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The relationship between some variables with birth outcome among postdate pregnant women delivering at Maternity Teaching Hospital Sulaymaniyah City, Iraq

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Abstract

Continuation of pregnancy may sometimes be life threatening for the mother and the fetus if the indication is frequently prolonged. Sometimes, it is necessary to bring on labor artificially because of safety concerns for the mother and her baby. A descriptive observational study performed in 200 postdate pregnant women who attended to the delivery room for induction of labor. The Purposive data collection took 3 consecutive months starting from February 28th, 2019 until May 26th 2019. A questionnaire and a checklist were designed for the purpose of the study and Bishop score, APGAR and patient's chart were used.

Content and Face Validity of the instrument was established and the reliability was measured by using Cronbach's alpha = 0.96. Formula for research, instrument. Descriptive & inferential statistical used for analysis data it was done with the SPSS version 22.0 software. Women's education, body mass index and method of delivery with mode of delivery had significant association. The overall caesarean section rate in this study was quartered. Half of them had a variety of complications and 44% of newborn needed admission to the neonatal intensive care unit. The rate of cesarean section was higher among participant were induced with misoprostol than who were induced by oxytocin. The statistically no significant relationship between the birth outcome with socio-demographic factors (age, residency, occupation and educational level), gravidity and Bishop score and the mode of delivering was determined in the study

Introduction

Labor induction is one amongst the principal medical approaches in pregnant women. It's a major intervention within the regular course of pregnancy, with the potential to line in motion a cascade of intervention, especially caesarean delivery [1]. Induction of labor means that the initiation of uterine contractions (after the time of viability) by any method (medical, surgical or combined) for the aim of vaginal delivery. Induction of labor is that the stimulation of uterine contraction before to the onset of spontaneous labor. It's an obstetric intervention that needs to be once when elective delivery are advisable for the mother and also the baby [2].

According to [3], up to 25% of all deliveries at term involve induction of labor in developed countries. The rate of induction of labor varies from a locality to a different. Among the United States of America and United Kingdom about 20% of all deliveries via induction of labor [4, 5]. Endogenous prostaglandins play a component all informed these processes. Interventions to artificially ripen the cervix, induce uterine contractions and augment labor once it is in progress also lack wonderful boundaries [1]. The aim of induction of labor is to realize a vaginal delivery when the advantages of expeditious delivery outweigh the possible risk of continuing the pregnancy [4]. While indications of labor induction are not definitive, the most frequent indication for induction is post-term pregnancy, is understood to keep elevated chance of perinatal mortality, meconium aspiration, and intrauterine infection within the neonate moreover at elevated risk of perineal trauma, labor dystocia, and caesarean delivery for the mother [6].

Post-term pregnancy is those pregnancies that continue beyond 287days (41weeks) from the first day of the last menstrual period. There is evidence supporting the induction of labor at or beyond 41 weeks (287days) of gestation. It's not synonymous with post-maturity, which is a clinical syndrome thought to be a consequence of a failing placental function [7]. Approximately 5 to 10 percent of all pregnancies continue to at least 42 weeks of gestation [8, 9]. Most cases of postdate pregnancies result from a prolongation of gestation. The most common cause of prolonged pregnancy is incorrect dating due to incorrect last menstrual period, and variable length of the menstrual cycle. The cause of most cases of true prolonged pregnancy remains unknown, but the anencephalic fetus and those with a placental sulfate deficiency are often associated with it [10].

Materials and Methods

A descriptive observational study was conducted, A purposive non probability sample consisted of 200 pregnant women who attended the delivery room in the Maternity Teaching Hospital for induction of labor and who were diagnosed as post-date according to the hospital guidelines 41weeks but according to the hospital policy the termination for postdate women would be performed at 40 weeks or more, because of the luck of the facility and the lack of monitoring for the mother and fetus. All samples of gestational age equal or are more than 40 weeks.

Inclusion criteria

Primi and multi gravida, pregnant women diagnosed by post-date and Fetuses via vertex presentation, with no recognized complication.

Exclusion criteria

Pregnant women with abnormal babies, fetal death, Medical condition (Pregnancy induced hypertension, diabetes).

Tool of data collection

Five instruments were used to gather data. First a questionnaire and a checklist were designed for the purpose of the study. The overall items included in the questionnaire were 6 parts and the third instrument was Bishop score and other instruments APGAR score and patient's chart. Content validity was decided via a panel of experts and the reliability was measured through using the correlation coefficient was r 88.4 (statistically adequate).

Method of data collection

When a client fulfills the study criteria and verbal consent is obtained, the data collection process was performed for the period of 28th February to 26th May 2019. Descriptive & inferential statistical used for analysis data was done with the SPSS version 22.0 software. There were criteria of probability levels to determine the significance of the test [Highly significant ($p \leq 0.001$), Significant ($p \leq 0.05$) and Not significant ($p > 0.05$).

Ethical considerations

Ethical approval from the university of Sulaimani and ethics committee was granted. Study participants gave informed consent and participated without being induced or coaxed.

Results

Table 1. Distribution of postdate cases of certain demographic variables.

Socio-demographic characteristics	Frequencies	Percentages
Maternal age		
16-20	28	14%
21-25	54	27%
26-30	74	37%
31-35	34	17%
36-40	10	5%
Mean ± SD (26.7 ± 5.2)		
Total	200	100%
Mean: 26.7, SD= 5.2		
Residency		
Urban	132	66%
Rural	68	34%
Total	200	100%
Level of education Illiterate	26	13%
Read and write	42	21%
Primary school graduate	46	23%
Secondary and high school graduate Institute and college	46	23%
graduate	40	20%
Total	200	100%
Occupation Housewife	166	83%
Employee Student	24	12%
Total	10	5%
	200	100%
Body mass index Unknown	40	20%
Underweight	10	5%
Normal	74	37%
Overweight	50	25%
Obese	26	13%
Total	200	100%

Table 1 shows that socio- demographic characteristics of the study sample. The study group age ranged from 16-40 years, nearly more than one third were in the age group 26-30 years to mean age 26.7 and SD =5.2.

Table 2. The distribution of the postdate cases, according to obstetric information *(n = 200).*

Obstetric information	Frequencies	Percentages
Prime parity	86	43%
Multi parity	114	57%
Total	200	100%
Gravidity G1	86	43%
2-4	88	44%
5-7	24	12%
8-10	2	1%
Total	200	100%
Mean: 1.24 SD= 0.473		
History of previous abortions		
Yes	74	37%
No	40	20%
Total	114	57%
Regularity of period Regular	164	82%
Irregular	36	18%
Total	200	100%

Table 2 demonstrates some variables related to obstetric information and menstrual history. Eighty six women were primigravida, and the other 114 were gravida 2 or more.

Table 3. The distribution of the postdate cases regarding intrapartum characteristics.

Intrapartum characteristics	Frequencies	Percentages
Gestational age		
40wk	8	4%
40wk+	142	71%
41wk	28	14%
41wk+	20	10%
42wk	2	1%
Total	200	100%
Type of rupture membrane Spontaneous	36	18%
Artificial	164	82%
Total	200	100%
Method of induction	2	1%
Artificial rupture of membrane Misoprostol	16	8%
Oxytocin	182	91%
Total	200	100%
Bishop score 0-3	44	22%
4-6	130	65%
7-9	26	13%
Total	200	100%
Mean: 1.915, SD= 0.587		

Table 3 shows that the majority of the study group (71%) gestational age were 40wks+ followed by 41 weeks 14% and 41wks+ 10%. Only 8 women were 40wks and 2 women 42 weeks because she waited for spontaneous labor.

Table 4. The distribution of the postdate cases regarding maternal outcome of induction of labor.

Outcome of induction of labor	Frequencies	Percentages
Mode of delivery	152	76%
Vaginal delivery	28	24%
Caesarean section	200	100%
Total		

The overall CS rate in this study was 24%, and 76% delivered vaginally, (Table 4).

Table 5. The distribution of the postdate cases regarding neonatal outcome of induction of labor.

Outcome of induction of labor	Frequencies	Percentages
Baby"s gender		
Male	96	48%
Female	104	52%
Total	200	100%
Birth weight		
≥2500 g	198	99%
<2500 g	2	1%
Total	200	100%
Apgar 5th minute		
<7	60	30%
≥7	140	70%
Total	200	100%
Admission to neonatal intensive care unit		
Yes	102	51%
No	98	49%
Total	200	100%
Neonatal complication No complication	126	63%
A breathing problem	2	1%
Breathing problem, Meconium	2	1%
Delay crying	6	3%
Shoulder dystocia	6	3%
Low APGAR	28	14%
Meconium	30	15%
Total	200	100%

Table (5) About the sex of the baby, 52% of the sample group delivered female babies and 48% of cases delivered male babies. Regarding the birth weight only 2 of the babies was under 2500 g.

Table 6. Relationship between birth outcomes with some variables.

Birth outcome	Maternal outcome				Neonatal outcome			
	Mean Square		F Tests	P value	Mean square		F Tests	P value
	Between Groups	Within Groups			Between Groups	Within Groups		
Socio-Demographic Factor	.045	.255	.175	.677	.479	.244	1.967	.164
Gravida	.336	.246	1.368	.230	.366	.237	1.548	.163
Bishop score	.249	.242	1.026	.316	.001	.236	.003	.960
Mode of delivery	.24	.242	1.026	.316	.001	.236	.003	.960

Table (6) A total of 200 women who had delivered after induction of labor were observed in the outcome. The end result identified that a statistically no significant relationship between the birth outcome with socio-demographic factors (age, residency, occupation and educational level), gravidity and Bishop score and the mode of delivering was determined in the study.

Discussion

The mean age for postdate cases was 26.7 years. It is consistent with the results of Njagi, 2002 who reported that the mean age of postdate cases was 26.8 years. On the other hand, the study carried out by Asmaa Salem, 2012 reported that advancing maternal age doesn't appear to influence the incidence of post-date pregnancy.

Concerning the residency, the majority of the cases (66%) were from the urban while the others were from the rural areas.

The educational level of the mother, only 13% were illiterate, whereas most of them were educated. Additionally, Atiya Mohammed, 2015 discovered that the majority (40.5%) of the study sample were educated which will help them to be capable to perceive their health needs and expectations during the delivery period. Additionally, education is a mean that enables women to gain access of knowledge and to modify many events in their life. The results of the study performed by Oberg et al. show that a higher the education level of the mother makes her pregnancy more likely go longer.

The The present study found the occupational status for most of them (83%) were housewives. This result insisted the necessity for complete pregnancy and postnatal health recommendation for these women as a result of exposure to work outside the house provides ladies higher possibilities of contact with an experienced person and acquire valuable health and social information.

The distribution of the cases, consistent with the body mass index earlier than getting pregnant, revealed those that who were normal in weight (BMI 18-25) constitute 37%, while those who were underweight (BMI<18) involved only 5% cases of all patients, patients who were overweight (BMI 26-30) encompass 25% cases just 13% cases were obese, 20% of women didn't know their weights before acquiring pregnant.

Concerning obstetric information 43% women were primigravida, and also the remaining were gravida 2 or more. Eden, 2008 mentioned prolonged pregnancies were encountered more frequently among primigravidas and women of high parity (4 or more). While [12] in her study determined that parity does not show up to impact the incidence of post date.

The gravidity of the study group ranged from 0-10 gravida, with a mean of 1.24 ± 0.473, the highest percent (44%) has 2 to 4 gravida. Masan, 2013 showed that the least number had delivered three children (4.8%). It was noted that the number of participants reduced with the increase in parity. The number of children delivered wasn't significant in determinative the success of induction of labor. The present study finds out that the majority of the study group (71%) gestational age were 40wks+ accompanied through 41 weeks 14% and 41wks+ 10%. Only 8 women were 40wks and 2 woman 42 weeks as a result of she waited for spontaneous labor.

The Eighteen percentage of the study sample had spontaneous rupture membrane whilst the majority of them (82%) had artificially ruptured membrane. Regarding the mode of induction of the sample group, only 1% of samples began induction by a surgical method (amniotomy) without medication when labor started, was given oxytocin for augmentation of labor and 24% of them were induced by prostaglandin (misoprostol) and the remain of the study sample were induced by oxytocin.

Esiromo, 2011 reported that the Prostaglandin E1 tablet in combination with artificial rupture of membranes and oxytocin infusion was the most common method used for inducing labor in this study while prostaglandin E2 was the least common similar way used in Nigeria. Aga Khan hospital, prostaglandin E2 is the most common technique used because it is the gold-standard and more on hand to this population of higher socioeconomic status. Oxytocin infusion alone used to be only by patients who had a diagnosis of premature rupture of membranes (8.4%) in accordance to the hospital protocol [18].

The WHO induction of labor guidelines encouraged the use of vaginal or oral misoprostol (or other vaginal prostaglandins) as first-line induction agents in women without a preceding caesarean section; intravenous oxytocin may be used if the prostaglandins aren't offered [3, 19]. Prostaglandins have a decreased risk of not achieving a vaginal birth within 24 hours and fewer caesarean births when in contrast to oxytocin alone [3].

The Bishop score at time of admission was checked, and found to be 4-6 among 65% of the study sample , between 0-3 at 22% and 7-9 in13% of women. Bishop, 1964 determined that when the total score was at least 9, the likelihood of vaginal delivery following labor induction was similar to that observed in patients with spontaneous onset of labor. Although the study conducted before [21] has been suggested, the Bishop score has become a classical parameter in obstetrics and has since been applied to nulliparous patients.

Initial research has been restricted to parous women, however the score was later found also to be applicable to nulliparous women Edward H. Bishop (1964) argued that a standardized evaluation of the cervix was needed to see suitable for elective induction. The Bishop score is used worldwide and several research on cervical assessment are performed. The cervix is rarely found to be favorable in post-term pregnancies [22].

Several comparative studies performed to assess effectiveness of Bishop score and transvaginal ultrasound for practice of inducing labor. Some studies found that the methods are comparable and some discovered that the Bishop score to be the most effective [23] and others state transvaginal ultrasound to be the most effective method [24].

The overall CS rate in this study was 24%, and 76% delivered vaginally. The current study agrees with the study conducted [17]. The success rate of induction of labor in this study was 74%, with 26% delivering via emergency CS. This was comparable to a similar study in the same setting which found that successful vaginal delivery was achieved in 75.1% of induced patients [11] and [18] within the Aga Khan hospital reported a success rate of 78.5%. Fortunately, throughout the data collection period, all of the discharged women and neonates (100%) were alive and there were not any dead mother and baby.

Regarding neonatal outcome, 48% of cases delivered male babies. Concerning this variable, different studies conclude that male baby is more risky for inducing labor and to have post date pregnancy [14, 25, 26]. Regarding the birth weight only 6% of the babies were under 2500 g. [27] mentioned that the risk of the baby being large at birth (>4500 grams) beginning at 38 weeks (0.5%), and doubled every week after that up until 42 weeks (6%). APGAR is test exams a baby's heart rate, muscle tone, and other signs see if more medical care or emergency care is needed, for the current study, the five minute APGAR scores the majority (70%) of the sample group APGAR score was between 7-10. Out of the 90 infants, when APGAR score was less than 7, only 42 of them were admitted to the NICU.

Stock et al. 2012 specified that induction was associated with lower 5th minute APGAR scores even following adjustment for contradictory factors. This is regularly in difference to research performed in settings with infusion and fetal heart rate monitors where there was no difference in APGAR scores between cases of medically indicated or elective induced labor and spontaneous labor [29, 30]. Regarding admission to the intensive care unit more than half (51%) didn't need admission to the NICU; however, those who required admission to NICU constituted 49%. But the pregnancies of their mothers were terminated by CS because the policy of the hospital stipulates that babies ought to be admitted to the NICU.

On the other hand, NICU admissions following elective induction were strongly influenced by the variable NICU availability and hospital policies. [28] mentioned that induction of labor increased the risk of neonatal admission to a special care unit. NICU admission rates were the lowest in 39 weeks (3.9%) and rose to 5% at 40 weeks and 7.2% at ≥42 weeks. The results of the current study agree with the results of a study conducted previously [31] who found that all babies were born alive and there were no neonatal deaths in the induction group. Demographic factors are the statistical characteristics of a population and within the study; women's demographic factors have mentioned to impact the outcome of birth [32].

The result of the current study showed no significant relationship between gravidity and birth outcome. The identical table confirmed that the Bishop score has not any significant relation to the birth outcome. Some research modifying or evaluating the Bishop score has used different outcomes like length of labor or achieving active labor and showed that the Bishop score has a significant relation to the birth outcome and more successful inductions [33]. Comparing the mode of delivery with birth outcome among the study

sample showed no significant difference statistically since the calculated p- value >0.05 (p- value 0.960)

Conclusions

The result identified that a statistically no significant relationship between the birth outcome with socio-demographic factors (age, residency, occupation and educational level). Induction was not associated with increased odds of maternal, fetal or perinatal mortality. Neonatal Intensive Care Unit (NICU) admission higher following elective induction, which can have resource implications. Oxytocin alone was the most common method of induction in Maternity Teaching Hospital in Sulaimani city, also should establish guidelines depending on local resources for scheduling of labor induction and every doctor ought to use these guidelines. If induction of labor is unsuccessful, the indication and also the technique of induction ought to be re-evaluated.

Acknowledgments

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