Outcomes of Labour based on Cardiotocography Categories: Donabedian Model Approach

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Abstract

Background: Many factors are crucial to be considered when determining labor outcomes and mode of giving births for pregnant women. **The aim of the study:** The current study aimed to investigate the correlation between cardiovascular imaging categories and determining the labor outcome based on Donabedian model approach.. **Methodology:** A correlational and descriptive study design was adopted in the labor room at maternal and children hospital (MCH) in Najran-Saudi Arabia. A purposive sampling technique was utilized for recruiting a total of 390 full term pregnant ladies at labor stag with specific inclusion criteria. A self- reported questionnaire, besides check-list was used for collecting data. **Results:** The age of the participants ranged between 18 and 41 years, with a mean of 26.2 ±6.1 years. Gravidity ranged between 1 and 7, with a mean of 2.7 ±3.1. Moreover, parity ranged between 1 and 8, with a mean of 1.9 ±1.8. The observed delivery mode was spontaneous normal vaginal delivery for 43.1%, followed by emergency cesarean section for 26.7%, while the least reported mode was vacuum-assisted (instrumental) vaginal birth for 9.2% of the participants. CTG was determined to be 86% for category I, 9% for category II, while category III was estimated for 5% respectively. Most of the newborns 362 (92.8%) had 7-10 Apgar scores in 1st minute, and almost 96% of them had 7-10 Apgar scores in the 5th minute. Only 7.2% (n=28) of newborns had been admitted to the neonatal intensive care unit (NICU). Mode of delivery, Apgar score at first minute, and admission to NICU were significantly associated with the CTG categories (P= 0.001, 0.045 & 0.012). **Conclusion & recommendation**: CTG categories were significantly related to labour outcomes in terms of mode of delivery, Apgar score at first minute, and thus NICU admission. For increasing CTG efficiency, continuous training is crucial for obstetricians and midwives on how to interpret CTGs and to escalate when there are concerns.

Keywords: Cardiotocography; Donabedian model; Labor outcome

Introduction

Both mothers and their fetuses are subjected to significant metabolic stress during labor and delivery process. Nonetheless, most women are able to cope with these stressors without adverse effects on their labor results[1]. Multiple factors should be considered when determining labor outcomes as well as mode of giving births for pregnant ladies. These factors had been grouped into psychological, psychosocial as well as psychosexual factors which are unique to the individual life experiences of pregnant women **(Humenick & Howell, 2003)** and **(Bang & Lee, 2009)** and **(Kim & Lee, 2008).**

On the other hand, fetuses too might expose to stressful periods for instance disrupting oxygenation which may result in a degree of acidosis and even death **(Walton & Peaceman, 2012)**. Accordingly, intermittent and or continuous fetal monitoring is a crucial

intervention for detecting fetal compromise during labor. Therefore, monitoring fetal heart rates is crucial during the laboring process **(Omidvar, et al., 2018)** Thus, obstetricians or midwives must accurately keep the records of any changes that may occur to fetal heart rates (FHR) during labor.

For determining the fetal heart rates, the most popular monitoring method that widely used in healthcare institutions is Cardiotocography (CTG) which is also named Electronic fetal monitoring that utilized for recording the fetal heart rate via ultrasound transducer which used for fetal assessment during labor **(Singh, et al., 2022)** In this regard, the National Institute of Child Health and Human Development (NICHD) developed 3-category system that helps obstetricians and midwives for CTG trace interpretation accurately **(Robinson, Nelson, 2008)**.

Accordingly, healthcare providers can make their decision for determining the suitable mode and outcome of labor in which category 1 denotes a normal trace, indeterminate trace represented by category II, while category III indicates abnormal trace respectively. In this line, numerous of obstetricians and midwives believe that the practice of continuous CTG monitoring and relying on it to decide on the mode of delivery and predict labor outcomes should be reconsidered **(Grivell, et al., 2015)** and **(Rimsza , et al., 2023)**. Moreover, some researchers concluded that there is a significant association between CTG categories, and the status of the newborns evaluated by 1st and 5th minutes Apgar score, umbilical cord artery blood pH, and NICU admission rate among women with abnormal test results **(Alfirevic, et al., 2017)** Furthermore, **(Amsumang, et al., 2017)** documented that CTG categories had been significantly associated with early labor outcomes as mothers with category II CTG were more likely to undertake operative delivery and cesarean delivery, compared to those with category I CTG (51.4% vs. 25.3%, p = 0.005) **(Ayrapetyan etal., 2019) and (Rahman et al., 2012).**

The Donabedian model is a conceptual model that provides a framework for examining health services and evaluating quality of health care. According to the model, information about quality of care can be drawn from three categories: "structure," "process," and "outcomes." **(Donabedian, 1988).** Structure describes the context in which care is delivered, including hospital buildings, staff, financing, and equipment. Process denotes the transactions between patients and providers throughout the delivery of healthcare **(McDonald, et al., 2007).** While there are other quality of care frameworks, including the World Health Organization (WHO)-Recommended Quality of Care Framework and the Bamako Initiative, the Donabedian Model continues to be the dominant paradigm for assessing the quality of health care **(Frenk &2000).**

Despite the fact that fetal heart rate monitoring and CTG interpretation are common practices in healthcare institutions, they have some drawbacks such as falsely interpretation. It was documented that poor or falsely CTG interpretation is considered one of the leading causes of stillbirth and brain injury. When the CTG is abnormal, further investigations should be undertaken to decide whether delivery of the baby should be brought forward dependent on the diagnosis of the fetal and maternal condition. Therefore, it should not be the only diagnostic tool for fetal distress and further measurements such as fetal scalp pH need be employed to distinguish hypoxic from non-hypoxic fetuses with abnormal CTG and reduce the rate of unnecessary cesarean sections **(Ikram, et al., 2018) and (Joshi et al., 2019).**

The immediate care of the neonates at the golden minutes include APGAR scoring system that had been defined as a quick assessment was done to babies at the first and the fifth minutes after birth **(Abd El-Moniem, et al, 2018).** A baby's first-minute score indicates how well the neonate tolerates birth, while the five minute scores show how well the baby is doing outside of the mother's womb, and also can help in measuring how well the baby responds when resuscitation is needed after birthing process **(Salustiano, et al. 2012) and (Nair, et al, 2018) .**

It has been documented that APGAR score could be influenced by many factors, such as fetus neurological condition, gestational age, some maternal medications, resuscitation, as well as cardio-respiratory conditions **(Devane, et al., 2007) and (Ayrapetyan, et al., 2019).**

Significance of the study

The current study examined the association between CTG categories and labor outcomes in terms of delivery mode, Apgar score at first and fifth minutes, and NICU admission. In addition to examining quality within a healthcare delivery unit, the Donabedian model is applicable to the structure and process for treating certain diseases and conditions with the aim to improve the quality of chronic disease management.

However, minimal studies were found in Saudi Arabia, assessing the relationship between CTG categories and labor outcomes. Also, the application of Donabedian model in such area was not focuses on labour so that the researchers need to study this Donabedian approach at the labour and assess the model outcomes, finally, outcomes of this research refer to the effects of healthcare on the health status of patients and populations will reflect on our community in Saudi Arabia

Aim of the Study

This study aimed to investigate the correlation between cardiovascular imaging categories and determining the labor outcome based on Donabedian model approach.

Research questions

Is there a relation between cardiovascular imaging categories and determining the labor outcome based on Donabedian model approach?

What is the outcome of using Donabedian model approach on cardiovascular imaging categories and labor ?

Methodology

Study Design, Setting and Population

A correlational and descriptive study design was utilized in the current study. This study was carried out at Najran Maternal and children hospital (MCH) among full-term pregnant ladies.

Sample type:

Purposive sample was utilized to conduct this study under the following inclusion and exclusion criteria

The inclusion criteria were:
- Active or transition phases of the first stage
- Single fetus
- Cephalic presentation,
- Full-term pregnancy (38 to 40+6 weeks)

The exclusion criteria were:
- High-risk pregnancy (Pre-Eclampsia Toxemia (PET), gestational diabetes mellitus (GDM), cardiac disease, placenta previa or abruption placenta),
- Elective cesarean section,
- Malposition or non-cephalic presentations.
- Ladies with twins

Sample size
- The following formula was used to determine the sample size (**Mani et al, 2015**). Wherever: n= size of sample, N= size of population, e=Margin of errors which is±0.05

$$n = \ /\ 1+N(e)^2$$

Data Collection Tools

The following tools were used to gather data:

Tool I: A structured Interviewing Questionnaire: It was written by the researchers after reading and reviewing relevant literature. It was divided into two parts:

Part (1): Personal characteristics of studied women (3 items) such as (age, level of education and Employment status)

Part (2): Obstetrical History (Previous Infertility, Number of pregnancies and Previous Mode of Childbirth)

Tool II: Observational Checklist

The second used tool was that composed of two main parts:

Part one used when observing laboring ladies starting from the 1st stage of labour till the first 24 hours after giving birth included the participants' previous and current labour history which includes status of liquor, CTG characteristics in terms of uterine contractions, fetal heart rate (FHR) variability, acceleration, deceleration, categories, who interpreted it and

mode of delivery. The researcher observed the CTG for 40 minutes during the active or transition phase of the first stage of labor. Then, the researcher asked an experienced midwife or the obstetrician to interpret the CTG according to NICHD 2008 criteria system which was already used in the current study setting[17]. If any changes occurred in the CTG pattern, the midwife or the obstetrician was asked to reinterpret the CTG. The researcher considered and recorded the last interpretation category before women's delivery.

Part two: a. Neonatal Outcomes Immediate Assessment in terms of birth weight, Apgar score at 1st and 5th minutes, and NICU admission status.

b. **Cord Assessment** After delivery, cord blood was collected in heparinized containers and analyzed within 5-10 minutes. Normal cord blood pH was defined as 7.25 or above while neonatal acidosis was defined as cord blood pH of 7.20 or less **(NICE, 2020).**

Tool III: Donabedian model

The Donabedian model provides a framework for evaluating and improving the quality of healthcare. The Donabedian domains of structures and processes were the focus of the elements influencing the infant outcome. This model based on three main constructs namely, structure, process, and outcome. In Donabedian's view, health care systems are shaped by their structures, which in turn affect processes and outcomes[21]. For the current study, the setting's policy and procedure regarding continuous fetal monitoring, staff training regarding CTG, and the application of continuous fetal monitoring in routine care are all considered care structures. Moreover, examining the relationship between interpretation of CTG categories based on NICDH is considered as a process of care. While the outcomes denote the mode of delivery, 1st and 5th minute Apgar score, and admission rate in NICU (Figure 1).

Health care structure in form of physical and organizational aspects of care, is represented in the current study as applying continuous CTG monitoring to all laboring women. While the care processes that showed in the middle of the diagram (figure 1) in the current study, the process of care is denoted as interpretation of CTG categories which based on NICHD and health outcomes that specified as labor outcomes.

Figure 1: Donabedian Model

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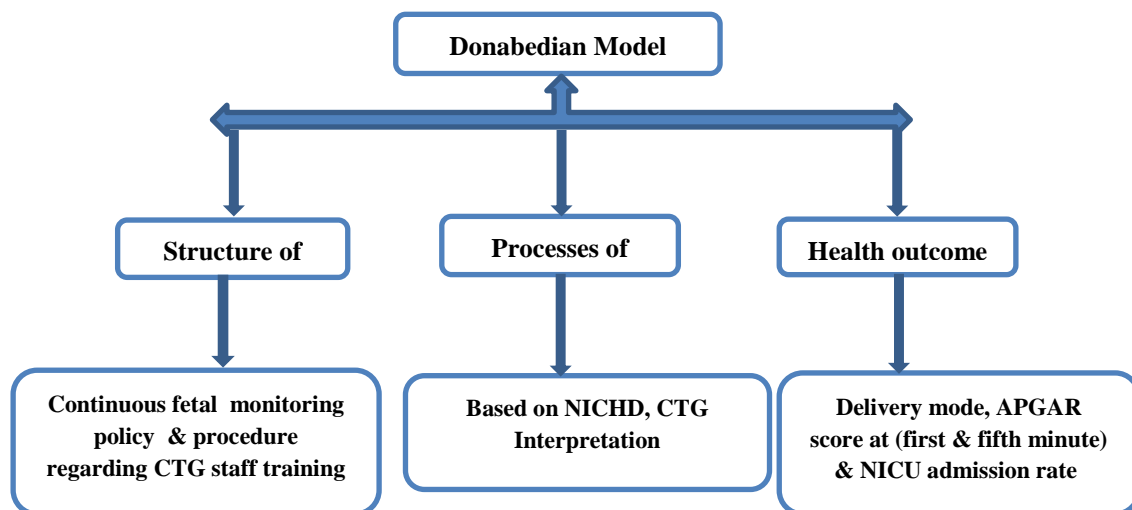
Validity and Reliability

The checklist and the questionnaire were reviewed translated into Arabic language and tested for content validity by a jury of 5 experts in obstetrics and gynecology field for relevancy and appropriateness to the current study aim. While the internal consistency was tested by Cronbach's alpha test which was 0.79 that showed acceptable internal consistency.

Data Analysis

Obtained data were entered, coded, and analyzed using the statistical package for social sciences (SPSS) version 25. Data were described using frequencies and percentages and presented in tables and graphs. Mean ±SD were utilized for continuous variables. Inferential statistics as Chi-square and ANOVA tests were used to test the relationship between variables. The level of statistical significance was considered at p-value <0.05 throughout the study.

Pilot Study

Furthermore, a pilot study was performed on 10 participants who were excluded from the main sample for ascertain the instrument's clarity and applicability and accordingly the necessary changes were undertaken.

Ethical Consideration

An official permission and ethical approval was obtained from the deanship of scientific research at Najran University. Additionally, an official permission was obtained too from maternal and children hospital's officials. A verbal consent indicated that the participant has the right to decline or withdraw at any point during the course of the study was obtained from all participants. Furthermore, confidentiality was assured to each participant.

Results

Description of the Participants and CTG Characteristics

The age of the participants ranged between 18 and 41 years, with a mean of 26.2 ±6.1 years. Gravidity ranged between 1 and 7 with a mean of 2.7 ±3.1. Moreover, parity ranged between 1 and 8, with a mean of 1.9 ±1.8. The observed delivery mode was spontaneous normal vaginal delivery for 43.1%, followed by emergency cesarean section for 26.7%, while the least reported mode was vacuum-assisted (instrumental) vaginal birth for 9.2% of the participants (Table 1).

As displayed in figure (2), CTG was determined to be 86% for category I, 9% for category II, while category III was estimated for 5% respectively.

As shown in table (2), the most noticed indications for CTG was abnormal presentation / fetal position (19.5%), followed by post-maturity (13.8%), while the least one was blood stained liquor (4.9%). Additionally, it had been noticed that most indications for CTG were noticed to be higher among primigravida (PG) except the indication due to decreased fetuses' movements was observed to be among multigravida (MG). Moreover, 87.2% have clear liquor.

Table (3) illustrates more than half of the neonates (54.1%) was normal vaginal birth.

It had been noticed that the mode of delivery was significantly associated with the CTG categories. Almost half of the participants with CTG category I had spontaneous vaginal birth who represented 49.2%, while only 4.4% of them had vacuum-assisted vaginal birth. In regard to participants with CTG category II, 3.3% of them had spontaneous vaginal birth followed by 2.6% who had vacuum-assisted vaginal birth. In terms of the participants with CTG category III, 2.6% of them had an emergency caesarean section, while only 1.5% of them had spontaneous vaginal birth (Table 4).

Moreover, a significant relationship was identified between CTG categories and the mode of giving birth (P- value =0.001). Apgar score at 1st minute was noticed too to be significantly correlated with CTG categories with P-value = 0.045 respectively. The majority of new-born babies (83.1%) with CTG category I, had a reassuring Apgar score (7-10), while only 2.8% of them had moderate asphyxia. Further, this study showed a significant association between the CTG categories and admission to NICU (P-value = 0.012). Almost all new-born babies who had CTG category I were not admitted to NICU except one baby respectively. In contrast, most of new-born babies with CTG category III were admitted to

NICU except one baby (0.3%) who was not   admitted to NICU (Table 4).

Table (1): Demographic characteristics of the studied sample (n=390)

Variable	N	(%)	P
Age			0.61
≤25	112	(28.7%)	
26-35	207	(53.1%)	
≥36	71	(18.2%)	
Educational level			0.33
Elementary/intermediate/secondary	280	(71.8%)	
College/University	110	(28.2%)	
Employment status			0.17
Employee	138	(35.4%)	0.09
Not employee (House wife)	252	(64.4%)	
Previous Infertility >1 year prior pregnancy	78	(20%)	0.11
Number of pregnancies			0.045*
Primiparas	106	(27.2%)	0.001*
Multiparas	284	(72.8%)	
Previous Mode of Childbirth			
Normal Vaginal Birth (one or more)	168	(43.1%)	0.16
Instrumental (vacuumed) Vaginal (one or more)	36	(9.2%)	0.037*
Elective caesarean section (one or more)	82	(21%)	0.002*
Emergency caesarean section (one or more)	104	(26.7%)	0.101
Gravidity	**Mean ± SD**		**Range**
	2.7 ±3.1		1-7
Parity	1.9 ±1.8		1-8

Figure (2): Categories of Cardiotocography (CTG) among participants (n=390)
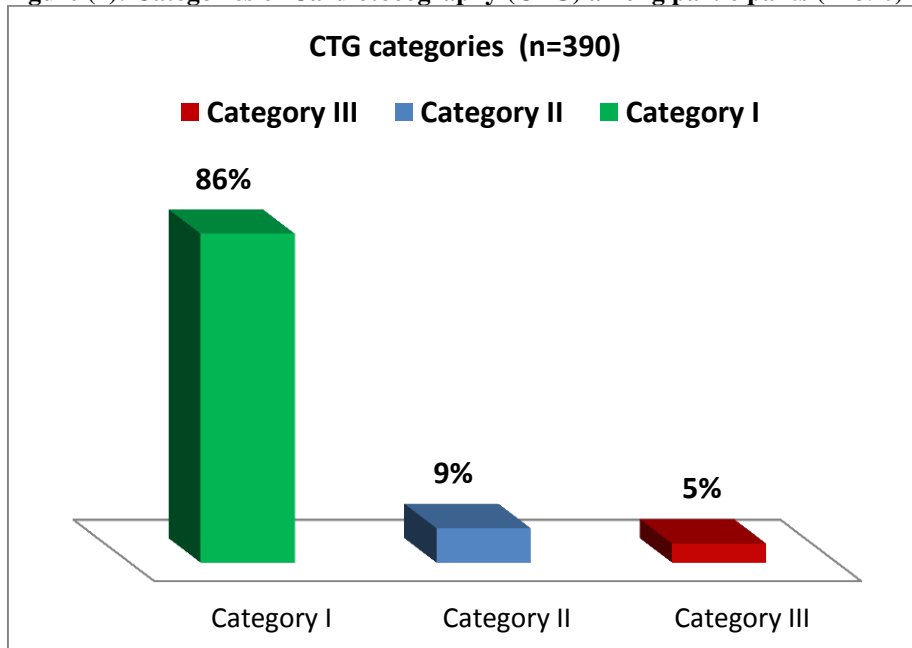
Table (2): Comparison between Gravidity Groups and indication for Categories of Cardiotocography (CTG) (n=390)

Indications for CTG	PG	MG	Total Frequency	%
Pre-maturity	26	15	41	10.5%
Post-maturity	30	24	54	13.8%
A decreased fetuses movements	19	27	46	11.8%
Abnormal presentation/position	42	34	76	19.5%
Induction of labour	29	12	41	10.5%
Clear liquor	155	185	340	87.2%
Meconium stained liquor	18	13	31	7.9%
Blood stained liquor	12	7	19	4.9%
Syntocinon	17	10	27	6.9%
Ante-partum hemorrhage	20	10	30	7.7%
Abnormal fetal heart rates	14	11	25	6.4%

CTG = cardiotocography; PG = Primigravida;   MG = Multigravida

Table 3. Current labor outcomes of the participants (n=390)

Variable	Frequency	%
Mode of Childbirth		
Normal Vaginal Birth	211	54.1%
Instrumental (vacuumed) Vaginal Birth	31	7.9%
Elective caesarean section	73	18.7%
Emergency caesarean section	75	19.2%
The fetus weight		
>2.5 kg	26	6.7%
2.5-4kg	303	77.7%
< 4 kg	61	15.6%
Admission to NICU		
Yes	28	7.2%
No	362	92.8%
Umbilical Cord Arterial Blood pH		
Cord arterial blood acidosis ($\leq$ 7.0)	11	2.8%
Normal cord arterial blood pH ($\geq$7.10)	379	97.2%
APGAR score at the first minute		
$\leq$ 3	0	0%
4 -6	28	7.2%
7-10	362	92.8%
APGAR score at the fifth minute		
$\leq$ 3	0	0%
4 -6	16	4.1%
7-10	374	95.9%

*NICU = Neonatal Intensive Care Unit

Table 4. Association between labour outcomes and CTG categories (n=390)

Variable	Frequency (%)	Cardiotocography (CTG) Categories			P-value
		I 335(86%)	II 35 (9%)	III 20 (5%)	
Mode of Childbirth					
Normal Vaginal Birth	211 (54.1%)	192 (49.2%)	13 (3.3%)	6 (1.5%)	0.001*
Instrumental (vacuumed) Vaginal Birth	31 (7.9%)	17 (4.4%)	10 (2.6%)	4 (1%)	
Elective caesarean section	73 (18.7%)	66 (16.9%)	7 (1.8%)	0 (0%)	
Emergency caesarean section	75 (19.2%)	60 (15.4%)	5 (1.3%)	10 (2.6%)	
The fetus weight					0.056
>2.5kg	26 (6.7%)	14 (3.6%)	9 (2.3%)	3 (0.8%)	
2.5-4kg	303 (77.7%)	279 (71.5%)	17 (4.4%)	7 (1.8%)	
< 4 kg	61 (15.6%)	42 (10.8%)	9 (2.3%)	10 (2.6%)	
Admission to NICU					0.012*
Yes	28 (7.2%)	1 (0.3%)	8 (2.1%)	19 (4.9%)	
No	362 (92.8%)	334 (85.6%)	27 (6.9%)	1 (0.3%)	
Umbilical Cord Arterial Blood pH					0.111
Cord blood acidosis (≤ 7.0)	11 (2.8%)	2 (0.5%)	3 (0.8%)	6 (1.5%)	
Normal cord blood pH($\geq$7.10)	379 (97.2%)	333 (85.4%)	32 (8.2%)	14 (3.6%)	
APGAR score at the first minute					0.045*
≤ 3	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
4 -6	28 (7.2%)	11 (2.8%)	8 (2.1%)	9 (2.3%)	
7-10 (normal)	362 (92.8%)	324 (83.1%)	27 (6.9%)	11 (2.8%)	

Cord pH < 7.10 as a cut of for acidosis

P-value $\geq$ 0.05* is considered statistically significant

NICU = Neonatal Intensive Care Unit

Discussion

Globally, CTG has been considered as a central tool for risk identification to babies during the course of giving birth. According to Donabedian Model, the main three pillars on which this model based are: 1- structure of care (Continuous fetal monitoring by CTG + staff training).   2-Processes of care (CTG interpretation based on NICHD,). 3- Health outcomes (Delivery mode, APGAR score at (first & fifth minute) & NICU admission rate) **(Guta, 2022)**

The structure of care that highlighted in the current study was utilizing CTG assessment tool to assess fetal wellbeing for preventing any adverse fetal outcomes. The current study showed that the most reported indication for performing CTG among participants was post-mature babies (pregnancies >42 weeks) which is considered as high risk pregnancy. The same indication had been recommended and reported by German Society of Gynecology and Obstetrics **German Society of Gynecology and Obstetrics {DGGG}, 2014)**

The important point to consider in this regard is the staff training. In order to maintain this important clinical skill, clinical staff engages in fetal well-being assessments are expected to keep up to date through professional development activities on regular basis. The same idea had been raised by numerous studies. **(Santos, 2016)** and **(Domingues et al., 2013)**

For the second pillar of Donabedian model which is about the CTG interpretation. Robinson et al believe that the success of CTG usage depends on how correct when healthcare professionals interpret CTG records meaningfully for allowing evidence-based clinical decisions. It was documented that poor or falsely CTG interpretation is considered one of the leading causes of stillbirth and brain injury. In this regard, CTG performing and interpretation in the current study were done by expert staff as mentioned earlier. The interpretation was performed by general

practitioner for 66 cases (16.9%), expert midwives for 178 lady (45.6%), and specialists for 146 (37.4%) respectively **(Yan Jia, et al., 2021)**

In regard to CTG categories that can be determined by this tool, most identified category was category I. In the same line, numerous studies showed that, more than two third of the participants had CTG category I. **(Ayrapetyan etal., 2019)** and **(Rahman et al., 2012).**

In terms of the third Donabedian model's component was the health outcomes that represented in form of delivery mode, APGAR score at (first & fifth minute) & NICU admission rate. In the light of this point, our study revealed that there was a statistically significant relationship between CTG categories and mode of delivery where majority of the participants with CTG category I (49.2%), had normal vaginal birth. Only 1.5% of the participated ladies with category III gave birth normally. These findings agreed with previous studies **(Nabukera etr al., 2006) and (Garite & Simpson , 2011).**

This study showed a significant statistical association between CTG categories and mode of delivery (P = 0.001). These findings agreed with another study which showed that, two thirds of the participants delivered by vaginal delivery, followed by cesarean delivery and the least mode was forceps extraction respectively **Devane, et al., 2007) and (Ayrapetyan, et al., 2019).**

Additionally, participants with CTG category III were more likely to undertake emergency cesarean delivery. Whereas, more than half of the participants with CTG category II had either normal or instrumental vaginal delivery. In the same line, it was reported that, vaginal delivery was the mode of delivery for 99.7% of the participants with CTG category I, while cesarean sections was the mode of delivery for most of the participants with CTG category III with a statistical significant relationship as reported by Joshi et al respectively **(Ikram, 2018)**. Moreover, another study used only two classification system of CTG categories, normal for category I and abnormal for category II and III identified that, 83.3% of the participants who had normal CTG,

delivered vaginally, and only 13.4% of them had cesarean section. While mode of delivery for the participants having abnormal CTG was cesarean section for 66.7%, assisted vaginal birth for 10%, and spontaneous vaginal delivery for 23% of them **(Amsumang et al., 2017)**

In regard to the neonatal outcomes, the current study revealed a significant statistical relationship between CTG categories and 1st minute Apgar score (P = 0.045). In the same line, a previous study revealed that all newborns with CTG category I had reassuring at 1st minute Apgar score **(Joshi et al., 2019).** Different results were found in another study where 86.7% of the new-borns with CTG category I had a reassuring 1st minute Apgar score and 90% of them had a reassuring 5th minute Apgar score. While 63.4% of the newborns with CTG category II and III, had a reassuring 1st minute Apgar score **(Amsumang et al., 2017).** This difference may be attributed to the small sample size (n=60) compared to ours in addition to different population and study area respectively Additionally, another study revealed that, two-thirds of the newborns who had moderate asphyxia at the 5th minute after delivery were with CTG category III while, the vast majority of the new-borns who had reassuring 5th minute Apgar score were with CTG category I **(Ikram, 2018)**

This study showed no statistically significant relationship between CTG categories and cord pH (P-value = 0.111). Coincided, other studies reported a statistically significant association between CTG categories and umbilical cord pH where newborns with CTG category II were more likely to develop neonatal acidosis than those with category I (Furthermore, it was found that, only 0.5% of the participants with CTG category I had acidic umbilical cord blood pH, 0.8% with CTG category II had acidic umbilical cord blood pH and, 1.5% with CTG category III had acidic umbilical cord blood pH. These results were much lower than another study in which the acidic pH of the umbilical cord blood were documented to be 2% of the participants with CTG category I had acidic umbilical cord blood pH, 22% with CTG category II had acidic umbilical cord blood pH and, 44% with CTG category III had acidic umbilical cord blood pH

respectively **(Devane, et al., 2007) and (Ayrapetyan, et al., 2019).**

The current study showed a statistically significant relationship between CTG categories and NICU admission (P-value = 0.012). These findings were consistent with numerous studies, which showed that, most of the newborns admitted to NICU, had CTG category III **(Ikram, 2018), (Devane, et al., 2007) and (Ayrapetyan, et al., 2019).**

Conclusion and recommendation

In summary, CTG categories have a significant relationship with labor outcomes in terms of mode of delivery, Apgar score at the first minute, and NICU admission. Abnormal CTG pattern during intrapartum CTG has high specificity. Therefore, labor of women especially for those with high-risk conditions should be monitored with CTG monitoring system.

Acknowledgment

Conflict of interest statement

There are no conflicts of interest to be declared.

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