

Assessment of antenatal knowledge and learning needs of pregnant women attending primary health care centers in Baghdad

Hiba Ali Ehissan
M.B.Ch.B.

Dr.Lamia Dhia AL Deen
M.B.Ch.B., MSc.Ph.D

Abstract:

Back ground: Antenatal care includes education, counseling, screening and treatment to monitor and promote the well-being of the mother and fetus.

Objectives: To assess the antenatal knowledge and learning needs of pregnant women attending the Primary Health Care Centers in Baghdad.

Methodology: A descriptive cross-sectional study with analytic elements was conducted in the period from the first of March to the end of May 2018. A convenient sample was collected from ten primary health care centers from Al-Karkh and Al-Rusafa sides of Baghdad, the data were collected by direct interview using predesigned and structured questionnaire format.

Results: A sample of (500) pregnant women were interviewed during the study period. Their age range (14-43) years with a mean of (26.6±6.2) years. The average age at marriage was (20.9±4.6) years and average age at first baby was (21.7±4.8) years, (30.4%) were primigravida, (46.2%) had primary education and (80%) of them were not working. More than half of them were (51.4%) in the second trimester of pregnancy and (76.8%) attended for a follow-up visit. The overall mean of the knowledge score was very low (16.7±3.3), (75.8%) had poor knowledge, (23.2%) had acceptable level, and only (1%) had good knowledge. The result of the study revealed a significant association between level of knowledge and antenatal care score ($p=0.0001$).

Conclusion: The study showed that most of the participants were young age (less than 20 years) with limited education. Most of them had poor knowledge about antenatal care, especially regarding the importance of early booking, investigation carried out during ANC visit and danger signs during pregnancy.

Key words: antenatal care, knowledge, and learning needs.

Introduction

Antenatal care (ANC) is a critical opportunity for health providers to deliver care, support and information to pregnant women. This includes promoting a healthy lifestyle, including good nutrition; detecting and preventing diseases; providing family planning counseling and supporting women who may be experiencing intimate partner violence.(1)

It is considered as a back bone of obstetrical services of any health care delivery system. It is considered to be important for health of pregnant women and is the way in which maternal and fetal complications are detected and managed. (2)

Antenatal education is provided to primi or multigravida pregnant women. These interventions have an impact on health of pregnant women as well as on the health and wellbeing of the next generation in any country. They provide mother with information that enable them to identify potential warning signs of malfunction or abnormality during pregnancy as well as strategies to adhere to prescribed treatment and referral. (3)

Antenatal education is provided to pregnant women during antenatal visit, this intervention is usually delivered as pregnant group educational session using adult learning strategies and one to one strategies. There is a clear need for such intervention targeting to pregnant women. (3)

Objective of the study:

To assess the antenatal knowledge and learning needs of pregnant women attending a sample of Primary Health Care Centers in Baghdad.

Methodology

Study design

A descriptive, cross-sectional study with analytic elements.

Selection of the PHCCs

The study was conducted in ten primary health care centers selected by a convenient sample, from Baghdad, Five centers from Al-karkh side: PHCC Hay-Al salam, PHCC Hay-Al aamel, PHCC Al-Bayaa, PHCC Al-yarmook and PHCC Al-Mansour), and the other five from AL-Rusafa side: (PHCC Zayuna, PHCC Bab-Al moadam, PHCC Al-aadamia, PHCC Al-Habebia and PHCC Baghdad-Al-Gadedda).

for the period from 1st of March to the end of May 2018.

The source of population comprised of all pregnant women attending the selected primary health care centers during the study period.

Collection of data

The data were collected by direct interview with all eligible subjects willing to participate in the study during the working hours of PHCCs

Predesigned and structured questionnaire was constructed by researchers after reviewing previously published literatures to include all possible variables that address the objective of the study. (4)

The questionnaire was designed to obtain information on the socio-demographic, knowledge and learning needs during different stages of pregnancy.

Ethical considerations were ensured every participant was given complete unconditioned choice to participate in the study. Privacy and confidentiality were maintained during interview. All collected data were used for research purpose only.

Statistical analysis: Each participant assigned a serial identification number. The data were analyzed using Statistical Package for Social Sciences (SPSS) version (25).

The categorical data presented as frequency and percentage tables. The continuous variables were presented as a mean, median and standard deviations. Chi-square test was used to assess the association between the categorical variables. P-Value less than 0.05 was considered significant.

In order to evaluate the knowledge of studied sample about ANC, scoring method was used and knowledge score was obtained by adding up of correct answers to the investigated variables in the questionnaire. Each parameter was awarded (1) mark for correct answer and (0) if the answer was wrong. Thus total marks for questions related knowledge were (37).

Participants level of knowledge was related as poor for those who percentage <50% (<19 score), 50-74% (19-27 score) considered as

acceptable and above 75% (> 28 score) as good level of knowledge.

Results:-

During the study period (500) pregnant women were interviewed, their age ranged (14-43) years with a mean of (26.6±6.2) years.

The average age at marriage was (20.9 ± 4.6) years, and the average age at first baby was (21.7±4.8) years. Educational level varied among the studied sample, where (46.2%) of them had primary school education, and approximately (80%) of them were not working.

Regarding the stage of pregnancy, more than half of sample (51.4%) were in the second trimester and most of them (76.8%) were presented for a follow-up visit.(as shown in table 1).

Table (1): Distribution of the studied sample according to socio-demographic characteristics (n=500):

		No	%
Age (years)	<20y	67	13.4
	20---24	132	26.4
	25---29	136	27.2
	30---34	97	19.4
	=>35y	68	13.6
	Mean±SD(Range)	26.6±6.2(14-43)	
Age at marriage (years)	<20y	210	42.0
	20---24	180	36.0
	25---29	88	17.6
	=>30y	22	4.4
	Mean±SD(Range)	20.9±4.6(13-39)	
Age at first baby (years) (n=348)	<20y	130	37.4
	20---24	138	39.7
	25---29	67	19.3
	=>30y	13	3.7
	Mean±SD(Range)	21.7±4.8(13-40)	
Educational level	Illiterate	20	4.0
	Primary	231	46.2
	Secondary	113	22.6
	College & higher	136	27.2
Occupation	Working	101	20.2
	Not working	399	79.8
The stage of pregnancy	First trimester (up to 12 weeks)	49	9.8
	Second trimester (up to 27 weeks)	257	51.4
	Third trimester (up to delivery)	194	38.8
The type of ANC visit	New	112	22.4
	Follow-up	384	76.8
	Emergency	4	0.8

About one third (27.4%) of the studied women had one previous pregnancy, (30.4%) were primigravida, and (26.2%) had one or more previous abortion. (as shown in table 2).

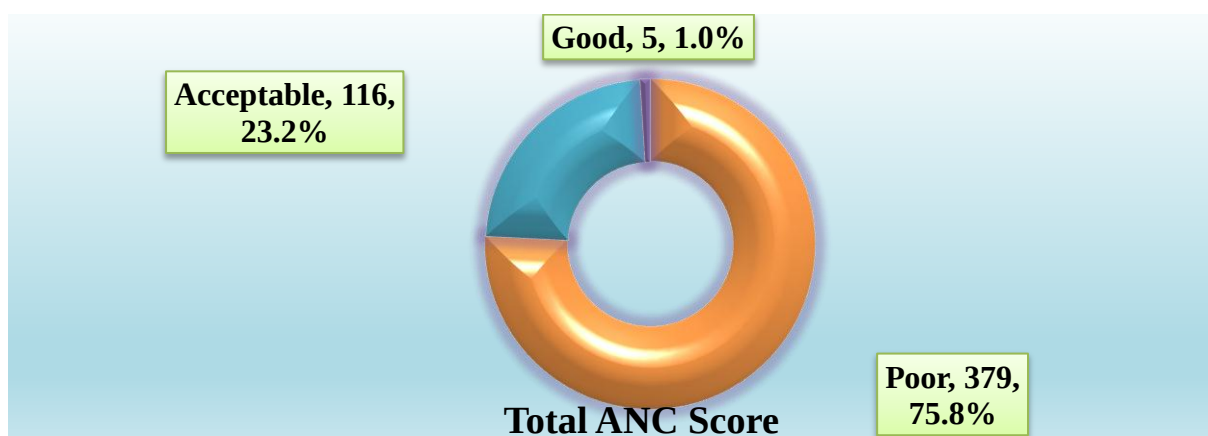
As shown in the figure below, out of (500) studied women, 379 (75.8%) had poor knowledge, 116

(23.2%) had acceptable level, and only 5 (1%) had good knowledge.

The distribution of the mean of knowledge score of antenatal care and Percentage of correct responses of participants on knowledge questions is shown in table 3.

Table (2): Distribution of participants according to gravidity, parity and number of abortion.

		No	%
Gravidity	Gravida 1	137	27.4
	2	106	21.2
	3	104	20.8
	4	78	15.6
	=>5	75	15.0
	Mean±SD(Range)	2.8±1.7(1-9)	
Parity	Para 0	152	30.4
	1	139	27.8
	2	103	20.6
	3	63	12.6
	Para 4 & more	43	8.6
	Mean±SD(Range)	1.5±1.4(0-6)	
Abortions	No abortion	369	73.8
	1	92	18.4
	2 & more	39	7.8
	Mean±SD(Range)	0.4±0.7(0-4)	

**Figure: Distribution of pregnant women according to their level of ANC knowledge****Table (3): Distribution of the mean of knowledge score of antenatal care**

	Mean±SD	(Range)
Definition & Timing (Total 9)	5.3±1.3	(2-9)
Investigations (Total 6)	2.4±0.9	(1-6)
Examinations (Total 6)	1.9±1.0	(1-5)
Supplementation& Avoidance (Total 5)	2.6±1.3	(1-5)
Danger signs (Total 7)	1.1±0.3	(1-3)
Other Care (Total 4)	3.4±0.8	(0-4)
Total Score (Total 37)	16.7±3.3	(9-30)

Table (4) showed the distribution of the studied sample according to preferred education, strategies format, source and timing of antenatal education.

One-to-one discussion was the most preference form for receiving AN education as

stated by 64% of study group, (84.6%) preferred motivation and support approach.

More than one half (54.8%) of the study participants stated that family is the most useful source of gaining information, and the main source of current information was the family in (55.6%) of cases.

Concerning the preferred timing of education, (72.8%) of participants thought that education should be delivered during the 1st trimester.

Significant association was found between overall knowledge and age of the women, age at marriage, age at first baby, educational level,

occupation (p value =0.0001) respectively, parity (p value=0.015) and stage of pregnancy (p=0.002) , except gravidity, number of abortion and type of ANC visit didn't reach to significant level (p=0.202), (p=0.602) and (p=0.518) respectively. as shown in Table (5).

Table (4): Distribution of the participants according to preferred format, strategies, source and timing of antenatal education:

		No	%
The preferred format of education is:	Written materials	68	13.6
	Group education	9	1.8
	One-to-one discussion	320	64.0
	Lecture	69	13.8
	Role play	-	-
	Practical activity	-	-
	Audio-visual	34	6.8
The preferred approach of education is:	Motivation & support	423	84.6
	Guidance	23	4.6
	Problem solving	54	10.8
The preferred source of gaining information is:	Physician	150	30.0
	Health educator	7	1.4
	Nurse	2	0.4
	Family/Friend	274	54.8
	Internet	67	13.4
The source of knowledge now (current information)	Family	278	55.6
	Internet	74	14.8
	Friend	7	1.4
	Health educator	141	28.2
The preferred timing of education is:	Before pregnancy	117	23.4
	First trimester	364	72.8
	Second trimester	16	3.2
	Third trimester	3	0.6

Table (5): Association between level of knowledge of antenatal care and socio-demographic characteristics:

		Characteristics:				P value
		Poor		Fair		
		No	%	No	%	
Age (years)	<20y	61	91.0	6	9.0	0.0001*
	20---24	109	82.6	23	17.4	
	25---29	101	74.3	35	25.7	
	30---34	64	66.0	33	34.0	
	=>35y	44	64.7	24	35.3	
Age at marriage (years)	<20y	185	88.1	25	11.9	0.0001*
	20---24	137	76.1	43	23.9	
	25---29	42	47.7	46	52.3	
	=>30y	15	68.2	7	31.8	
Age at first baby (years)	<20y	116	89.2	14	10.8	0.0001*
	20---24	107	77.5	31	22.5	
	25---29	29	43.3	38	56.7	
	=>30y	10	76.9	3	23.1	
Gravidity	Gravida 1	109	79.6	28	20.4	0.202
	2	80	75.5	26	24.5	
	3	73	70.2	31	29.8	
	4	55	70.5	23	29.5	
	=>5	62	82.7	13	17.3	
Parity	Para 0	117	77.0	35	23.0	0.015*
	1	111	79.9	28	20.1	
	2	65	63.1	38	36.9	
	3	50	79.4	13	20.6	
	Para 4 & more	36	83.7	7	16.3	
Abortions	No abortion	283	76.7	86	23.3	0.602
	1	66	71.7	26	28.3	
	2 & more	30	76.9	9	23.1	
Educational level	Illiterate	19	95.0	1	5.0	0.0001*
	Primary	215	93.1	16	6.9	
	Secondary	93	82.3	20	17.7	
	College & higher	52	38.2	84	61.8	
Occupation	Working	29	28.7	72	71.3	0.0001*
	Not working	350	87.7	49	12.3	
The stage of pregnancy	First trimester	28	57.1	21	42.9	0.002*
	Second trimester	207	80.5	50	19.5	
	Third trimester	144	74.2	50	25.8	
The type of ANC visit	New	84	75.0	28	25.0	0.518
	Follow-up	291	75.8	93	24.2	
	Emergency	4	100	-	-	
*Significant association using Pearson Chi-square test at 0.05 level						

*Significant association using Pearson Chi-square test at 0.05 level.

Association between level of knowledge and scores of antenatal care is shown in Table (6)

Significant association was found between level of knowledge and definition and timing of

ANC, investigations, examination, supplement and danger signs of pregnancy. Only other care such as dental care and physical activity didn't show significant association (p=0.061).

Table (6): Association between level of knowledge and scores of antenatal care.

		Level of knowledge				P value
		Poor		Acceptable		
		No	%	No	%	
Definition & Timing (Total 9)	Poor	67	88.2	9	11.8	0.0001*
	Acceptable	295	87.3	43	12.7	
	Good	17	19.8	69	80.2	
Investigations (Total 6)	Poor	304	91.0	30	9.0	0.0001*
	Acceptable	75	51.4	71	48.6	
	Good	-	-	20	100	
Examinations (Total 6)	Poor	338	85.6	57	14.4	0.0001*
	Acceptable	41	45.1	50	54.9	
	Good	-		14	100	
Supplementation & Avoidance (Total 5)	Poor	235	97.5	6	2.5	0.0001*
	Acceptable	140	65.7	73	34.3	
	Good	4	8.7	42	91.3	
Danger signs (Total 7)	Poor	379	75.8	121	24.2	0.0001*
	Acceptable	-	-	-	-	
	Good	-	-	-	-	
Other Care (Total 4)	Poor	13	92.9	1	7.1	0.061
	Acceptable	153	79.7	39	20.3	
	Good	213	72.4	81	27.6	
*Significant association using Pearson Chi-square test at 0.05 level.						

*Significant association using Pearson Chi-square test at 0.05 level.

Discussion:-

Antenatal care is an effective health intervention care for reducing the risk of maternal morbidity and mortality, and help to ensure healthy outcomes for women and newborn. (5,6)

The result of the study showed that the average age of participants was (26.6+ 6.2 range 14-43) years and (42%) of them got married before 20 years (mean 20.9+4.6 and range 13-39) years, this finding was in agreement with a previous study by Dawood *et al.* (2017) in Basra city. (6) and study by Raoof and Al-Hadithi (2011) in Erbil. (7)

Regarding the education level of the participants the study revealed that nearly half (46.2%) of them had primary education, this was in agreement with a study done by Nasir (2007) in Hyderabad in Pakistan, where (47.2%) of women had primary education. (8)

Obah (2016) in Pakistan reported that young mothers were at greater risk of leaving school or attaining a lower level of education. (9)

Advanced educational status tends to positively concern health-seeking behaviors, and the educational status also can play an important role in the birth control (10)

This study was comparable with a study done by Al-Shammari *et al.* (1994) in Saudi Arabia who found that educated mothers had more antenatal visits. (11)

Most of the participants, 399 (79.8%) were housewives, this finding was also identified by former studies in Iraq (5,6) and elsewhere. (12)

More than one-quarter of participants (30.4%) were primigravida, higher figure was reported by Patel. B. *et al.* (2018) in India who reported that (50.3%) of women were primigravida. (4)

Regarding stage of pregnancy more than half of the studied sample (51.4%) were in the second trimester at the day of interview and the main purpose of the visit was for follow-up, these results coincide with the findings obtained in previous study in Iraq (7) and elsewhere. (3)

Ideally the first visit should be started in the first trimester. (13) The present study showed that only (30%) of the interviewed pregnant women stated that they had obtained antenatal care during the first trimester of pregnancy, while (68.2%) of them had their first visit in the second trimester, this reflects the lack of knowledge and information about the importance of this type of health care, (14) This finding was in keeping with the results reported by other authors. (6,7,15)

The overall knowledge of participants declared by the current work was low, where (75.8%) of pregnant had poor knowledge. Higher figure (95.9%) was reported by Otaiby *et al.* (2013) in Saudi Arabia. (3)

Regarding the frequency of antenatal check-up, the majority (84.8%) of the participants had once or twice visits, and the main purpose of their visits was to receive tetanus toxoid vaccine, these against study by Ogunba *et al.* (2017) in Nigeria who documented that (80.4%) of antenatal visit was to know the condition of mother and baby. (16) This

may be because the participants in this study thought that antenatal visit only for the purpose of vaccinations.

About half of study sample (46.6%) had adequate knowledge about the benefits of tetanus toxoid vaccine to protect mother and child, higher figure was reported with previous study by Seger.H. (2014) in Iraq. (17)

Most of the studied sample (96.2%) knew the importance of blood investigation, this finding was replicated by Eram.*et al.* (2017) in Aligarh (India).(18)

More than half of the respondents (51.6%)knew the importance of blood pressure(Bp) measurement, and that rising Bp would negatively effect the baby. Lower figure reported from pervious study by Gervase.*et al* (2016) in Tanzania (Africa) who declared that (13.4%) of pregnant recognize the importance of B.P. exam. (19)

The pregnant women should change her dietary habit, consume more energy. (20)the mother diet contain iron, folic acid, protein, calcium for the formation of baby muscle, bone and hemoglobin. (21)

About three-quarters of study sample (70%) thought that increasing nutrition during pregnancy is essential for growth and development of fetus, this finding was in parallel with previous study in Iraq. (6)

More than (90%)of respondents knew the need for folic acid during pregnancy, and half of them (44.6%) knew that iron is essential to prevent anemia, higher figure was documented by Ahirwar (2018) in India, who found that(93.33%) of pregnant knew that extra iron is needed during pregnancy to prevent anemia, and (50.66%) of them knew that folic acid is needed during pregnancy to prevent neural tube defect.(22)

Nearly half of respondents (47.6%) recognized the harmful effect of smoking during pregnancy, this finding against the results reported by Roslizaet .*et al.*(2011) in Nigeria who declared that (77%) of pregnant knew that smoking during pregnancy is harmful to fetus. (23)

The most common mentioned danger signs of pregnancy was vaginal bleeding (66.2%), possibly because it is the most visible sign compared with other signs such as weak or no fetal movement, these finding were also identified by former studies conducted in Tanzania (24), Ethiopia (25) and Uganda

(26)whereby most respondents spontaneously identified vaginal bleeding as a danger sign.

It was found that women who engage in regular moderate physical activity throughout their pregnancies tended to have less complicated labors, less gain weight during pregnancy ,and decrease in the common discomforts of

pregnancy. (5,6) Babies born to exercising women have less body fat compared to babies born to non- exercisers. The exercise is not only good for the mothers, but also good for the babies. (5,6) In

the current study most of participants(90%) had light exercise.

Concerning breast feeding less than three-quarters of pregnant (68%) stated that breastfeeding is the best way to feed a baby, this is in agreement with previous study done in Iraq (5). and close to a study by Newby.*et al.* (2014) in Australiawho showed that (85%) of participants recognized that breastfeeding was the best way for feeding a baby.(27)

The majority of the studied women (88%) stated that pregnant should have dental checkup during pregnancy, this is in line with a previous studies in Jordan (28), inAustralia(29) and in Brunei.(30)

More than two-thirds of participants preferred receiving antenatal education through one to one discussion, most of them preferred approach by motivation and support and through that education should be started in the first trimester, this finding was against previous study in Saudi Arabia which showed that written material and problem solving were the preferred approach.(3)

Current study finding declared a significant association between the level of knowledge about antenatal care and most of the socio-demographic characteristics.

These findings were against previous study in Baghdad (2012)which showed no statistical association with their socio-demographical characteristics. (5)

A statistical significant association was found between age of pregnant (<20yr) and poor knowledge about ANC, which coincided with other study done by Patel *et al.* (2016) in India, (4) and study by Sanjel .*et al.* (2011) in Tamang (Nepal) (31)

Education status is an important effective factor on early booking of ANC, this study shows a significant association between education and knowledge, this was in agreement with study done by Ahirwar (2018) in India. (22)but againstDawood *et al.* in Basra. (6)

This study recommends raising the awareness of pregnant women about the importance of early booking ,to enlighten young females mind through increasing their educational level, ,and mass media should play an important role in presenting the benefits of antenatal care like early diagnosis and treatment of some possible complications during pregnancy.

References

1. The world health organization ,Pregnant women must be able to access the right care at the right time, says WHO, 2016, Accessed June 2018www.who.int/entity/mediacentre/news/releases/2016/antenatal-care-guidelines/en/index.html
2. Shafqat T.,Fayaz S., Rahim R., Saima S., Knowledge And Awareness Regarding Antenatal Care And Delivery Among Pregnant Women,2015,(23),(2): 88-91.

3. Otaiby TAI, Jradi H, BawazirA ,Antenatal Education: An Assessment of Pregnant Women Knowledge and Preferences in Saudi Arabia. *J Women's Health Care*,2013, 2:139. doi:10.4172/2167-0420.1000139,1.
4. PatelB, GurmeetP, SinalkarD, PandyaK, Mahe nA, SinghN, A study on knowledge and practices of antenatal care among pregnant women attending antenatal clinic at a Tertiary Care Hospital of Pune, MaharashtraYear, *Medical Journal of Dr. D.Y.Patil University*, 2018 , : 9 :(3) , : 354-362
5. Shalash I., Mohammed F., Assessment of pregnant women's knowledge and practices concerning prenatal care who attend primary health care centers in Baghdad City, *Iraqi National Journal of Nursing Specialties* ,2012, 25, 8.
6. Dawood S., Assessments of Knowledge and Attitudes of Pregnant Women of Antenatal - and Postnatal Care Basra City, Iraq, *Journal of Health Medicine and Nursing*, 2017, .39, ISSN 2422-8419, 59.
7. Raoof M., Alhadithi T., Antenatal Care in Erbil City-Iraq: Assessment of information, Education and Communication Strategy, *Duhok Medical Journal*,2011, 5,(1), 35.
8. Nisar N., Amjad R., Pattern of antenatal care provided at public sector hospital Hyderabad Sindh. *J Ayub Med Coll Abbottabad* 2007;19(4): 11-3.
9. Obah T., Obstetrical complication in grandmultiparty. *Medical channel*. 2016; 15(4): 53- 58.
10. McNamee P., Ternent L., Hussein J., Barriers in accessing maternal healthcare: evidence from low-and middle-income countries. *Expert Rev Pharm Out Res* 2009;9(1):41–48.
11. Al-Shammari S., Khoja T., Jarallah J., The pattern of antenatal visits with emphasis on gestational age at booking in Riyadh Health Centers. *J R Soc Health* 1994; 114:62-6.
12. Ismail N., Abdel Aziz I., Mohamed Essa R., Pregnant Women's Satisfaction with the Quality of Antenatal Care at Maternal and Child Health Centers in El-Beheira Governorate, Egypt, *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 2017, ISSN: 2320–1959,p- 6, (2):,40.
13. WHO antenatal care randomized trial for the evaluation of a new model of routine antenatal care2002, Accessed September 2018 available at <https://www.researchgate.net/publication/11960357>.
14. USAID. Client exit survey on satisfaction with primary health care services and perception of antenatal care and child care in Basra, Iraq,2004, Accessed September 2018 , Available from: <http://pdf.usaid.gov>.
15. El-Sherbini A., El-Torky M., Ashmawy A., Abdel-Hamid H., Assessment of knowledge, attitude and practices of expectant mothers in relation to antenatal care in Assiut governorate. *Egypt Public Health*, 1993;68(5-6):539-65. Accessed October 2018Available from:<http://www.ncbi.nlm.nih.gov/pubmed>
16. Ogunba BO and AbiodunOB,Knowledge and Attitude of Women and Its Influence on Antenatal Care Attendance in Southwestern Nigeria, *Journal of Nutrition and Health Sciences*,2017, 4 |(2): 6.
17. Seger H., Abbas I., Assessment of Pregnant Women's Knowledge about Tetanus Toxoid Vaccination in Karbala City, *Iraqi National Journal ofNursing Specialties*,2014, 27 (1):29.
18. Eram U., Knowledge Regarding Antenatal Care Services in Mothers (15-49 Years) in Rural Areas of Aligarh, *International Journal of Engineering Technology Science and Research IJETS*, 2017, 4(6):123.
19. Gervase L., Reported Knowledge, Attitude and Practice of Antenatal Care Services among Women in Dodoma Municipal, Tanzania,*Journal of Pediatrics and Neonatal Care*, 2016, 4(1): 00125, 5.
20. Butte N., Wong W., Treuth M., Ellis K., Smith O., Energy requirements during pregnancy based on total energy expenditure and energy deposition, *The American Journal of Clinical Nutrition*,2004, 79, 6,(1) : 1078–1087 <https://academic.oup.com/ajcn/article>.
21. Martin J., Hamilton B., Sntton P. and Ventura S. Births final data for 2002. *National Statistics Reports*. 2003; 52 (10): 1-114.available at <http://wonder.cdc.gov>natal03>births03>, Accessed October 2018.
22. Ahirwar N.,Study to assess knowledge attitude and practices of antenatal care among antenatal women attending outdoor clinic in tertiary care hospital,*International Journal of Reproduction, Contraception, Obstetrics and Gynecology*,2018 May;7(5):1757.
23. Rosliza AM., Muhamad HJ., Knowledge, Attitude and Practice On Antenatal Care Among Orang Asli Women in Jempol, Negeri Sembilan, *Malaysian Journal of Public Health Medicine* 2011, 11(2): 13-21.
24. Mwilike B., Nalwadda G., Kagawa M.,Malima K.,Mselle L and HoriuchiS., Knowledge of danger signs during pregnancy and subsequent healthcare seeking actions among women in Urban Tanzania: a cross-sectional study,*BMC Pregnancy Childbirth*. 2018; 18: 4.
25. Hailu M, Gebremariam A, Alemseged F. Knowledge about obstetric danger signs among pregnant women in AletaWondo District, Sidama Zone, Southern Ethiopia. *Ethiopian J Health Sci*. 2010; 10:4314.
26. Kabakyenga J., Östergren P., Turyakira E., Pettersson K., Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. *Repro Health*. 2011; 10.1186/1742-4755-8-33.

27. Newby R., Brodribb W., Ware R., And Davies P., Infant Feeding Knowledge, Attitudes, And Beliefs Predict Antenatal Intention Among First-Time Mothers in Queensland, *Breastfeeding Medicine*, 2014, 9, (5): 270.
28. Alwaeli HA, Aljundi SH, periodontal disease awareness among pregnant women and its relationship with socioeconomic variable, *international journal of dental hygiene*, 2005, 3:74-82.
29. Thomas NJ, Middleton PF, Crowther CA, Oral and dental health care practices in pregnancy women in Australia: a postnatal survey, *BMC pregnancy and child birth* 2008,1-6.
30. Bamanikar S., KokKeeL., Knowledge, Attitude and Practice of Oral and Dental Healthcare in Pregnant Women, *Oman Med J*. 2013; 28(4): 288–291.
31. Sanjel S., Ghimire R., Pun K., Antenatal care practices in Tamang community of hilly area in central Nepal. *Kathmandu Univ Med J (KUMJ)* 2011; 9:57-61.