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## **IMPACT OF ANTENATAL CARE ON PREGNANCY OUTCOME**

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### **Abstract**

**Background and objectives:** Antenatal care is defined as the care provided by skilled health-care professionals to pregnant woman in order to ensure the best health conditions for both mother and baby during pregnancy. The objective of this study was to find out the relationships between the antenatal care for pregnant woman and pregnancy outcome

**Methods:** In this cross-sectional survey was conducted in maternity , hospital in Duhok city of Kurdistan region Iraq from October 2018 to the April 2019 Data collection was done during 25<sup>th</sup> of December 2018 the 400 sample were selected by convenience method in maternity hospital in Duhok city for those pregnant women admitted to maternity hospital and accept to participate in present study the data were gathered through using a structured questionnaire that included general information , number of prenatal visit mode of delivery and mother and baby outcome and information was gathered by interview technique with pregnant by filling questionnaire

### **Results:**

The mothers who had less than 3 prenatal care visits were more likely to have eclampsia (9.6%) in contrast with the mother who had  $\geq 3$  prenatal care visits (2.9%; P=0.033). The rate of preeclampsia was higher in mothers who had less than 3 prenatal care visits (21.2%) compared to other mothers (11.8%; P=0.061)

**Conclusion:** The present study showed that The mothers who had less than 3 prenatal care visits were more likely to have eclampsia than those who has more than 3 visit .

### **INTRODUCTION**

Antenatal care (ANC) is a very important component of maternal health services. It provides the opportunity to learn about risks associated with pregnancy and guides to plan the place of deliveries thereby preventing maternal and infant morbidity and mortality (Majrooh et al, 2014). The purpose of ANC is to monitor and improve the

wellbeing of the mother and fetus. The World Health Organization recommends risk-oriented strategy that includes the routine care to all women ,additional care for women with moderately severe diseases and complications, specialized obstetrical and neonatal care for women with severe diseases and complications. (ANC) is concerned with adequate care in order to be effective. Measurement for adequacy of (ANC) often applies indexes that assess initiation of care and number of visit (Yeoh et al, 2016).

Regular ANC visits provide health personnel with an opportunity to manage the pregnancy. It is a period during which a variety of services such as treatment of pregnancy induced hypertension ,tetanus immunization(Raatikainen et al,2007). (ANC) is very important to pregnant women as it helps prevent mother and child mortality, Prevent complications help foster a good relationship between the husband-wife, mother-child and father-child. (ANC) can help women prepared

for delivery and understand warning signs during pregnancy and childbirth(Cumber et al,2016). The life time risk of maternal mortality due to pregnancy complications, such as obstructed labor, excessive bleedings or eclampsia previous studies have suggested that demographic, socio-economic and behavioral factors such as age, time and cost of travel to the health facility, big family size and poor access to social support are associated with poor (ANC) attendance (Rurangirwa et al,2017). The antenatal period clearly presents opportunities for reaching pregnant women with a number of interventions that may be vital to their health and well-being (Ronmans and Graham, 2006). The effectiveness of (ANC) programmers

to reduce infant mortality and preterm birth. (ANC) is generally thought to be an effective method of improving pregnancy outcomes, but the effectiveness of specific antenatal care programmers as a means of reducing infant mortality (Hollowell et al, 2011). Women report many barriers to accessing prenatal care. Barriers can be classified into societal, maternal, and structural dimensions.

Women may not be motivated to seek care, especially for unintended pregnancies. Societal and maternal reasons cited for poor motivation include a fear of medical procedures or disclosing the pregnancy to others, depression, and a belief that prenatal care is unnecessary. Structural barriers include long wait times, the location and hours of the clinic, language and attitude of the clinic staff and provider, the cost of services, and lack of child-friendly facilities. Knowledge of women's views of access can help in development of policies to decrease barriers.(Phillippi, 2010)

Rational and importance of study:

Pregnancy is an important stage of a woman's life, and has the potential to influence the growing fetus and the mother. Access to prenatal care as a part of primary health-care system was established to improve access to health care for pregnant women and reduce the health gap between urban and rural areas. Adequacy of prenatal care has been defending by the number of visits, the stage of pregnancy at which care was initiated, the source of care, the spacing of visits, and medical care services. Mothers who delayed initiation of care until the third trimester are likely to have a higher risk of low birth weight and other medical conditions.

The Aim of the Study:

The aim of the present study is to examine the effect of antenatal care visits on pregnancy outcomes.

The Specific Objectives of the Study:

The study objectives are:

- To find out the impacts of prenatal care on pregnancy outcomes in women with different medical conditions
- To examine the impacts of prenatal care visits of mothers on early neonatal health status prenatal outcome.

**Methodology**

Descriptive study design was established during the

Period of October 2018 through April 2019 after

formal consent obtained from maternity hospital in which this study applied in Maternity hospital of Duhok city \_Kurdistan region of Iraq

the pregnant women who attend to maternity hospital for labour were the sample of present study they were recruited as a convenience method of sampling for reaching 400 pregnant women within third trimester at the time of delivery In order to follow up them to assess the pregnancy outcome after delivery .these 400 pregnant women were included in present study depending on their agreements to participate in such study and those disagree to participate were excluded this process of selection were done after informed those pregnant women about the objective of present study .

Our tools of data collection is by adapting of direct interview technique and using a constructed questionnaire through reviewing

A previous literature related to the topic of this study which is included in three part the first part deals with pregnant women general information while the second part deal with pregnant female and last one went around baby outcome .

More over the response related to the pregnancy outcome were specified as dichotomous response at yes or no

And these response were rated just as one for yes and two for no

Statistical analysis these data were analysed by using statistical package of social science (SPSSIBM) version 23 .the approach that use of analytic the study data are frequency percentage through

Chi \_ square and Fishers Exact test

*Results*

The general information of the patient was presented in Table 1. The study revealed that most of the patient were in 25-29 age group (29.3%) and most of them were uneducated ( 32% ) . In addition, most of the patients were underwent elective caesarean section (44.5%) followed by normal vaginal delivery (38.0%). The majority of patients were non smoker (97.%) and one-third was physically active (32.8%).

<b>Patients' Characteristics (n=400)</b>	<b>Statistics</b>	
	<b>Number</b>	<b>Table 1: General informaiotn of patients Percentage</b>
<b>Age Groups</b>		
15-19	27	6.8
20-24	85	21.3
25-29	117	29.3
30-34	86	21.5
35-39	65	16.3
40-44	20	5.0
<b>Level of education</b>		
Uneducated	128	32.0
Elementary School	97	24.3
Middle School	68	17.0
High School	38	9.5
College/Institute	69	17.3
<b>Delivery mode</b>		
Normal Vaginal Delivery	152	38.0
Elective C/S	178	44.5
Emergency C/S	70	17.5
<b>Smoking</b>	11	2.8
<b>Physical exercise</b>	131	32.8
Taking drug without doctor advice	14	3.5
Taking dexamethasone during pregnancy	95	23.8

The study revealed that most of the patients started to receive prenatal care in the first trimester (86.5%) for  $\geq 3$  times (87.0%). Most of them visited a specialist for prenatal care purposes (69.3%) as presented in Table 2.

Table 2: Antenatal care information in study patients

<b>Antenatal care information (n=400)</b>	<b>Statistics</b>	
	<b>Number</b>	<b>Percentage</b>
<b>Starting Prenatal Care</b>		
First Trimester	346	86.5
Second trimester	47	11.8
Third trimester	7	1.8
<b>Prenatal Care Visit</b>		
< 3 times	52	13.0
$\geq 3$ times	348	87.0
<b>Doctor Consultation For Prenatal Care</b>		
GP	71	17.8
Specialist	277	69.3
Both	52	13.0

The study did not show that there is a statistically significant association between number of prenatal care visit and baby outcome (Alive baby: 65.4% vs. 67.8% in  $< 3$  and  $\geq 3$  times, respectively); P=0.237. Similarly, the association was not statistically significant with other baby outcomes (full term: 88.5% vs. 87.1% in  $< 3$  and  $\geq 3$  times, respectively); P=0.538. The babies of mothers who attended the clinicians for less than 3 times for prenatal care purposes had a higher rate of low birth weight (22.2%) compared to those who had  $\geq 3$  times prenatal care visits (13.6%), but the overall difference was not statistically significant (P=0.159), see Table 5.

The mothers who had less than 3 prenatal visits had higher rate of emergency C/S (19.2%) compared to those mother had  $\geq 3$  prenatal visits (17.2%), but the overall difference was not statistically significant (P=0.643), see Table 5.

The mothers who had less than 3 prenatal care visits were more likely to have eclampsia (9.6%) in contrast with the mother who had  $\geq 3$  prenatal care visits (2.9%; P=0.033). The rate of preeclampsia was higher in mothers who had less than 3 prenatal care visits (21.2%) compared to other mothers (11.8%; P=0.061), as presented in Table 5.

Table 3: Association of prenatal care visit with newborn and maternal outcomes

Baby outcomes (n=400)	Prenatal care visit		P-Value
	Less than 3	More than 3	
<b>Baby Outcome</b>			0.237**
Alive	34	236	
Stillbirth	2	3	
NICU	16	109	
<b>Baby outcome</b>			0.538*
Preterm	6	37	
Full Term	46	303	
Post Term	0	8	
<b>Birth Weight Categories</b>			0.195**
Normal Weight (=>2.5 Kg)	28	287	
Low Birth Weight (1.5-<2.5 Kg)	8	34	
Very Low Birth Weight (1.0-<1.5 Kg)	0	7	
Extreme Birth Weight (<1.0 Kg)	0	4	
<b>Birth Weight Category</b>			0.159*
Normal Weight (=>2.5 Kg)	28	287	
Low Birth Weight (<2.5 Kg)	8	45	
<b>Maternal outcomes (n=400)</b>	Prenatal Care Visit		P-Value
	Less than 3	More than 3	
<b>Delivery Mode</b>			0.643*
Vaginal	22	130	
Elective C/S	20	158	
Emergency C/S	10	60	
<b>Eclampsia</b>			0.033**
yes	5	10	
no	47	338	
<b>Preeclampsia</b>			0.061*
yes	11	41	
no	41	307	

\*Chi-square, \*\*Fishers' exact were performed for statistical analyses.

The values are in number (%) in this table.

There was no statistically significant difference in the rate of NICU admission in newborns of the mothers who started prenatal care visits in different period (P=0.174). But, there was a high rate of NICU admission in three study groups; 29.5%, 44.7%, and 28.6% in mother who started prenatal care visit in the first, second, and third trimesters. The rate of preterm in mothers who started the prenatal care visit in the third trimester was 28.6% compared to

12.8% in mothers who started in the second trimester, but the association was not statistically significant ( $P=0.174$ ). The rate of low birth weight in mothers who started the prenatal care visit was 14.3% compared to 14.5% in the first trimester ( $P=0.988$ ).

The patients who started the prenatal care visit in the third trimester had a higher rate of emergency C/S (28.6%) compared to 16.8% in those mothers who started the prenatal care in the first trimester. The rate of eclampsia in mothers was 3.2% in those who started prenatal care in the first trimester, 8.5% in those who started in the second trimester, and 0.0% in those who started in the third trimester ( $P=0.177$ ). The rate of preeclampsia was higher in those mothers who started the prenatal care visit in the second trimester (17.0%) compared to those who started in the first trimester (12.7%;  $P=0.418$ ), as presented in Table 6.

Table 4: Association of starting prenatal care visit period with newborn and maternal outcomes

<b>Baby outcomes (n=400)</b>	<b>Starting Prenatal care Visit</b>			<b>P-Value</b>
	<b>First Trimester</b>	<b>Second Trimester</b>	<b>Third Trimester</b>	
<b>Baby Outcome</b>				0.174**
Alive	240	25	5	
Stillbirth	4	1	0	
NICU	102	21	2	0.372**
<b>Baby outcome</b>				
Preterm	35	6	2	
Full Term	304	40	5	
Post Term	7	1	0	0.857**
<b>Birth Weight Categories</b>				
Normal Weight ( $\geq 2.5$ Kg)	271	38	6	
Low Birth Weight (1.5- $<2.5$ Kg)	35	6	1	
Very Low Birth Weight (1.0- $<1.5$ Kg)	7	0	0	
Extreme Birth Weight ( $<1.0$ Kg)	4	0	0	0.988*
<b>Birth Weight Category</b>				
Normal Weight ( $\geq 2.5$ Kg)	271	38	6	
Low Birth Weight ( $<2.5$ Kg)	46	6	1	
<b>Maternal outcomes (n=400)</b>	<b>Starting Prenatal care Visit</b>			<b>P-Value</b>
	<b>First Trimester</b>	<b>Second Trimester</b>	<b>Third Trimester</b>	
<b>Delivery mode</b>				0.442**
vaginal	137	13	2	
elective C/S	151	24	3	

emergency C/S	58	10	2	
<b>Eclampsia</b>				0.177**
yes	11	4	0	
no	335	43	7	0.418*
<b>Preeclampsia</b>				
yes	44	8	0	0.418*
no	302	39	7	

\*Chi-square, \*\*Fishers' exact were performed for statistical analyses.

The values are in number (%) in this table.

## DISCUSSION

The study showed that's age groups (25-29) years has highest (29.3%) percentage frequency distributions of pregnancy women, because this age group had most pregnancies at this age. It could also be due to women at this age are very productive. And lowest percentage (5.0%) in age groups (40-44) years. In 2014, a study showed in Iraq that the highest percentage of frequency distributions of pregnancy was (34.2%) in age group (31-40) years and lowest percentage (13.2%) in age groups (>40) (Shabila et al, 2014). In 2010, a study showed in Erbil that the highest percentage of frequency distributions of pregnancy was (96%) in age group (21-25) years and lowest percentage (14%) in age (>35) (Sabir, 2018). The study shows that the level of education uneducated (32.0%) percentage have highest percentage and high school (9.5%) have lowest percentage. Also a study in 2018 in Duhok shows the highest percentage (29.8%) primary school has, and lowest percentage (7.7%) institute and college graduation have (Abdulmalek and Yousif, 2018). The study shows that the mode of delivery elective C/S have highest percentage (44.5%) and lowest percentage (17.5%) have emergency C/S, while a study in Baghdad in 2013 showed highest percentage (50.47%) caesarean sections and vaginal delivery have lowest percentage (21.70%) (Jabir et al, 2013). The study shows the prenatal care visits more than 3 (87.0%) have highest percentage and prenatal care visits less than 3 (13.0%) have lowest percentage

.And the study in Erbil in 2015 showed that's prenatal care visits less than 3 visits have highest percentage (40.8%) and more than 3 visits was have lowest percentage (29.6%) (Dahir and Zangana, 2015). The study shows that's (69.5%) percentage have taken vaccine T.T. And studied in 2015 in Al-Hilla city showed (66.8%) have vaccinated T.T (Abdul Hussein and Yaser, 2015). The study shows

that (1.3%) percentage was stillbirth. And studied in 2018 in Erbil was (20.4%) stillbirth percentage (Abd Alrahman and Al alaf S (2015). The study shows that's (Anemia, UTI, hypertension, Gestational diabetes mellitus) have percentage (38.5%, 54.0% 8.3%, 5.5%). And in the study in Erbil in 2015 showed (Anemia , UTI, hypertension, Gestational diabetes mellitus) have percentage (31.1%, 33.1%.8.3%.6.5%) (Al-Khafaji et al, 2015). The study shows that's (30.6%) percentage have referred to NICU and study in Al-Amara City, Iraq was (4.95%) referred to NICU in 2007 and in 2015 was (5.33%) referred to NICU (Al-Sadi, 2017). The study shows that's (79.8%) take folic acid, And studied in Median-Saudi in

2017 showed (92.1%) take folic acid (Alhazmi et al, 2017). The study shows that abortion is (7.3%) percentage. And in Kurdistan in 2016 were (27.7%) abortions (Akbay and Azo, 2016). The study show that the preterm baby is (10.8%) percentage and full term baby is (87.3%) percentage. While in Baghdad Iraq in 2005 the preterm birth was (38.7%) percentage and full term birth was (28.1%) percentage (Al-Kubaisy et al, 2005).

#### Study limitation

A major limitation of the study was the language and level of education of the pregnant women, because some of them were have different languages and they did not educate about medical terms.

### CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions

1. The highest percentage of delivery mode was elective C/S percent.
2. Prenatal care visits more than (3) have highest percentage (87.0%) and less than (3) prenatal care visits have lowest percentage (13.0%).
3. Highest percentage of baby outcomes were have (Normal weight birth, Full term and Alive).
4. Mother have highest percentage (83.3%) normal state in chronic diseases, hypertension (8.3%) percentage and hypertension with (high cholesterol, IBS, renal disease and thyroid) and renal disease have same percentage (0.3%).
5. New born baby (69%) percent not refer to NICU.

#### Recommendations

1. The perfect attention of government to primary health center especially antenatal care unit (vaccinations, nutrition's, health educations, laboratory tests, ..... ) to provide health state of maternal and prevent the complication.
2. Increase awareness and education in community to understand and know benefit of antenatal care.
3. Provide health services facility in (PHCC, maternity hospital, NICU....).

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