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Factors Influencing Antenatal Care Services Utilization in Primary Health Care Centers in the Second Sector of Basra City Center

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Abstract. This cross-sectional study was conducted to assess the factors influencing the utilization of ANC services. The total sample consisted of 400 cases with a previous history of pregnancy attending ANC for less than one year, was collected from 15 PHCCs in the second sector of Basra city center, through face-to-face interviews and the use of a questionnaire format during the study period which extended from the beginning of February to the end of July 2018. The results of the present study showed that (31.5%) of the participants' ages were between 20-25 years old. About two-thirds of the studied women (68.5%) lived in the family home of their husbands; (69.0%) of them had a partner of 1–3. Both studied women, and their husbands had the highest percentage of intermediate education, (28.5%) and (29.5%) respectively. The majority of women (93.7%) were housewives, and most of their husbands were self-employed (67.3%). The highest percentage of participants (66.0%) lived in families composed of seven and above members. There were (89.5%) of women had no history of stillbirth. It was suggested that more government efforts be made to target less educated women and to inform them of the advantages of using antenatal care, this proposal also needs to include their husbands and improve family planning services. Government policy should help increase the spread of the media among mothers. Provide ultrasonic examination services (SONAR) in all primary health care centers and finally, further research should be obtained to include both urban and rural areas.

Highlights:

1. Majority were housewives, aged 20–25, with intermediate education level.
2. Most lived in large families, husband's home, with 1–3 children.
3. Recommend education, media access, SONAR services, and broader research coverage.

Keywords: Factors, Antenatal Care Services, in Primary Health Care Centers.

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Introduction

Reduction of maternal and neonatal death remains a significant challenge to attain global social and economic growth, the vision of the World Health Organization

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(WHO) is that "during the prenatal and postnatal period every pregnant woman and newborn ought to acquire full access to quality and medical care" (1). However, approximately 303,000 women and teenage girls died as a result of pregnancy and childbirth-related complications in 2015, worldwide (2). Around 99% of maternal mortality occurs due to lack of resources. Furthermore, approximately 2.6 million babies after birth were stillborn due to low-resource settings (3, 4). The mortalities can be avoided through primary health care access (5).

This was reflected in the Millennium Development Goals (MDG) to promote safe motherhood and childcare across the globe; emphasizing specifically maternal health with the fifth MDG, which aims to reduce maternal mortality rate to 75% from 1990 to 2015 (6).

ANC is a preventive obstetric health care program designed to optimize pregnant mothers and their newborn health outcomes via consistent monitoring of pregnancy (7).

Despite the ANC's positive outcome, some mothers do not take advantage of this service during pregnancy for a variety of reasons. Therefore, these pregnant women may have unexpected complications including maternal death (8).

There are many causes of maternal mortality around the globe, especially in developing countries, causes can be due to hypertensive disorders, anemia, hemorrhage, obstructed labor, unsafe abortion, ectopic pregnancy, and specific chronic nutritional deficiencies (9, 10). Routine checkups for pregnant women can prevent mortality from these complications (11). Examples of how important the routine checkup during pregnancy are: dietary interventions during pregnancy can help to reduce the risk of gestational weight gain and the subsequent weight gain complications, diagnosis with severe anemia due to lack of iron and folate can be resolved via presenting iron and folic acid to the pregnant mother's diet (12).

ANC is also used as a platform to educate pregnant women about the symptoms and risks that might threaten their pregnancy, labor, and delivery (13, 14). Spacing out the births and delivering with skilled health personnel are highly recommended by ANC to enhance pregnant women and their fetus health and survival (15, 16). Furthermore, because tetanus immunization during pregnancy is very essential, ANC provides that immunization shot to protect pregnant women and infants (17, 18). Visiting ANC as recommended means that there is often enough time for early detection and treatment

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of infections and diseases such as Human Immunodeficiency Virus (HIV) and Sexually Transmitted Infections (STIs) during pregnancy (19).

Methods

A cross-sectional study was performed on a sample of married women in their reproductive age (15-45 years) seeking antenatal care services to assess the factors that influence the utilization of ANC services.

The study was carried out in PHCCS (which includes 15 PHCCs) in the second sector of Basra city center. For six months starting from the beginning of February to the end of July 2018. Formal administrative approval was obtained from Basra Health Directorate/ Iraqi Ministry of Health to conduct the study, and allowance was given to collect the data from PHCCs in the second sector of Basra city center.

This study included all women who visited PHCCs for postnatal care visits and mothers attending PHCCs who had delivered within one year. Data collection was done, three days per week (every Sunday, Monday, and Wednesday). Each visit lasted about 3-4 hours, during the working hours for each selected PHCC. An average of 15 –20 questionnaire forms per day was collected. Each questionnaire requires 10 to 15 minutes to be filled. The total sample consisted of 400 women distributed to 15 PHCCs.

Two of the data (number of ANC visits and initiation of first ANC visit), were obtained by the researcher from the Permanent Register at the ANC unit and others were obtained directly by direct interview with the cases (participants: women who came for postnatal care visit and mothers attending PHCCs who had delivered within one year ago) by special questionnaire form. Statistical analysis was conducted using SPSS (Statistical Packages for Social Sciences- version 20). The results were tabulated, logistic regression was used to detect if there is any statistically significant association.

Results and Discussion

Table (1) Distribution of Participants according to Socio-Demographic Factors

Sociodemographic factors	No.	%
Age		

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Sociodemographic factors	No.	%
15 to less than 20	29	7.2
20 to less than 25	126	31.5
25 to less than 30	110	27.5
30 to less than 35	83	20.8
35 to less than 40	44	11.0
40 to 45	8	2.0
Residence		
Their own house	126	31.5
In the family home of the husband	274	68.5
Parity		
1-3	276	69.0
4-6	115	28.7
7 and above	9	2.3
The educational level of the mother		
Illiterate	49	12.2
Just literate	10	2.5
Primary	110	27.5
Intermediate	114	28.5
Secondary	35	8.8

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Sociodemographic factors	No.	%
Institute	20	5.0
University and above	62	15.5

Table (1) continued

Sociodemographic factors	No.	%
The educational level of the husband		
Illiterate	29	7.3
Just literate	7	1.8
Primary	102	25.4
Intermediate	118	29.5
Secondary	40	10.0
Institute	29	7.2
University and above	75	18.8
Occupation of the mother		
Housewife	375	93.7
Employee	23	5.8
Student	2.0	0.5
Occupation of the husband		
Governmental employee	115	28.7
Self-employed	269	67.3
Unemployed	16	4.0
Total	400	100.0

Participants' ages were ranging from 15 to 45 years. The highest percentage of participants was found to be in the age group 20 – 25 (31.5%). Concerning residence, about two-thirds of the studied women (68.5%) lived in the family home of their husbands, (69.0%) of them had a para of 1–3. Both studied women, and their husbands had the highest percentage of intermediate education, (28.5%) (and 29.5%) respectively. In this study, the majority of women (93.7%) were housewives, and most of their husbands were self-employed (67.3%).

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Table (2) Distribution of Participants according to Factors related to the mother

Factors related to the mother	No.	%
Household size		
2-3	29	7.3
4-6	107	26.7
7 and above	264	66.0
History of Stillbirth		
Present	42	10.5
Absent	358	89.5
History of private ANC use in the last pregnancy		
Present	365	91.2
Absent	35	8.8
Type of last pregnancy		
Planned	299	74.8
Unplanned	101	25.2
No. of ANC visits		
< 4	293	73.2
≥ 4	107	26.8
Starting the first ANC visit		
Before 4th month	73	18.2
4th month and above	327	81.8
Total	400	100.0

The highest percentage of participants (66.0%), lived in families composed of seven and above members, (89.5%) of women had no history of stillbirth. Most of the mothers in this study (91.2%) attended private ANC in addition to attending ANC at

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PHCC. More than two-thirds (74.8%) had a planned last pregnancy. All participants advocated having ANC by their husbands and other family members.

Regarding ANC visit numbers, three-quarters (73.2%) of participants had less than four visits, and (81.8%) of attending mothers started the first ANC visit at the fourth month of gestation and above.

Table (3) Distribution of Participants according to Factors related to PHCCs

Factors related to the PHCCs		No.	%
Satisfaction of participants concerning:			
Cost payments for services	Satisfied	99	9.8
	Unsatisfied	2	0.2
Cost payments for access to PHCCs	Satisfied	64	1.0
	Unsatisfied	6	9.0
Waiting time	Satisfied	44	6.0
	Unsatisfied	6	4.0
Seeing the same doctor at each visit	Yes	67	1.8
	No	33	8.2
Privacy during the examination	Present	395	98.8
	Absent	5	1.2

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Information given about health education topics	Yes	379	94.8
	No	21	5.2
Blood pressure measurement	Yes	399	99.8
	No	1	0.2
Body weight measurement	Yes	399	99.8
	No	1	0.2
Laboratory investigations	Yes	399	99.8
	No	1	0.2
Ultrasound examination	Yes	60	15.0
	No	340	85.0
Receiving medicines & tonics	Yes	327	81.8
	No	73	18.2
Total		100	100.0

The overall satisfaction with ANC services provided by PHCCs as perceived by participants was as follows: (99.8%) and (91.0%) were satisfied with costs paid for services & access to PHCCs, respectively, (86.0%) were satisfied with the time that they spent waiting for services & (100.0%) were satisfied with the way and style dealing

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submitted by staff of the PHCCs, (91.8%) seeing the same doctor at each visit and (98.8%) had privacy when examined.

Regarding the information given about health education topics (like: bad signs during pregnancy, nutrition needs during pregnancy, exclusive breastfeeding, and planning of labor), the highest percentage of participants (94.8%) were given this information.

Most of the mothers (99.8%), received blood pressure and body weight measurements and laboratory investigations during their visit to the PHCCs. The highest percentage of participants (85.0%), had not received an ultrasound examination & (81.8%) received all the medications and tonics prescribed.

Table (4) Results of Logistic Regression Analysis

Parameters	B	Sig.	Exp(B) ___	95% C.I for EXP(B)	
				Lower	Upper
Predictors					
date of initiation first ANC visit	-2.294-	0.000	0.101	0.055	0.186
Household size	-0.729-	0.012	0.482	0.274	0.850
Non-predictors					
Age	-0.050-	0.713	0.951	0.729	1.241
Residence	0.674	0.91	1.962	0.898	4.283
Parity	0.126	0.718	1.135	0.573	2.248
The educational level of the mother	0.119	0.245	1.126	0.922	1.377
The educational level of the husband	-0.067-	0.502	0.935	0.769	1.137
Occupation of the mother	-1.153-	0.100	0.316	0.080	1.245

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Occupation of the husband	0.110	0.678	1.116	0.664	1.876
History of stillbirth	-0.183	0.663	0.833	0.366	1.896
History of private ANC use	0.052	0.908	1.054	0.432	2.570
Type of current pregnancy	-0.096	0.785	0.908	0.454	1.817
Satisfaction about costs payment for access to PHCCs	-0.497	0.331	0.608	0.224	1.656
Waiting time	0.411	0.265	1.508	0.732	3.105
Privacy during the examination	0.838	0.397	2.312	0.333	16.049

To identify significant independent predictors of ANC use, we made a logistic regression analysis. The dependent variable was the use of ANC as "less than four versus 4 and above."

Taken variables were a combination of continuous and categorical types. They include (age, residence, parity, educational level of the mother, educational level of the husband, occupation of the mother, occupation of the husband, household size, history of stillbirth, history of private ANC use, type of last pregnancy, date of initiation first ANC visit, satisfaction about costs payment for access to PHCCs, waiting time and privacy during the examination). Two variables were significant independent predictors. These are the date of initiation first ANC visit (early booking visit) and household size.

Discussion

The utilization of ANC services is a significant indicator of reducing maternal and neonatal morbidity and mortality. Mother's health care services during pregnancy, delivery, and postnatal period are essential for maintaining the health and safety of mother and neonate health. A report published by WHO showed that the maternal mortality ratio is 450 maternal deaths per 100,000 live births in developing countries while in developed countries the ratio has tremendously dropped to 9 maternal deaths

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per 100,000 live births. Among the 133 million babies who are born alive each year, 2.8 million die in the first week after birth and slightly less than 1 million in the following three weeks (20). These health outcomes threaten the achievements of the MDGs by 2015.

1. Socio-Demographic Factors

In the current study, the largest age group of participants was in their third decade 20-25 years, the association between age and ANC utilization was unpredicted ($p>0.05$). Our result corresponded with two other studies done in Al-Hilla City of Iraq (2015) (21) and Saudi Arabia (2017) (22) and reflected another study done in Southeastern Ethiopia (2017) (23). The reason for the difference in the results could be due to the differences in socio-demographic characteristics between the target groups in the different studies.

Regarding residency, (68.5%) of the participants lived in their husband's family house. This result was agreed with another study done in Pakistan (2013) (24).

Regarding the parity of the participants, our study showed that (69.0%) of participants had 1-3 children. This result was nearly similar to a study performed in Al-Basra city of Iraq (2017) which showed (79.0%) of participants had 1-3 children (25). However, in our study the association between parity and ANC utilization was insignificant ($p>0.05$), this disagreed with other studies done in Brazil (2013) (26) and in Southern Ethiopia (2017) (23). The reasons for the difference in the results could be due to those participants attending a private clinic for ANC without recording these visits or due to the difference in age category. Additionally, difficulties in attending health services during pregnancies can also occur due to a lack of social support to care for the other children (27) and adverse experiences with previous prenatal care (28).

The result of the present study showed a non-prediction between the educational level of participants and ANC utilization ($p>0.05$). This result corresponded to other studies done in Al-Basra City (2015) (29) and Pakistan (2011) (30) but disagreed with studies performed in Egypt (2014) (31) and in Pakistan (2013) (24), this may be due to cultural differences, the difference in measuring scales, rural areas were included and variation in sample size.

Regarding the educational level of the participant's spouse, there was no significant association found in our study between the husband’s educational level and

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the participant's ANC utilization (p>0.05). This result was disagreed with a study that took place in Pakistan (2017) (32). The cause of the difference in the results could be due to our study did not include rural areas.

Concerning the occupational status of participants, our findings revealed that most of the studied subjects (93.7%) were housewives. This parameter was not significantly associated with ANC utilization (p>0.05). This result was supported by studies executed in Al-Hilla City (2015) and Southern Ethiopia (2017) (21, 23). Nevertheless, these data do not correspond with a study that was done in Iran (2017) (33). The present study showed that there was no prediction of the occupation status of spouses and ANC utilization by participants (p>0.05). A comparable result was found in a study that took place in China (2016) (34).

2. Factors Related to The Mother

Regarding household size, (66.0%) of participants lived in their home with 7 or more members. This result showed a prediction with the ANC utilization (p<0.05). This result was agreed with another study done in Nigeria (2017) (35). One of the explanations for our significant result may be that bigger families were able to take care of participants' other children allowing them to attend PHCC for ANC utilization.

In the present study, the presence of obstetric risk history of stillbirth infants was not significantly associated with ANC utilization (p>0.05). This result is similar to a study done in Brazil (2013) (26). The explanation for this might be that pregnant women who have a higher risk of obstetric complications prefer to attend private clinics. The current study showed that (91.2%) of participants were attending a private clinic, which agreed with a study done in Saudi Arabia (2017) (22). In our study, there was no prediction between using the private clinic for ANC and ANC utilization in PHCCs (p>0.05).

In the present study, (74.8%) of the participants revealed that their pregnancy was planned, but there is no significant association between the planning of the pregnancy and the ANC utilization (p>0.05). This result agreed with a study done in South Ethiopia (2015) (36) but disagreed with another study done in Southwestern Ethiopia (2013) (37) which may be attributed to the differences in socioeconomic status.

About (73.3%) of participants had less than four visits during all months of gestation. This result disagreed with other studies done in Nepal (2015) (38). The

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explanation for this difference in the results may be due to those participants attending a private clinic for ANC with no recording of these visits.

A highly significant association was found between the time of initiation for ANC and ANC utilization (p=0.000), this study showed that (81.8%) of participants started their first ANC visit at or after four months of gestation. This finding agreed with a study done in South Ethiopia (2015) (36) but disagreed with other studies done in Saudi Arabia (2017) (22) and Brazil (2013) (26). The reason for these differences, when compared to our country, is that in Iraq, the initiation of the ANC begins in the first trimester, but women attend the health center in the 2nd trimester when the pregnant women are given the tetanus vaccine in the 4th month of gestation.

The current study showed that even though there was no role of media perception for ANC use, all the participants were encouraged to visit PHCCs for ANC use by their family members. This result was disagreed with another study done in Southern Ethiopia (2017) (39).

Conclusion

Most of the participants were found to be in the age group 20-25, had a para of 1-3, were housewives, had an intermediate level of education, their husbands were self-employed, and had to have an intermediate level of education. Generally, most of the studied women were satisfied with the services that they had received (cost payments for the services and access, waiting time, and the way and style of dealing submitted by staff of the PHCCs) and submitted that they got privacy on examination and were received the information about health education topics, blood pressure and body weight measurements, laboratory investigations, medications and tonics prescribed during their visit to the PHCCs.

More than two-thirds of attending mothers started their first ANC visit in the fourth month and above and they had less than four ANC visits. More than half of the participants lived in families composed of seven and above members. One-fourth of the mothers had unplanned pregnancies. Mostly, ultrasound examination service was not provided in the health centers. All participants advocated having ANC by their husbands and other family members. No association was found between age, residence, parity,

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https://doi.org/10.21070/ijhsm.v2i1.131

educational level, and occupational status of both the women and their husbands and ANC utilization.

References

[1] Ö. Tunçalp et al., "Quality of care for pregnant women and newborns—the WHO vision," BJOG, vol. 122, no. 8, pp. 1045–1049, 2015. [Online]. Available: https://doi.org/10.1111/1471-0528.13451

[2] L. Alkema et al., "Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: A systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group," Lancet, vol. 387, no. 10017, pp. 462–474, 2016. [Online]. Available: https://doi.org/10.1016/S0140-6736(15)00838-7

[3] H. M. Sabty, S. B. Dawood, and A. M. Tiryag, "Nurses' knowledge and practices on influenza vaccination for pregnant women," J. Kebidanan Midwiferia, vol. 10, no. 2, pp. 50–59, Oct. 2024.

[4] H. Blencowe et al., "National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: A systematic analysis," Lancet Global Health, vol. 4, no. 2, pp. 98–108, 2016.

[5] J. L. Alvarez, R. Gil, V. Hernandez, and A. Gil, "Factors associated with maternal mortality in Sub-Saharan Africa: An ecological study," BMC Public Health, vol. 9, p. 462, 2009.

[6] United Nations, The Millennium Development Goals Report 2014, New York: United Nations, 2014, pp. 28–30.

[7]

[8] [7] USAID/IRAQ, Antenatal and Postnatal Care Guideline in Primary Health Care Centers in Iraq, 2013.

[9] E. Martínez-García et al., "Inadequate prenatal care and maternal country of birth: A retrospective study of southeast Spain," Eur. J. Obstet. Gynecol. Reprod. Biol., vol. 165, no. 2, pp. 199–204, 2012.

[10] A. M. Tiryag, "Revitalizing hearts: The transformative impact of pacemaker therapy on cardiac conduction disorders," Academia Open, vol. 9, no. 1, pp. 10–21070, Jun. 2024.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.131

[11] J. Villar et al., "Nutritional interventions during pregnancy for the prevention or treatment of maternal morbidity and preterm delivery: An overview of randomized controlled trials," J. Nutr., vol. 133, no. 5, pp. 1606S–1625S, 2003.

[12] J. Ekabua, K. Ekabua, and C. Njoku, "Proposed framework for making focused antenatal care services accessible: A review of the Nigerian setting," ISRN Obstetrics and Gynecology, vol. 2011, Article ID 253964, 2011.

[13] M. A. Akber, A. M. Tiryag, and A. I. Alobaidi, "Nurses' knowledge regarding cast complications of limb fractures: A cross-sectional study," Cent. Asian J. Med. Nat. Sci., vol. 5, no. 2, pp. 195–200, Apr. 2024.

[14] D. P. Paudel, B. R. Nilgar, and M. Bhandankar, "Antenatal care service utilization and contributing factors: A community-based study in rural Belgaum, Karnataka, India," IOSR J. Dent. Med. Sci., vol. 9, no. 3, pp. 25–31, 2013.

[15] Y. Baral, K. Lyones, J. Skinner, and E. van Teijlingen, "Maternal health services utilization in Nepal: Progress in the new millennium," Health Sci. J., vol. 6, no. 4, pp. 618–633, 2012.

[16] T. Dowswell et al., "Alternative versus standard packages of antenatal care for low-risk pregnancy," Cochrane Database Syst. Rev., no. 10, Art. no. CD000934, 2010. doi: 10.1002/14651858.CD000934.pub2

[17] A. M. Van Eijk et al., "Use of antenatal services and delivery care among women in rural western Kenya: A community-based survey," Reprod. Health, vol. 3, p. 2, 2006.

[18] A. M. Tiryag, "Nurses' knowledge and attitudes toward pacemaker: A cross-sectional study," Academia Open, vol. 9, no. 1, pp. 10–21070, Jun. 2024.

[19] N. M. Abel et al., "Determinants of maternal health services utilization in urban settings of the Democratic Republic of Congo–A case study of Lubumbashi City," BMC Pregnancy Childbirth, vol. 12, no. 1, p. 66, 2012.

[20] G. R. Varma, Y. S. Kusuma, and B. V. Babu, "Antenatal care service utilization in tribal and rural areas in a South Indian district: An evaluation through a mixed methods approach," J. Egypt. Public Health Assoc., vol. 86, no. 1–2, pp. 11–15, 2011.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.131

[21] E. H. Rahi, Z. M. Al-Hejaj, and A. M. Tiryag, "Nurses' knowledge of nonalcoholic fatty liver disease: A cross-sectional study," Academia Open, vol. 9, no. 2, pp. 10–21070, Jun. 2024.

[22] A. F. Abdul-Hussein and A. A. Yaser, "Assessment of antenatal care services among pregnant women in Al-Hilla City," Kufa J. Nurs. Sci., vol. 5, no. 3, pp. 2223–4055, 2015.

[23] J. M. Alhazmi et al., "Awareness of antenatal care importance among Saudi pregnant women in Madina," J. Gynecol. Women's Health, vol. 4, no. 4, pp. 2474–7602, 2017.

[24] D. Dubale, D. Deresse, and W. Negash, "Antenatal care utilization and its associated factors among pregnant woman in Boricha District, Southern Ethiopia," Divers. Equal. Health Care, vol. 14, no. 2, pp. 76–84, 2017.

[25] F. A. Jassim, A. M. Tiryag, and S. S. Issa, "Effect of bad habits on the growth of school students: A cross-sectional study," Indones. J. Health Sci. Med., vol. 1, no. 1, pp. 10–21070, Jul. 2024.

[26] S. B. Dawood, "Assessments of knowledge and attitudes of pregnant women of antenatal and postnatal care, Al-Seef Primary Health Care Center, in Basra City," J. Health Med. Nurs., vol. 39, pp. 2422–8419, 2017.

[27] R. M. Domingues et al., "Access to and utilization of prenatal care services in the Unified Health System of the city of Rio de Janeiro, Brazil," Rev. Bras. Epidemiol., vol. 16, no. 4, pp. 953–965, 2013.

[28] M. A. Mohammad, H. H. Abdul-Ra'aoof, K. A. Razzaq Manahi, and A. M. Tiryag, "Parents' knowledge and attitudes toward testicular torsion," Bahrain Med. Bull., vol. 46, no. 1, Mar. 2024.

[29] D. G. Bassani, P. J. Surkan, and M. T. A. Olinto, "Inadequate use of prenatal services among Brazilian women: The role of maternal characteristics," Int. Perspect. Sex. Reprod. Health, vol. 35, no. 1, pp. 15–20, 2009.

[30] Z. K. Dhahi, S. S. Issa, and L. A. Hameed, "A study on pregnant women's satisfaction with primary health care services in Basra," Int. J. Res. Humanit. Arts Lit., vol. 3, no. 2, pp. 7–20, 2015.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v2i1.131

[31] N. Sadiq et al., "Factors affecting the utilization of antenatal care among women of reproductive age in Nurpur Shahan," J. Pak. Med. Assoc., vol. 61, no. 6, pp. 616–618, 2011.

[32] M. A. Akber, A. M. Tiryag, and A. I. Alobaidi, "Nurses' knowledge concerning developmental dysplasia of the hip: A cross-sectional study," Am. J. Pediatr. Med. Health Sci., vol. 2, no. 4, pp. 155–160, 2024.

[33] M. Asim et al., "Antenatal health care: A literature review of antenatal and postnatal health care utilization in Pakistan," Prof. Med. J., vol. 24, pp. 495–499, 2017.

[34] S. Hajian, F. Imani, H. Riazi, and F. Salmani, "Prediction of adequate prenatal care utilization based on the extended parallel process model," Int. J. Community Based Nurs. Midwifery, vol. 5, no. 4, pp. 342–354, 2017.

[35] S. S. Hamid, A. F. Kareem, A. M. Tiryag, and H. H. Abdul-Ra'aoof, "A study regarding the basic anatomy and physiology of the eye among nursing students: A cross-sectional study," Indones. J. Health Sci. Med., vol. 2, no. 2, Apr. 2025.

[36] D. E. Azuh et al., "Factors influencing maternal mortality among rural communities in southwestern Nigeria," Int. J. Women's Health, vol. 9, pp. 179–188, 2017. doi: 10.2147/IJWH.S120184

[37] I. H. Zainel, H. H. Abdul-Ra'aoof, and A. M. Tiryag, "Mothers' knowledge and attitudes towards her children with neonatal jaundice: A cross-sectional study," Health Educ. Health Promot., vol. 10, no. 3, pp. 565–570, Jul. 2022.

[38] Y. D. Wado, M. F. Afework, and M. J. Hindin, "Unintended pregnancies and the use of maternal health services in southwestern Ethiopia," BMC Int. Health Hum. Rights, vol. 13, no. 1, p. 36, 2013. doi: 10.1186/1472-698X-13-36

[39] K. K. Deo et al., "Barriers to utilization of antenatal care services in Eastern Nepal," Front. Public Health, vol. 3, p. 197, 2015. doi: 10.3389/fpubh.2015.00197