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Mode of Delivery and Immediate Adverse Neonatal Outcomes in Sana'a Hospitals – Yemen

Fawz M. Abol-Gaith[1,2], Nada A. Ismail[2], Afrah M. Al-Dubhani[2], Nabil A. Al-Robiee[1,2], Ahmed H. Al-Shahethi[1,*], Samah A. Al-Derbji[1], Anood N. Al-Malhani[1]

1. Community Health and Nutrition Department, Faculty of Medicine & Health Sciences, Al-Razi University, Yemen
2. Nursing Department, Faculty of Medicine & Health Sciences, Sana'a University, Yemen
3. Department of Community Medicine, Faculty of Medicine, 21 September University of Medical and Applied Sciences.

Abstract:

***Background**: Adverse neonatal outcomes are a major public health concern, particularly in low and middle-income countries. Mode of delivery has been found to be associated with adverse neonatal outcomes, and understanding this relationship can inform policies and interventions to improve maternal and neonatal health. **Aim**: To assess the mode of delivery and immediate adverse neonatal outcomes at selected hospitals in Sana'a City, Yemen. **Methods**: A descriptive cross-sectional study include 362 deliveries from December 2022 to January 2023. A structured questionnaire was used and the convenient sampling method. Data analysis was with SPSS version 22. **Results**: Vaginal delivery was common among mothers aged 18-24 years, while caesarean section was common among mothers aged 25-30 years. The majority of both delivery modes had a secondary school education. Vaginal delivery accounted for 63.80% of all deliveries, while caesarean section was 36.20%. The 5-minute Apgar scores revealed significant differences (p=0.026), with a higher percentage of normal scores for vaginal delivery and more low scores for caesarean section. The occurrence of neonatal health abnormalities did not significantly differ (p=0.065), and there was no significant difference in neonatal death (p=0.659). **Conclusion**: The adverse neonatal outcomes was higher in neonates delivered by cesarean section compared to those delivered vaginally. The most common adverse outcomes were respiratory distress syndrome, NICU admission and neonatal resuscitation.*

***Keywords**: Immediate adverse neonatal outcomes, Mode of delivery, Sana'a hospitals, APGAR score.*

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Address for Correspondence:
Fawz M. Abol-Gaith: Community Health and Nutrition Department, Faculty of Medicine & Health Sciences, Al-Razi University, Yemen, Sana'a, Yemen. ***E-mail***: fawzabolgaith@hotmail.com.

Introduction

The neonatal period is a highly vulnerable time for an infant completing many of the physiologic adjustments required for survival in the extra uterine environment. More specifically, the first seven days are the most critical period for the survival of neonates **[1]**. The adverse neonatal outcomes are defined as the presence of birth asphyxia, respiratory distress, birth trauma,

hypothermia, meconium aspiration syndrome (MAS), neonatal intensive care admission, and neonatal death. Globally, nearly 2.5 million infants died in the neonatal period in 2019, with approximately 7,000 neonatal deaths every day and 1 million deaths on the first day of birth. **[2]** According to the World Health Organization (WHO), 15% of deliveries have precise indication for cesarean section where it is mandatory for the preservation of maternal and/or neonate health. Increasing rates of lower segment caesarean sections(LSCS) puts foreword various question that, whether a LSCS need to be reflected as a vaginal delivery in this twenty first century **[3]**. Cesarean section (CS) is the most frequently performed surgical procedure in reproductive aged women. The (CS) rates are increasing worldwide. With rising (CS) rates, studies have shown the dangers of this procedure to both the mother and the neonate. **[4]**

The vast majority of these neonatal deaths occur in poor countries including Yemen where the neonatal mortality rate amounted to 37.3 per 1000 live births **[5]**. In the nursery unit at Al-Kuwait hospital, Sana'a a total of 692 neonates were admitted to the neonatal unit in Al- Kuwait hospital – 2014-2015. Among them, males were 334 (48.3%) and females were 358 (51.7%). According to the mode of delivery Caesarean section represent about 59.6% of all admission in 2015. Low birth weight accounted for 37.6%, Prematurity (30.3%) of total admissions. Respiratory problems were the next major cause of admission (26.1%). Neonatal infections only represent (11.6 %) of admission. Among total admissions 79.8% were discharged with a satisfactory condition, 12.7% died, 6.6% Left Against Medical Advice (LAMA) including that discharged on their attendants' request and 0.9 % referred to another hospital **[6].**

In Yemen, where maternal and child health indicators remain a significant concern, understanding the relationship between mode of delivery and adverse neonatal outcomes becomes crucial. By conducting this study in hospitals across Sana'a City, the aim is to shed light on the experiences of Yemeni mothers and their neonates, bringing attention to the pressing issues they face during childbirth. This study also seeks to enhance the overall quality of maternal and neonatal healthcare services, promoting the well-being and healthy development of neonates.

Aim of the study

To assess the mode of delivery and immediate adverse neonatal outcomes at hospitals in Sana'a City, Yemen.

Materials and Methods

A hospital-based descriptive, cross-sectional study was conducted in Sana'a city to assess the association between mode of delivery and immediate adverse neonatal outcomes from December 2022 to January 2023.The five major hospitals (AL-Thawra Modern General Hospital, El Sabeen Maternity and Child Hospital, Al-Kuwait University Hospital, Republican Teaching Hospital Authority, Palestine Maternity and Childhood Hospital) in Sana'a City, the capital of Yemen. All women who attended the obstetrics and gynecology ward of selected hospitals in Sana'a city for delivery, whether through vaginal delivery or cesarean section. All delivered women who agreed to participate in the study were included and exclude women who gave birth at home or other facilities and only visited the hospitals for the management of complications and the Neonates who were beyond the first minute after birth. A convenience sampling technique was employed. The data was including information on all the neonates in the labor room (LR) or operation theatre (OT). The sample was distributed proportionally. The following determinants were used to estimate sample size: Population size: (previous 1 month) =2284, Confidence interval = 95%, Expected frequency = 53.9% **[7]** and Marginal Error = 5%. The final sample size was 362 Yemeni patients. Data collection tool used in this study was close-ended structured questionnaire filled

by the researchers. The questionnaire was adopted from previous studies **[2,8-9]** further Modifications to suit the local context was used to collect the data. Trainings on data collection methods and refreshment on APGAR scoring system were given to data collectors. And the content of the tool was designed to obtain information on the following sections: Maternal Sociodemographic, Obstetric history, Maternal Comorbidities, Neonatal Demographic, APGAR Score, Adverse Neonatal Outcomes. The data generated in this study was analyzed using the (Statistical Package for the Social Sciences) IBM (SPSS), version 26. Descriptive statistics was employed to compute the mean and standard deviation of quantitative variables. Frequencies (numbers and proportions) was implemented. T-test and one-way analysis of variance (ANOVA) was used for normally distributed data and use. The statistical significance for all the analysis was assessed using the p-value. A *p*-value less than 0.05 was considered significant. Ethics approval was obtained from Ethics Review Board in the Faculty of Applied Medical Sciences Council, Al-Razi University. The data was double checked and coded. The confidentiality of the data was ascertained to the participants. All questionnaire was anonymous. All of the study participants were informed about the purpose of the survey, their right to participate or to terminate at any time if they want. Respondents' information was kept confidential. Privacy was maintained and the consent was taken orally from all participated in this study.

Results

Sociodemographic Characteristics

It is notice that there are no statistically significant differences between vaginal delivery and caesarean section regarding to the sociodemographic characteristics, however, statistically significant differences were found in family income per month (p-value 0.002). (**Table 1).**

Table (1): Sociodemographic Characteristics (n= 423).

Items	Expected Answer	Mode of Delivery				
		Vaginal delivery		Caesarean section		*P*- value
		F	%	F	%	
Maternal age	< 18	7	2.6	2	1.3	0.06
	18 – 24	104	38.5	43	28.1	
	25 – 30	89	33	61	39.9	
	31 – 37	51	18.9	36	23.5	
	38+	19	7	11	7.2	
Educational Level	Illiterate	46	17	26	17	0.55
	Primary School	76	28.1	50	32.7	
	Secondary School	117	43.3	61	39.9	
	University Degree	31	11.5	16	10.5	
Residence	Urban	195	72.2	106	69.3	0.522
	Rural	75	27.8	47	30.7	
Occupation	Employee	27	10	18	11.8	0.5٧٣
	Unemployed	243	90	135	88.2	
Family income per month	<50.000 YER	139	51.5	46	30.1	**0.002**
	51.000-100.000 YER	83	30.7	72	47.1	

	101.000-150.000 YER	30	11.1	22	14.4	
	>150.000 YER	18	6.7	13	8.5	

Distribution of sample according to delivery mode

Figure 1 illustrates that vaginal delivery accounts for 63.80% of all deliveries, while caesarean section accounts for 36.20%. The statistical analysis reveals that there is no significant difference between the two modes of delivery, as evidenced by a p-value of 0.573.

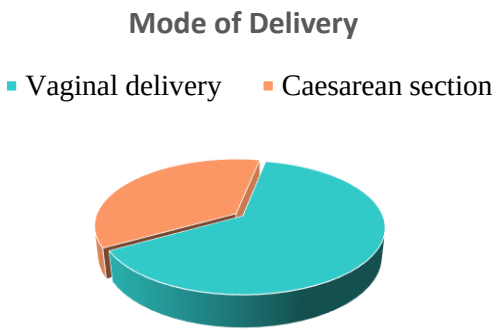

Figure (1): Distribution of sample according to delivery mode (n= 423).

Obstetric Characteristics & Maternal Comorbidities

The results reveal statistically significant differences between vaginal delivery and cesarean section regarding maternal parity, with a p-value of 0.010, the majority of both vaginal delivery and cesarean section cases were multiparas. Regarding the maternal comorbidities, the results show that there are statistically significant differences between vaginal delivery and caesarean section regarding to maternal hypertensive disorder with (p-value=0.001), and Other Medical conditions with (p-value=0.008). While there are no statistically differences in maternal diabetes (p-value=0.877) and thyroid disorders (p-value=0.084)

Neonatal Demographic Characteristics

Table 2 demonstrates that majority of neonates' birth weight are between normal birth weight in both vaginal delivery (75.6%) and caesarean section (68.6%). There were no statistical differences between birth weight and delivery mode with (P-value = 0.139). Regarding to gestational age majority of neonates were full term in both vaginal delivery (77%) and (86.9%) with caesarean section.

APGAR score

Table 3 shows, that the mean ± SD of Apgar score for vaginal delivery and caesarean section in 1st minute are 6.84 ± 2.12 and 6.35 ± 2.18, respectively. 5th minutes APGAR score means are 8.39 ± 1.69 and 8.02 ± 1.8, respectively. While the 10th minutes means are 9.24 ± 1.39 and 8.84 ±1.63, respectively. There are statistically significant differences between the mode of delivery in respect to the APGAR score.

Items	Expected answer	Mode of Delivery				
		Vaginal delivery		Caesarean section		*P*- value
		F	%	F	%	
Birth Weight	Extremely Low Birth Weight	0	0	0	0	0.139
	Very Low Birth Weight	9	3.3	2	1.3	
	Low Birth Weight	52	19.3	42	27.5	
	Normal Birth Weight	204	75.6	105	68.6	
	High Birth Weight	5	1.9	4	2.6	
Gestational Age	Preterm	27	10	9	5.9	0.711
	Full term	208	77	133	86.9	
	Post term	35	13	11	7.2	
Sex of the neonates	Male	135	50	88	57.5	0.137
	Female	135	50.	65	42.5	
Birth Type	Singleton	261	96.7	147	96.1	0.754
	Twins	9	3.3	6	3.9	

Table 2: Neonatal demographic characteristics (n= 423).

Table 3: Differences in the neonate Apgar score mean and SD in the 1st ,5th and 10th minutes regarding to delivery mode. (n= 423).

APGAR Score	Mode of Delivery				
	Vaginal delivery		Caesarean section		*P*- value
	Mean	SD	Mean	SD	
1st minute	6.84	2.12	6.35	2.18	**0.028**
5th minute	8.39	1.69	8.02	1.81	**0.039**
10th minute	9.24	1.39	8.84	1.63	**0.013**

Apgar score categories

Table 4 shows that absent of difficulty (normal APGAR) scores in vaginal delivery and cesarean section were (66.4%- 33.6%), respectively. Moderate difficulty (intermediate APGAR) scores in vaginal delivery and cesarean section were (47.3%- 52.7%), respectively. Sever distress (low APGAR) scores were (62.5%- 37.5%), respectively. With p value of 0.026.

Table 4: Sample distribution according to Apgar score categories in the 5th minute (n= 423).

Items	Classification according to adaptation to the extrauterine life	Mode of Delivery				
		Vaginal delivery		Caesarean section		*P*- value
		F	%	F	%	
APGAR 5min	Sever Distress	5	62.5	3	37.5	**0.026**
	Moderate Difficulty	26	47.3	29	52.7	

	Absent of difficulty	239	66.4	12 1	33.6	

Neonatal abnormalities by mode of delivery

The table 5 reveals that there is no statistically significant difference between vaginal delivery and caesarean section regarding the occurrence of neonatal health abnormalities (57%- 43%) respectively, with P- value of 0.065**.**

Table (5): Health abnormalities occurrence according to delivery mode (n= 423)

Items	Expected Answer	Mode of Delivery				
		Vaginal delivery		Caesarean section		P- value
		F	%	F	%	
Neonatal Abnormalities	Yes	69	57	52	43	**0.٠٦٥**
	No	201	66.6	101	33.4	

Neonatal outcomes by mode of delivery

The table 6 **r**eveals that there are statistically significant differences between vaginal delivery and caesarean section regarding to respiratory distress syndrome (8.9% and 15%) respectively with (p-value=0.040), regarding to NICU admission about 14.4% of (NICU) admission was with vaginal delivery (VD), while 21.6% was with caesarean delivery (CD), and there were statistically significant differences between delivery mode and NICU admission with (p-value=0.031). In relation to neonatal resuscitation a statistically significant variation in outcomes across groups was found (p-value=0.02). The percentage of resuscitation following vaginal delivery and cesarean section was 7.2% and 2.2%, respectively. While there were no statistically differences in neonatal asphyxia (p-value=0.988) and birth injury (p-value=0.699).

Table (6): Differences of neonatal outcomes by mode of delivery (n= 423)

Neonatal Outcomes		Mode of Delivery				*P*- value
		Vaginal delivery		Caesarean section		
		F	%	F	%	
Delay in initiating and maintaining respiration.	Yes	38	14.1	17	11.1	0.394
	No	73	27	41	26.8	
	Not applicable	159	58.9	95	62.1	
Asphyxia.	Yes	8	3	10	6.5	0.988
	No	102	37.8	47	30.7	
	Not applicable	160	59.3	96	62.7	
Meconium aspiration syndrome.	Yes	14	5.2	13	8.5	0.198
	No	96	35.6	44	28.8	
	Not applicable	160	59.3	96	62.7	
Respiratory distress syndrome	Yes	**24**	**8.9**	**23**	**15**	**0.040**
	No	87	32.2	35	22.9	

	Not applicable	159	58.9	95	62.1	
Birth injury.	Yes	1	0.4	1	0.7	0.699
	No	109	40.4	56	36.6	
	Not applicable	160	59.3	96	62.7	
Small for gestational age.	Yes	18	6.7	12	7.8	0.629
	No	93	34.4	46	30.1	
	Not applicable	159	58.9	95	62.1	
Hypoglycemia.	Yes	18	6.7	6	3.9	0.455
	No	93	34.4	51	33.3	
	Not applicable	159	58.9	96	62.7	
Hypothermia.	Yes	23	8.5	8	5.2	0.429
	No	88	32.6	49	32	
	Not applicable	159	58.9	96	62.7	
NICU admission.	Yes	**39**	**14.4**	**33**	**21.6**	**0.031**
	No	74	27.4	27	17.6	
	Not applicable	157	58.1	17.6	93	
Neonatal resuscitation.	Yes	**6**	**2.2**	**11**	**7.2**	**0.02**
	No	104	38.5	47	30.7	
	Not applicable	160	59.3	95	62.1	

Discussion

Mode of the delivery: In the current study the distribution of delivery modes shows that VD accounted for approximately 63.80% of the sample, while CS accounted for 36.20%. These findings indicate a higher proportion of vaginal deliveries compared to cesarean sections among the study population. When comparing these results with previous studies conducted in turkey, Brazil, and Ethiopia, a consistent pattern emerges. In turkey (2022), the mode of delivery was reported as 59.2% vaginal delivery and 40.8% cesarean section.**[10]** Similarly, in Brazil (2018), 59.4% of deliveries were vaginal and 40.6% were cesarean. **[4]** In Ethiopia, a study revealed that 67.5% of deliveries were vaginal and 32.5% were cesarean. **[2]**

Comorbidities of the mothers: The current study shows that there are statistically significant differences between vaginal delivery and caesarean section regarding to maternal hypertensive disorder with (p-value=0.001), and other medical conditions with (p-value=0.008). While there are no statistically differences in maternal diabetes (p-value=0.877) and thyroid disorders (p-value=0.084). in relation to gestational hypertension was (3.7% and 5.2%) respectively, sever preeclampsia was (1.5% and 7.2%) respectively). In terms of hypertensive disorders, gestational hypertension and severe preeclampsia were more prevalent among women who underwent cesarean section compared to vaginal delivery. These findings are consistent with previous studies conducted in Southern California, which also reported higher rates of severe preeclampsia in cesarean deliveries. in Southern California 2015, it was found that gestational hypertension rate was 3.6% and 3.9% respectively, sever preeclampsia 3.1% and 20.2% respectively.**[11]** In China 2018, Late preeclampsia (≥34 weeks) prevalence was found to be 51.5% in vaginal delivery

group and 31.8% for caesarean section.**[12]** Regarding urinary tract infections (UTIs), the current study found higher rates among women who underwent cesarean section (56.2%) compared to vaginal delivery (38.9%). This finding is contradicted with a study conducted in Babylon, Iraq, which reported higher rates of UTIs in vaginal delivery 69.6% than cesarean section 22.3%.**[13]** However, a contrasting study from 2019 reported lower rates of UTIs in cesarean deliveries 17.0% compared to the current study. **[14]**

APGAR Score and Adverse Neonatal Outcomes: The current study indicates statistically significant differences in Apgar scores between vaginal delivery and cesarean section at 1 minute, 5 minutes, and 10 minutes after birth. The study found that infants delivered vaginally had higher mean Apgar scores compared to those delivered by cesarean section at each time point. Statistical analysis indicated that there are statistically significant differences between the mode of delivery in respect to the Apgar scores with p value of 0.013. These findings suggest that the mode of delivery may have an impact on the immediate well-being and vitality of the newborn, as reflected by the Apgar scores. The higher Apgar scores observed in vaginal delivery compared to cesarean section at each time point may indicate better physiological adaptation and overall newborn health in the immediate postnatal period. A study done in Ethiopia align with our findings found that the mean and SD of Apgar score for vaginal delivery and caesarean section in 1st minute was (7.19±1.18 - 6.83 ±1.31), respectively and p-value= 0.001, while the 5th minutes Apgar score mean was (8.49 ±1.23 - 8.32±1.34) and p-value= 0.055.**[15]** This finding is in agreement with another study conducted in tell Aviv, among preterm birth reported that Apgar score at 1 min mean ±SD for vaginal delivery and cesarean section was 7.7 ± 2.2- 6.5 ± 2.7 with (p-value=<.0001).**[16]** However, it is important to consider the limitations of the Apgar score and the interpretation of the findings. The Apgar score is a subjective assessment and may be influenced by various factors such as gestational age, maternal health, and obstetric interventions.

The current study reveals a statistically significant difference between VD and CS in relation to the occurrence of respiratory distress syndrome (RDS). The prevalence of RDS was found to be 8.9% in VD cases and 15% in CS cases, with a p-value of 0.04 indicating a significant association between mode of delivery and RDS. In comparison to a previous study conducted in northwest Ethiopia in 2016, no statistically significant differences were observed in the prevalence of RDS between VD (16.9%) and CS (18.1%) cases, as indicated by a p-value of 0.793.**[15]** Another study done in China 2020, found that about (2.2% and 2.8%) respectively (p-value=0.403) of respiratory distress syndrome with preterm premature rupture of membranes.**[17]** All previous studies show results that there are no statistically significant differences between mode of delivery regarding to RDS is more with CS, the current study suggests that the higher prevalence of RDS in CS cases may be attributed to emergency situations such as obstructed labor or fetal distress. This highlights the significance of considering underlying indications for CS when interpreting the relationship between mode of delivery and RDS.

The present study investigates the differences between vaginal delivery and caesarean section in relation to birth injury. The results indicate that the prevalence of birth injury was 0.4% in vaginal delivery cases and 0.7% in caesarean section cases, with a p-value of 0.699, suggesting no statistically significant difference between the two modes of delivery. Comparing these findings to a previous study conducted in

shanghai, China in 2018, which reported a prevalence of birth injury of 0.3% in vaginal delivery and 0.1% in caesarean section cases, a non-significant difference was also observed (p-value = 0.485) (medicine, 2018a). Another study conducted in Tehran in 2017 reported a prevalence of 4.16% in vaginal delivery and 2.71% in caesarean section cases, with a p-value of 0.083.**[18]** additionally, a study conducted in China in 2020 investigated birth injuries specifically in cases of preterm premature rupture of membranes. The study reported a prevalence of 0% in vaginal delivery and 0.1% in caesarean section cases, with a p-value of 1.000, indicating no significant difference between the two modes of delivery.**[17]** Birth injuries can have multifactorial causes, including factors unrelated to the mode of delivery, such as maternal and fetal characteristics, the skill and experience of the healthcare provider, and the presence of underlying medical conditions. These factors should be taken into account when interpreting the relationship between mode of delivery and birth injury.

Comparing these findings to a previous study conducted in shanghai, China in 2018, which reported a prevalence of birth injury of 0.3% in vaginal delivery and 0.1% in caesarean section cases, a non-significant difference was also observed (p-value = 0.485).**[19]** Another study conducted in Tehran in 2017 reported a prevalence of 4.16% in vaginal delivery and 2.71% in caesarean section cases, with a p-value of 0.083.**[18]** additionally, a study conducted in China in 2020 investigated birth injuries specifically in cases of preterm premature rupture of membranes. The study reported a prevalence of 0% in vaginal delivery and 0.1% in caesarean section cases, with a p-value of 1.000, indicating no significant difference between the two modes of delivery.**[17]** Birth injuries can have multifactorial causes, including factors unrelated to the mode of delivery, such as maternal and fetal characteristics, the skill and experience of the healthcare provider, and the presence of underlying medical conditions. These factors should be taken into account when interpreting the relationship between mode of delivery and birth injury. The study conducted in Indonesia reported a significantly higher prevalence of neonatal asphyxia of 16.2% in vaginal delivery and 83.8% in caesarean section cases among preterm infants (p-value = 0.00).**[20]** Similarly, the study conducted in Ethiopia in 2018 reported a significantly higher prevalence of neonatal asphyxia of 5.57% in vaginal delivery and 17.90% in caesarean section cases (p-value = 0.000).**[21]** These discrepancies in the reported prevalence rates and statistical significance across studies may be attributed to various factors, including: premature rupture of membrane, delivery of twins, prolonged labor, and others.

Regarding to neonatal intensive care unit admission (NICU) admission, the current study shows that about 14.4% of (NICU) admission was with vaginal delivery (VD), while 21.6% was with caesarean delivery (CS), and there were statistically significant differences between delivery mode and NICU admission with (p-value=0.031). This finding is in line with previous study carried out in Canada that investigated the relationship between neonatal outcomes in obese women and mode of delivery suggested that, NICU admission with vaginal delivery was about 11.1%, while caesarean delivery admission was 16.6% with (p-value= 0.0023) that indicating a significant association between delivery mode and NICU admission.**[22]** However, the findings of the current study contrast with previous research study done in northwest Ethiopia have posited that NICU admission with vaginal delivery was about 29.1% while, 31.0% was with caesarean delivery with (p-value= 0.766)

that revealed no significance between delivery mode and NICU admission.**[15]**

The present investigation found that there were statistically significant differences in neonatal resuscitation outcomes between vaginal delivery and cesarean section p= 0.02. The percentage of cases requiring resuscitation was 7.2% for cesarean section and 2.2% for vaginal delivery. This suggests that neonates born through cesarean section had a higher likelihood of requiring resuscitation compared to those delivered by vaginal delivery. In contrast, another study conducted in eastern Ethiopia in 2021 reported different findings. They found that the percentage of cases requiring resuscitation was higher for vaginal delivery (43.97%) and cesarean section (13.55%). These results indicate a higher need for resuscitation in vaginal delivery compared to cesarean section.**[2]**

Conclusion

One third of the deliveries was caesarean section. There statistical differences between the vaginal delivery and caesarean section regarding the sociodemographic characteristics of the mothers except in the family income. There was statistical difference between vaginal delivery and caesarean section regarding the maternal parity, while no differences in maternal gravity and history of abortion. In relation to maternal comorbidities, there were no differences according to the delivery mode except in the preeclampsia and UTI which more in caesarean section.

Around three quarters of the neonate in both modes were with normal weight and full term. In the classification according to adaptation to the extra-uterine life for neonates, there were statistical significant differences according to the mode of delivery. Two third of them who delivered normally have sever distress in the 5th minute, while one third of the neonates who delivered by caesarean section have no difficulties in the same minute. Regarding the neonatal adverse events, there were statistical differences between normal delivery and caesarean section in the respiratory distress syndrome, NICU admission and neonatal resuscitation in the favor of caesarean section.

Recommendations

The study results highlight the need for policies and interventions that promote the appropriate use of cesarean delivery, particularly in low-resource settings, to improve neonatal outcomes.

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طريقة الولادة والنتائج السلبية الفورية لحديثي الولادة في مستشفيات مدينة صنعاء، اليمن.

فوز أبوالغيث[1,2]* - ندى إسماعيل[2] – أفراح الذبحاني[2] –نبيل الربيعي[1,2] - أحمد الشاحذي[3] - سماح الدربجي[1] – عنود الملحاني[1]

fawzabolgaith@hotmail.com

١. قسم صحة مجتمع والتغذية، كلية الطب والعلوم الصحية جامعة الرازي ، صنعاء، اليمن.
٢. قسم التمريض كلية الطب والعلوم الصحية/جامعة صنعاء، صنعاء، اليمن.
٣. قسم طب مجتمع، كلية الطب، جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية، صنعاء، اليمن.

الملـخص

الخلفية: تعد النتائج السلبية لحديثي الولادة هي مصدر قلق كبير للصحة العامة، وخاصة في البلدان المنخفضة والمتوسطة الدخل. لقد وجد أن طريقة الولادة ترتبط بنتائج سلبية على حديثي الولادة، وفهم هذه العلاقة يمكن أن يفيد في وضع السياسات والتدخلات المناسبة لتحسين صحة الأمهات والاطفال حديثي الولادة. **الهدف:** تقييم طريقة الولادة والنتائج السلبية الفورية لحديثي الولادة في مستشفيات مختارة في مدينة صنعاء، اليمن. **منهجية البحث:** دراسة وصفية مقطعية تتضمن ٣٦٢ ولادة في الفترة من ديسمبر ٢٠٢٢ إلى يناير ٢٠٢٣. تم استخدام استبيان منظم وطريقة أخذ العينات المناسبة. تم تحليل البيانات باستخدام SPSS الإصدار ٢٢. **النتائج:** كانت الولادة المهبلية شائعة بين الأمهات الذين تتراوح أعمارهم بين ١٨-٢٤ سنة، في حين كانت الولادة القيصرية شائعة بين الأمهات الذين تتراوح أعمارهم بين ٢٥-٣٠ سنة. كانت غالبية الامهات في كلا وضعي الولادة حاصلة على تعليم ثانوي. وشكلت الولادة المهبلية ٦٣,٨٠٪ من جميع الولادات، في حين بلغت نسبة الولادة القيصرية ٣٦,٢٠٪. كشفت نتائج APGAR في الدقيقة الخامسة عن فروقات ذات دلالة إحصائية (P value= ٠,٠٢٦)، مع نسبة أعلى من APGAR للولادة المهبلية ودرجات أكثر انخفاضًا للعمليات القيصرية. ولم يختلف حدوث المشاكل الصحية لحديثي الولادة اختلافا ذو دلالة احصائية (P value = ٠,٠٦٥)، ولم يكن هناك فرق كبير في وفيات لولادة في كلا وضعي الولادة (P value = ٠,٦٥٩). **الاستنتاج:** النتائج الوليدية السلبيةكانت أعلى عند حديثي الولادة الذين ولدوا بعملية قيصرية مقارنة بأولئك الذين ولدوا عن طريق الولادة الطبيعية. وكانت النتائج السلبية الأكثر شيوعاً هي متلازمة الضائقة التنفسية، والدخول الي وحدة العناية المركزة لحديثي الولادة، وإنعاش حديثي الولادة.