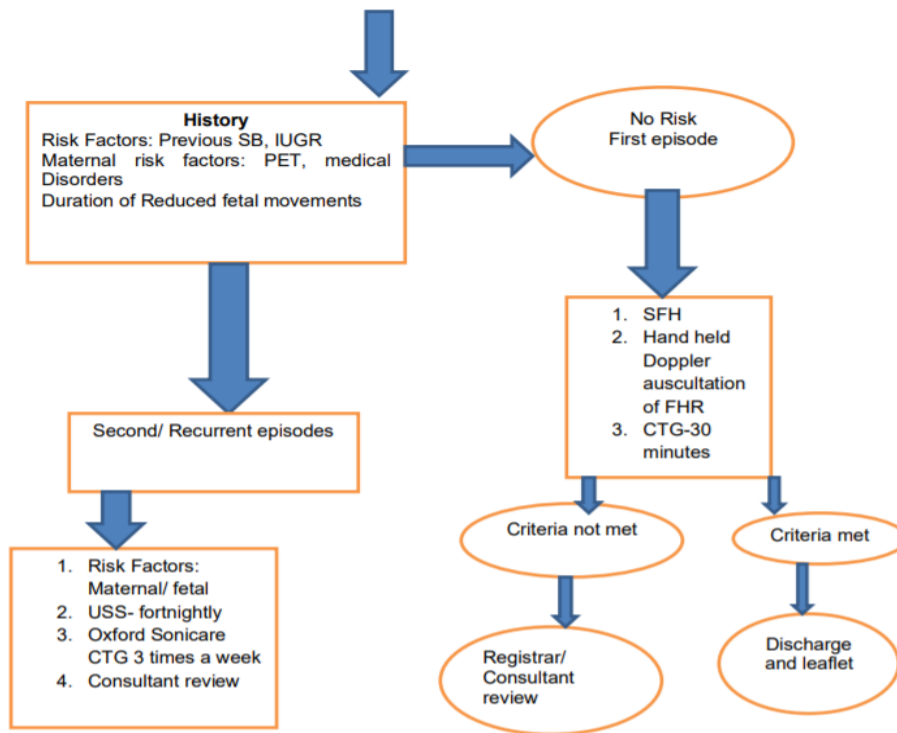
For the assurance of women's privileges, a composed letter was acquired from the members in the wake of clarifying the reasons for the research paper, which include: no mischief was striking member, don't negate with the social, customary and strict issues, human rights were saved, and information was classified and utilized for the most part with the end goal of the exploration.

Procedures for Data Collection:

An official letter was sent from the Dean of the Faculty of Nursing in Menoufyia University to the executives of Obstetrics and Gynaecology clarifying the point of the research paper and the hour of information accumulation looking for his consent for information group. An official authorization through composed letters was acquired from the chiefs of the chose emergency clinics as an endorsement for information group

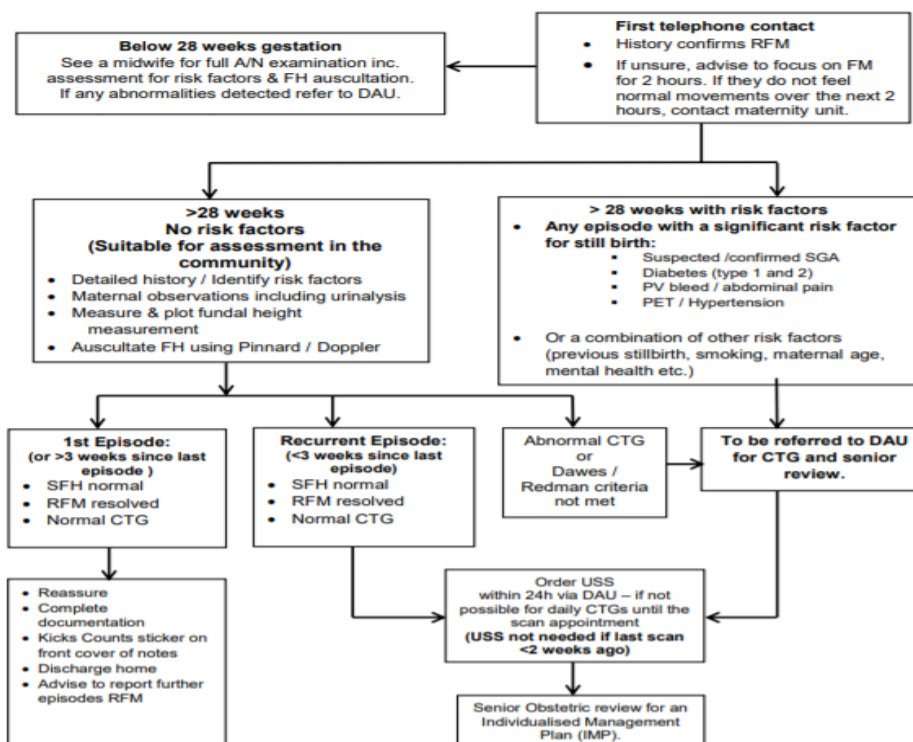
- At the beginning of the study, the researcher introduced herself to the high-risk pregnant women and explained the purpose and scope of the study..
- Evaluation of high-risk pregnant women's experience of fetal well-being self-assessment approaches. Assessment of practice of the the high risk pregnant women about methods of self -assessment of fetal well-being.
- Health education for high-risk pregnant women on self-assessment measures of fetal well-being was planned; Each session included three women a day.
- Every session was for 30-40 minutes, state least.
- Oral presentation, group discussions, suggestions will be used for health education and vibrant booklets will be circulated to women about self-assessment methods of fetal well-being.
- A posttest was done to assess knowledge of women and their ability to practice these methods.
- Work progress review was carried out for the participation of both groups in the same manner as a control group.
- The researcher then assesses the proper behavior of the mother and, if necessary, re-demonstrations of the steps were performed to ensure that the mother follows the kick chart correctly. A card was given to the mother including a telephone number for the researcher to be conveniently reached when admitted to the hospital labor unit.
- Explain referral protocol for decreased fetal monitoring • Researchers were measured neonatal results in the labor unit. In the first and fifth minutes, using APGAR score
- Care pathway for women presenting with decreased fetal movements from 28 weeks' gestation

**Reduced Fetal Movements
in Pregnancy over 28 weeks gestation**



Summary: Algorithm for Management of Reduced Fetal Movement (RFM)

All pregnant women to be given Kicks Count leaflet by 28 weeks by their CMW
CMW explains what normal movements are and what actions the woman needs to take if she experiences a change in fetal movement pattern



2. STATISTICAL ANALYSIS

Up on finishing of gathering information, the information were coded, classified and analysed statically by PC and measurable version SPSS form 22. Information was displayed utilizing distinct measurements as frequencies and rates for subjective factors and means and standard deviations for quantitative factors. Factors were thought about utilizing chi-square test. The analysis was utilized for evaluation of the between connections among quantitative factors. Measurable criticalness was considered at p-value <0.05 and P < 0.001.

3. RESULTS

Table (1): Socio-demographic characteristics of Women in Study participant

	Clinical Pathway Group 150	
	No	%
Age		
20	100	66.6
30	40	26.7
40	10	6.7
Education level		
Primary	30	20
Secondary	110	73.3
University	10	6.7
Occupation		
House wife	70	46.7
Working	80	53.3

Table 1 represents that the age of the study participant ranged between 20 and 40 years, with slightly more than half of them being younger than 30years 66.6%, more than two third had a secondary school and more than half working women

Table (2): Distribution of risk factors among study participant.

List	No (n=150)	Percent %
PIH	22	14.7
History of previous still birth	11	7.3
Gestational diabetes	8	5.3
PMROM	13	8.7
Polyhydramnios	6	4
Previous cesarean section	69	46
Heart disease	5	3.3
Placenta Previa	9	6
History of Post term	7	4.7

Table 2 revealed the distribution of risk factors among the study participant. The most incidence was for cesarean section as near to third (46%) of the study participant have previous history to cesarean section. The distribution for other risk factors 14.7%, 8.7%, 7.3% for PIH, PMROM, previous history of still birth respectively.

Table 3: Knowledge of Women in Study Participant about Fatal Wellbing among Study Participants.

	Preclinical pathway intervention group 150		post clinical pathway intervention group 150		X ²	P value
	No	%	No	%		
Definition of fetal well being						
Wrong knowledge	144	96.0%	1	0.7%	274.81	0.001
Good knowledge	4	2.7%	20	13.3%		
More good knowledge	2	1.3%	129	86.0%		
Important of fetal well being						0.001

Wrong knowledge	145	96.7%	2	1.3%	274.02	
Good knowledge	4	2.7%	30	20.0%	5	
More good knowledge	1	0.7%	118	78.7%		
Indication of fetal well being						0.001
Wrong knowledge	147	96.7%	2	2.7%	266.34	
Good knowledge	2	2.7%	28	20.0%	6	
More good knowledge	1	0.7%	120	77.3%		
Method of fetal well being						0.001
Wrong knowledge	145	90.0%	4	3.3%	230.37	
Good knowledge	4	8.0%	30	33.3%	2	
More good knowledge	1	2.0%	116	63.4%		

Table 3 presents that there are high statistically significant differences of the study participant about fatal wellbeing pre-clinical pathway and post clinical pathway intervention regarding definition, importance, indications and methods of fetal wellbeing (P value 0.001). Total improvement regarding the previous items as good and more than good are in pre clinical pathway intervention 4%,5%,3% and 5% and after clinical pathway intervention are 99.3%,98.7%,90% and 97.1% respectively.

Table (4) Knowledge and Practice of Daily Fetal Movement Chart among the Study Participants

	Preclinical pathway intervention group 150		post clinical pathway intervention group 150		X ²	P value
	No	%	No	%		
Knowledge of daily fatal movement chart						
Wrong knowledge	135	90.0%	5	3.3%	230.372	0.001
Good knowledge	12	8.0%	50	33.3%		
More good knowledge	3	2.0%	95	63.3%		
Practice of daily fatal movement chart					Fisher's Exact Test 272.762	0.001
done	2	1.3%	145	96.7%		
not done	148	98.7%	5	3.3%		

Table 4 shows that there are high statistically significant differences between knowledge and practice regarding to daily fatal movement chart for the study participant (P value 0.001). Total improvement regarding knowledge of daily fatal movement chart and practice of daily fatal movement chart as good and more than good are 96.6% after post clinical pathway interventions compared to 10% in preclinical pathway interventions.

Table (5) Knowledge about Fundal Height Measurement Chart and Practice regarding Fundal Height Measurement Chart for the Study Participants.

	Preclinical pathway intervention group 150		post clinical pathway intervention group 150		X ²	P value
	No	%	No	%		
Knowledge about fundal height measurement chart						
Wrong knowledge	145	96.7%	8	5.3%	252.112	0.001
Good knowledge	5	3.3%	40	24.0%		
More good knowledge	0	0.0%	102	70.7%		
Practice about fundal height measurement chart					Fisher's Exact Test 273.248	0.001
done	0	0.0%	143	95.3%		
not done	150	100.0%	7	4.7%		

Table 5 there are high statistically significant differences between the pre-clinical pathway and post clinical pathway regarding Knowledge about fundal height measurement chart and there are statistically practice about fundal height measurement chart for the study participant (P value0.001).Total improvement are 94% and 95.3% after post clinical pathway interventions compared to 3.3% and 0% respectively in preclinical pathway interventions .

Table (6): Fetal Outcomes Related to Apgar Score at the First Minute and Fifth Minutes among Study Participants

Parameter	Apgar score						χ^2	p-value
	0-3		4-7		> 7			
	No.	%	No.	%	No.	%		
The first minute	8	5.3	25	16.7	117	78	120	<0.001
Fifth minutes	3	2	8	5.3	139	92.7	124	<0.001

As noticed from table 6 there were statistically significance differences regarding Apgar scoring in first and fifth minutes (p<0.001).There are only 8 cases (5.3%) in the first minutes have low apgar score and only 3 of them(2%) remain low and need ventilation.

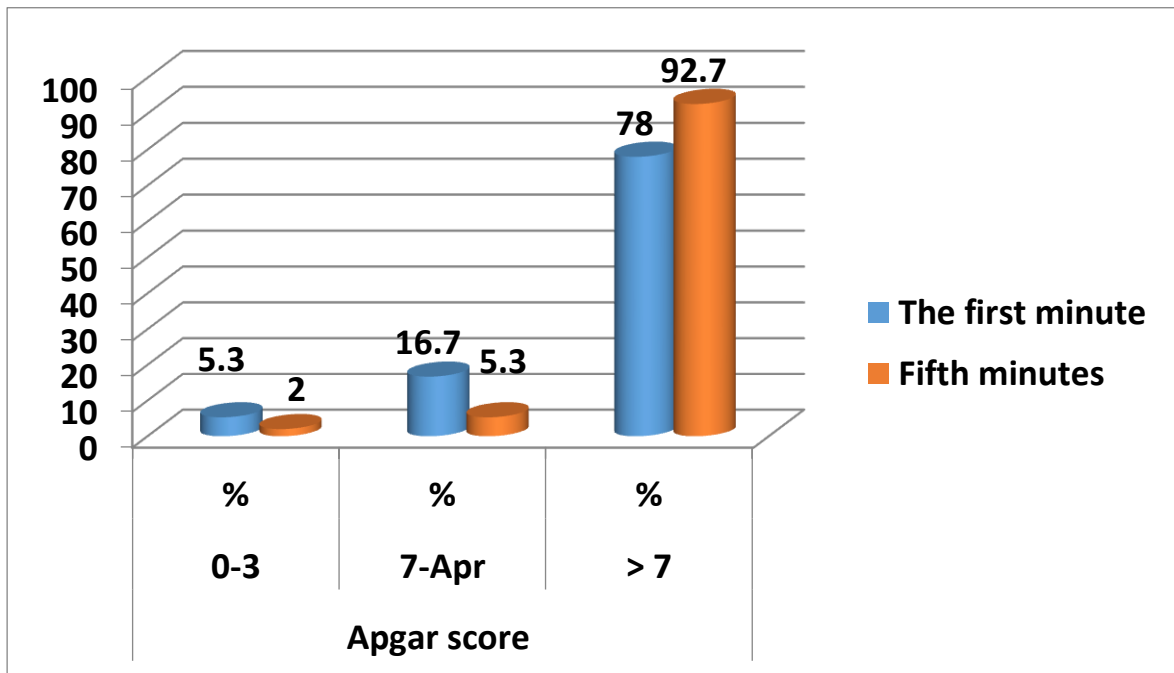
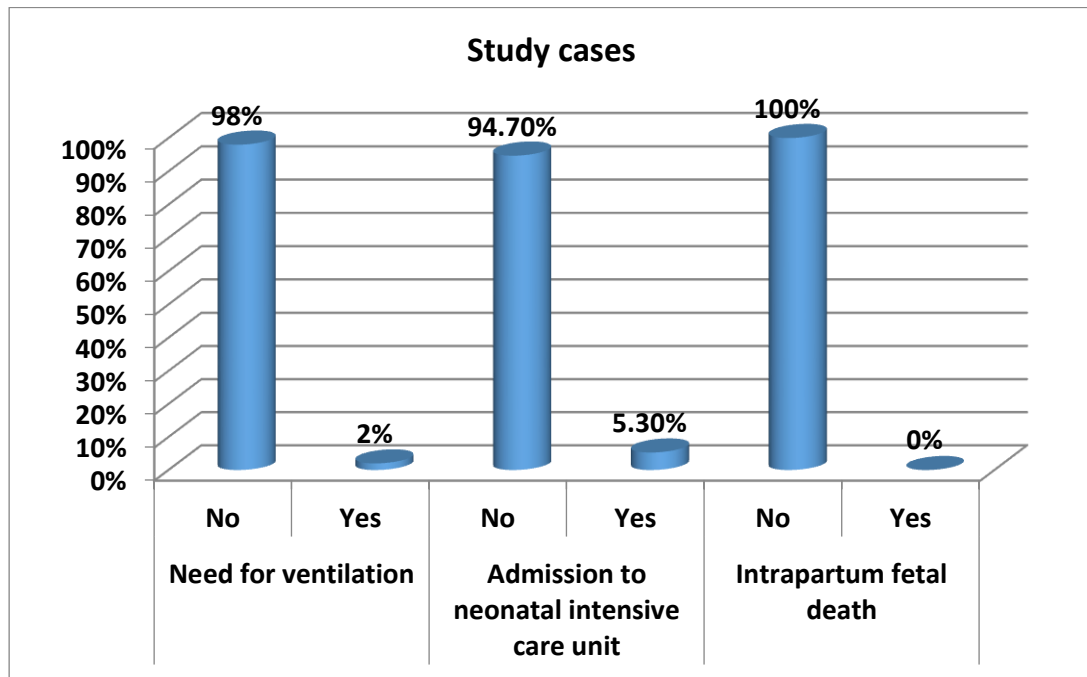


Table (7): Distribution of Fetal complication

Variable	Study cases	
	No.	%
Need for ventilation	No	147 98
	Yes	3 2
Admission to neonatal intensive care unit	No	142 94.7
	Yes	8 5.3
Intrapartum fetal death	No	150 100%
	Yes	0 0

Table 7 represents fetal complications in the study group in relation to Apgar score at the first stage. There were decreased frequency distribution of fetal complications as it is only3 (2%)cases needed to be ventilated and 8(5.3%) need admission due to life threatened complications as need for ventilation and admission to neonatal intensive care unit.



4. DISCUSSION

Researches have established significant correlations between altered fetal activity and stillbirth. However, women are generally unaware of this relationship. Providing pregnant women with information about the importance of fetal movements could improve stillbirth rates. However, there are no consistent fetal movement awareness messages globally for pregnant women. To our knowledge, no previous studies have measured the effect of application of clinical pathway on self-assessment of fetal well-being among high risk pregnancy until now.

Regarding to sociodemographic characteristics the current study revealed that the age of the study participant ranged between 20 and 40 years, with slightly more than half of them being younger than 30years 66.6%, more than two third had a secondary school and more than half working women. It is incongruence with Aida (2018) who was studying the effect of implementing clinical pathway to improve child-birth and neonatal outcomes. The researcher's study results show that, mean age of women in intervention and control groups was 20.40 ± 3.37 and 26.32 ± 4.29 years, respectively.

The current study revealed that the distribution of risk factors among study participant revealed the distribution of risk factors among the study participant. The most incidence was for cesarean section as near to third (46%) of the study participant have previous history to cesarean section. This is in accordance to list of high risk pregnancy mentioned by Fernando,etal(2008) and Hemant (2011). In the same line Claire, McCarthy, Meaney, and O'Donoghuev (2016) in studying Perinatal outcomes of reduced fetal movements: a cohort study indicate that all cases of decreased fetal movement were Post-dates, , Pre eclampsia/Pregnancy Induced Hypertension, Prolonged Rupture of Membranes, Fetal (e.g. Intrauterine growth retardation/Oligohydramnios) and Maternal Medical (Obstetric Cholestasis, Venous Thromboembolic Disease, Gestational Diabetes

Regarding knowledge of women in study participant about fatal wellbeing among study participants. The current study presents that there are high statistically significant differences of the study participant about fatal wellbeing pre-clinical pathway and post clinical pathway intervention regarding definition, importance, indications and methods of fetal wellbeing .This results supported by Thulasamma and Varalakshmi(2017) who studied the effectiveness of structured teaching programme on self-assessment of fetal well- being among primigravida mothers. The study revealed that the pre-test revealed that the majority 58.3% (35) had poor knowledge whereas 16.7% (10) had average knowledge and least 25% (15) had good knowledge on self-assessment of fetal well-being. In post-test knowledge scores on self-assessment of fetal well-being among primi mothers. It reveals the majority 68.3% (41) had fair knowledge whereas least 6.7% (4) had average knowledge on self-assessment of fetal well-being. Study finding imply that such a teaching programme contribute to increased knowledge on self-assessment of fetal wellbeing among primigravida mothers. All of the above results support the first hypothesis.

Knowledge and practice of daily fetal movement and application of fundal height measurement chart among the study participants shows that there are high statistically significant differences between knowledge and practice regarding to daily fetal movement chart for the study participant. This is also matched with Thulasamma, Varalakshmi (2017). Also Antepartum Evaluation of the Fetus and Fetal Well Being is a study by Erica and John (2013). It is a prospective study of fetal movement counting in low-risk women noted decreased fetal mortality rate significantly as patients used the count-to-ten approach with a 2-hour alarm, and the number of antepartum tests performed to assess decreased fetal activity increased 13% during the study period. On the same line, Abd-El-Rhman (2001) found that there was an obvious improvement in quality of care and improvement in patient knowledge level post-clinical pathway implementation and added that educational booklet helps patients become aware of the expectations for each day of their hospitalization, thus reducing anxiety associated with illness and hospitalization. The researcher concluded that application of the nursing clinical pathway can improve patients' knowledge, enhance their performance of self-management practices. It also increases patient's compliance to therapeutic regimen, increases patients and their family satisfaction, reduces complications and the negative variances as well as reduces length of hospital stay.

Singh, Maj Sindhu (2008) conducted a prospective study in military hospital at Amritsar. Sample were 500 of 9 the month pregnant women. Among them no fetus was lost in 250 cases who were given DFMC chart and delivered with no perinatal mortality. Five intrauterine deaths occurred in the ninth month in control group (2% perinatal mortality). The findings of the study showed that fetal deaths reduced from 20.4 per 1000 live births to nil in the study group.

Velasquez [22] suggested that compliance is high among women who understand the rationale for fetal monitoring, have been informed about the procedure, and know that it takes no more than 1–2 hours/day. Systematic self-assessment of fetal movements among expectant mothers. In a large randomized trial which included 68 000 women the compliance was also high regarding the counting of fetal movements, 81 percent of the women in the intervention group followed the chart for counting of fetal movements. The most likely explanation of this high compliance among women probably has to do with a generally high awareness of importance of fetal activity among pregnant women. We cannot neglect the fact that women in our study reported that the assessment was comfortable and gave them positive emotions. This support the second hypothesis.

Fetal outcomes interpreted in the current study in to apgar score at the first minute and fifth minutes and incidence of fetal complications. The current study reported that there were statistically significance differences regarding Apgar scoring in first and fifth minutes. Also represents fetal complications in the study group in relation to Apgar score as there were incidence of need to ventilation, admission to NICU and no still birth. There were decreased frequency distribution of fetal complications this findings is supported by Aidaa (2018) as the study revealed a statistically significant difference regarding Apgar score among Clinical pathway intervention group and control groups. This result also was in the line with Abushaikha, & Oweis who reported that newborns were benefited from the support that the mothers were receiving in labor and are less admitted to intensive care units. The present study also, found that the Clinical pathway intervention group applied early attachment as one of comfort measures during labor. This is supporting the new evidence from WHO (2018) for the importance of early contact as a good practice which is useful and should be encouraged in cases of low risk and normal birth. WHO also recommending daily fetal movement counting as reported studies shows that there is no perinatal deaths in the Norwegian trial (1076 women).

On the other hand, studies by Saastad et al. indicated that low awareness of the fetal movements is associated with adverse neonatal outcomes such as low birth weight.. Since previous studies have focused on quantitative self-assessment methods one can speculate whether a qualitative method for maternal awareness would cause less anxiety among the women. Further studies are needed in order to evaluate the benefits of systematic self-assessment for the fetal well-being among women with uncomplicated pregnancies. The implementation of clinical care pathways for optimizing prenatal care had a positive influence on new born. Low maternal awareness of fetal movements is associated with negative birth outcomes. This support the third hypothesis.

Conclusions: It can be concluded that:

The study hypothesis was accepted as

1- Nursing clinical pathways improve knowledge scores of high risk pregnant women about self-assessment of fetal movement.

2- Nursing clinical pathways improve practice scores of high risk pregnant women about self-assessment of fetal movement.

3-Nursing clinical pathways improve fetal outcomes (better Apgar score and decreased incidence of complication).

Recommendations: Applying nursing clinical pathways in routine nursing care for low risk and high risk pregnant women in hospitals

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