

Knowledge, Attitude and Practice of Pregnant Women toward Antenatal Care at Public Hospitals in Sana'a City-Yemen

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Abstract—Background: Antenatal care can be defined as the care provided by skilled healthcare professionals to pregnant women and adolescent girls to ensure the best health conditions for both mother and baby during pregnancy. The components of Antenatal Care (ANC) include risk identification; prevention and management of pregnancy-related or concurrent diseases; and health education and health promotion. The aim of this study: to assess the knowledge, attitude, and practice of pregnant women regarding ANC. Methodology: A descriptive knowledge, attitude, and practice (KAP) study was conducted in public hospitals in Sana'a City, Yemen. The study population included all pregnant women that intended to the prenatal department and clinical outpatient department; the final sample size was 371 pregnant women. A self-administered questionnaire was used to collect the data, statistical package for social sciences SPSS was used to data analysis. The results: Most (79%) of pregnant women had correct answers in total knowledge regarding ANC, and about two-thirds (67%) of pregnant women had performance practice regarding ANC and two-third (68%) of pregnant women had a positive attitude. Conclusions: More than three quarter of pregnant women had good knowledge level, most of pregnant women had moderate practice level, and more than two-thirds of pregnant women had a positive attitude regarding antenatal care. There was a statistically significant association between overall knowledge and practice level toward ANC and demographic characteristics of pregnant women, at $P\text{-value} \leq 0.05$. Recommendations: we recommended more education and training courses, lecturers, and education sessions in clinical facilitators focused on ANC, which relies on evidence-based interventions provided to women during pregnancy by skilled healthcare providers such as midwives, doctors, and nurses.

KEYWORDS—Antenatal care, knowledge, practice, attitude, pregnant women.

I. INTRODUCTION

ANC is a comprehensive assessment and follow-up programme for pregnant women that includes education, counselling, screening, and treatment to maintain the mother's and foetus's best possible health [1].

Every year, around 6 million women become pregnant, with 5 million of these pregnancies ending in a child's birth. Improved maternal and new-born health is linked to adequate

utilisation of prenatal health care. Pregnancy care is expected to affect the development of the foetus and the baby as well as the mother [2].

The major goal of prenatal care is to assist the mother during her pregnancy and to monitor her and her foetus' health and well-being. Although pre-conceptual care is advised, ANC generally commences at booking. The National Institute for Health and Care Excellence provides a framework and recommended schedules for routine ANC [3].

Health knowledge is essential for women to know their health condition and the necessity of receiving adequate prenatal care. At this moment, data on the maternal health status of Sanaa women are scarcely available. This study was conducted to determine the level of KAP related to ANC among these underprivileged women in a selected setting which will be used as baseline data for further planning of health intervention programs.

Significance of the Study

In low-resource countries, ANC is a critical approach for reducing maternal mortality. ANC clinics offer tools to help people learn more about nutrition and health, as well as encourage them to follow healthy practices [4].

Perinatal outcomes depend on the ANC such as early recognition and management of problems, identification of the risks, together with appropriate and timely intervention during the perinatal period, which can prevent morbidity and mortality among mothers and infants [5].

The midwives play a major role in delivering health care to pregnant women and them responsible for updating the knowledge on ANC care among pregnant women. Therefore, this study was carried out to assess the knowledge, practice, and attitude of pregnant women towards ANC.

Aim of the Study

The aim of the study is to assess the knowledge, attitude practice, of pregnant women toward ANC at Public Hospitals in Sana'a City-Yemen.

Research Questions

1. Do pregnant women have knowledge about ANC?
2. What is the attitude and practice of pregnant women regarding prenatal care?
3. What is the relationship between demographic characteristics of pregnant women and their knowledge level regarding ANC?

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II. METHODOLOGY

Study Setting

This study was conducted in three public hospitals in Sana'a City, Yemen that include Al-Thawra General Hospital Model, Al-Sabeen Maternity & Child Hospital, Republican Teaching Hospital Authority. These hospitals were selected as they are the referral hospitals for most people and the service fees are low.

Study Design

A descriptive KAP study was carried out to assess the KAP of pregnant women regarding ANC at public hospitals in Sana'a City –Yemen.

Sample Size and Technique Determination

The sample size was determined through the use EpiCalc program, version 2000 taking into consideration: The study's population consisted of all pregnant women who visited the prenatal department and clinical outpatient clinic at public hospitals for one month, with a precision of 5% and a 95% confidence level. The final sample size was 371 Yemeni pregnant women.

Data Collection Methods and Tool

Data Collection Tool

A structured questionnaire was administered to assess the knowledge, practice, and attitude of pregnant women). A close-ended questionnaire with an information letter and consent form was attached and handed to pregnant women by the researchers. A code number was applied. The questionnaire consisted of 57 questions and pregnant women's informed consent.

The questionnaire divided into the following parts

- Part I: Demographic characteristics of pregnant women: This part contains the following: hospital code, department, age in the year, education of respondents, district, place of delivery of the last baby, husband support in attending ANC, information toward antenatal care, source of information, and health education sessions on ANC, in the past three months. This included 12 questions.
- Part II: Knowledge of pregnant women's regarding ANC: This part included 22 questions. This part was comprised of the following sections:
 - a) Section I: general knowledge of pregnant women about ANC.
 - b) Section I: knowledge about ANC in the first trimester of pregnancy.
 - c) Section II: Knowledge about ANC in second and third-trimester pregnancy.
- Part III: Practice of pregnant women regarding ANC.
- Part VI: Attitude of pregnant women regarding ANC. The question number from (Q1 to Q10).

Validity and Reliability of the Tools

The questionnaire was structured from previously validated and reliable studies, the validity of the English and Arabic

versions of the questionnaire was reviewed by three experts to determine if all questions and observes were worded and would not be misinterpreted.

As a result, some questions were omitted, some added, and others rephrased. Other questions added were formulated by the researchers with the help of literature supervisor and experts was make modified to add or omit to clearly and correct misinterpreted and doubtlessness from credence and completeness of study tool.

The reliability of the questionnaire was tested by using Cronbach's Alpha so, the tool was found to be highly reliable (Cronbach's Alpha = 0.841)

Scoring System

Each correct response to the items in the questionnaire or checklist was given one, and zero was given to either wrong or don't know responses.

1. Scoring system for total knowledge as the following:
 - a. Good knowledge = was assigned to pregnant women who got from 76 to 100%.
 - b. Moderate knowledge = was assigned to pregnant women who got from 50 to 75%.
 - c. Poor knowledge = was assigned to pregnant women who got from 1 to 49%.
2. Scoring system for total practice as the following:
 - a. Good practice = was assigned to pregnant women who got from 76 to 100%.
 - b. Moderate practice = was assigned to pregnant women who got from 50 to 75%.
 - c. Poor practice = was assigned to pregnant women who got from 1 to 49%.
3. Scoring system for total attitude as the following:
 - a. Positive attitude = less than 1.66.
 - b. Negative attitude = from 1.67 to 3.

Pilot Study

The piloted questionnaire was performed before data collection. A pilot study was done on 10% of participants to assess the clarity, feasibility of the study, and drawbacks of the questionnaire. Following the pilot study, minimal modifications to the layout and presentation of the instrument were made. The pretest was excluded from the final study sample.

Data Collection Methods

Data were collected through the one month from December to November 2020 where good rapport was maintained in the whole period of data collection, pregnant women were told to sign the verbal consent form. The questionnaire prepared in English language and translated from English into Arabic using translation and back-translation techniques by two specialists. All pregnant women received an Arabic version questionnaire. The questionnaires were filled in the presence of the researchers and participants were free to ask for any questions or clarifications. All the collected data have been checked by the researchers daily for completeness.

Data Processing and Statistical Analysis

A packaged computer analysis program, statistical package for the social science (SPSS 21.0), was used for statistical analysis of this data. Descriptive statistics were used to interpret the demographic data, descriptive measures, including frequency, the percentage for categorical variables, and the mean and standard deviation for numerical variables. To find the association between KAP and demographic characteristics was used chi-square test for categorical data, and a P-value ≤ 0.05 was considered significant.

Ethical Considerations

Approval of the study was obtained before carrying out this study from the ethical committee of the college of medical sciences of Al-Razi University. A cover letter was sent to the principles of hospitals to obtain approval to conduct this study. The purpose and benefits of the study were explained to participants. The consent was taken from all participated pregnant women in this study. All pregnant women also have the right to refuse to participate or to withdraw from the study.

III. RESULTS

TABLE I
SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PREGNANT MOTHERS ATTENDING ANC (N = 371)

Items	No.	%
Age group:		
< 20 years	67	18%
20 -30 years	232	63%
31- 40 years	70	19%
> 40 years	2	1%
Mean \pm SD	(26.49 \pm 5.716)	
Hospital Name:		
Al-Thawra General Hospital Model	134	36%
Al-Sabeen Maternity & Child Hospital	132	36%
Republican Teaching Hospital Authority	105	28%
Department Name:		
Clinical outpatient	212	57%
Prenatal Departments	159	43%
Education of respondents:		
Illiterate	39	11%
Primary school	46	12%
Middle school	61	16%
Secondary school	127	34%
Diploma degree	35	9%
Bachelor's degree	62	17%
Above the bachelor's degree	1	.3%
Residence place:		
Urban	319	86%
Rural	52	14%
Number of pregnancies:		
Prime	125	34%
Multi	246	66%
Place of delivery of the last baby:		
Hospital	155	42%
Home	92	25%
No have delivery	124	33%

Table I shows the distribution of socio-demographic data,

the most (63%) of the pregnant women between age group 20-30 years. 57% of the pregnant women were from the clinical outpatient department while 43% of them were from the prenatal department. Regarding education level, more than one third (34%) of pregnant women had secondary school. The majority (86%) of pregnant women were living in urban residence places, while 14% of them were living in rural residence places. More than two-thirds (66%) of pregnant women had multi pregnancies. The most (42%) of pregnant women were delivering the last baby in the hospital.

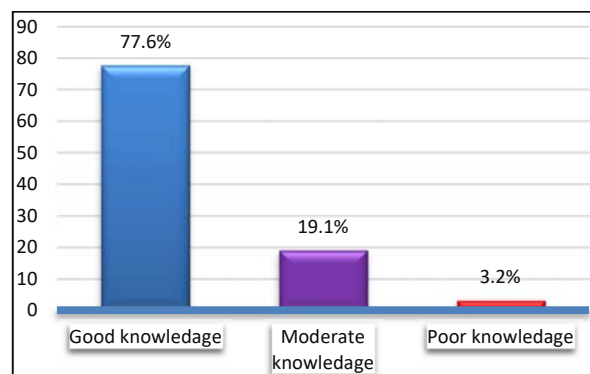


Fig. 1 Overall knowledge level of pregnant women regarding ANC (n = 371)

Fig. 1 shows that most (77.6%) of pregnant women had good knowledge regarding ANC, followed by 19.1% of them with moderate knowledge while only 3.2% of them had poor knowledge.

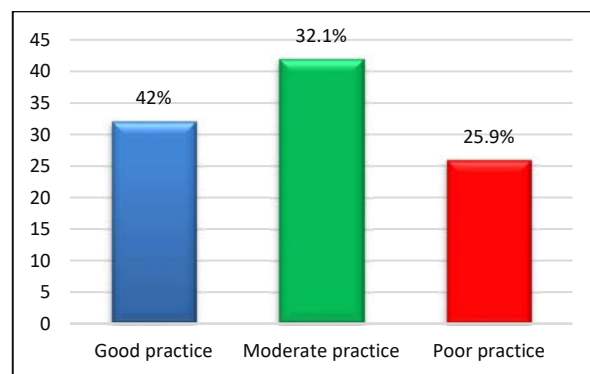


Fig. 2 Overall practice level pregnant women regarding ANC (n = 371)

Fig. 2 shows that about 42% of pregnant women had moderate practice regarding ANC, followed by one-third (32.1%) of them having good practice while 25.9% of them had poor practices regarding ANC.

Fig. 3 shows that about two-thirds (68%) of pregnant women had a positive attitude, followed by one third (32%) of the negative attitude regarding ANC.

Table II shows a significant association between overall knowledge level regarding ANC and demographic characteristics of pregnant women (residence place, level of education, husband support in attending ANC and place of

delivery of the last baby) at P-value < 0.05. There was a statistically significant association between the overall knowledge level regarding ANC.

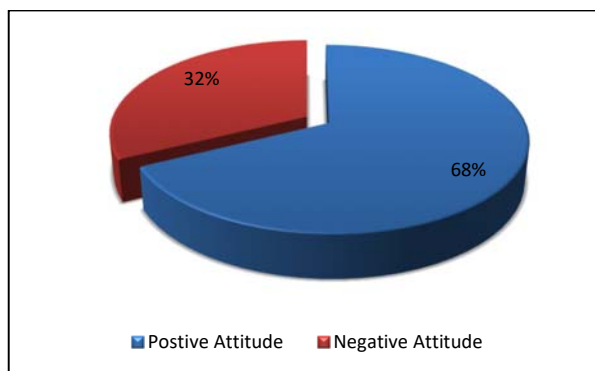


Fig. 3 Overall attitude level of pregnant women regarding ANC (n = 371)

TABLE II
ASSOCIATION BETWEEN OVERALL KNOWLEDGE LEVEL REGARDING ANC AND DEMOGRAPHIC CHARACTERISTICS OF PREGNANT WOMEN (N = 371)

Items	Level of knowledge			P-value
	Good knowledge	Moderate knowledge	Poor knowledge	
Residence place:				
Rural	261	53	5	0.000
Urban	27	18	7	
Department Name:				
Clinical outpatient	157	47	8	0.163
Prenatal Departments	131	24	4	
Number of pregnancies:				
Prime	93	27	5	0.551
Multi	195	44	7	
Level of Education:				
Illiterate	23	11	5	0.021
Primary school	34	10	2	
Middle school	47	11	3	
Secondary school	98	27	2	
Diploma degree	31	4	0	
Bachelor's degree	54	8	0	
Above the bachelor's degree	1	0	0	
Place of delivery of the last baby:				
Hospital	137	17	1	0.007
Home	59	27	6	
No have delivery	92	27	5	
Husbands support you in attending ANC:				
Yes	270	52	4	0.000
No	18	19	8	

Table III shows a statistically significant association between overall knowledge level regarding ANC and other demographic characteristics of pregnant women at P-value ≥ 0.05 .

Table IV shows a statistically significant association between overall practice level regarding ANC and demographic characteristics of pregnant women (residence place, level of education, husband support in attending ANC,

and place of delivery of the last baby) at P-value ≤ 0.05 . there was not a statistically significant association between overall practice level regarding ANC and other demographic characteristics of pregnant women at P-value ≥ 0.05 .

TABLE III
ASSOCIATION BETWEEN OVERALL KNOWLEDGE LEVEL REGARDING ANC AND DEMOGRAPHIC CHARACTERISTICS OF PREGNANT WOMEN ACCORDING TO INFORMATION AND EDUCATION (N = 371)

Items	Level of knowledge			P-value
	Good knowledge	Moderate knowledge	Poor knowledge	
Information regarding ANC:				
Yes	233	41	5	0.000
No	55	30	7	
Source of information:				
Social media	88	17	1	0.000
Health care agency	116	15	4	
Publication mediums	8	4	0	
Other	21	5	0	
No have information	55	30	7	
Health education session on ANC:				
Yes	89	16	0	0.032
No	199	55	12	
In the past three months, have you seen, heard, or read anything about the importance of attending ANC:				
Yes	131	22	3	0.041
No	157	49	9	

TABLE IV
ASSOCIATION BETWEEN OVERALL PRACTICE LEVEL REGARDING ANC AND DEMOGRAPHIC CHARACTERISTICS OF PREGNANT WOMEN (N = 371)

Items	Level of practice			P-value
	Good practice	Moderate practice	Poor practice	
Residence place:				
Rural	111	139	69	0.000
Urban	8	17	27	
Department Name:				
Clinical outpatient	71	82	59	0.306
Prenatal Departments	48	74	37	
Number of pregnancies:				
Prime	36	59	30	0.354
Multi	83	97	66	
Level of Education:				
Illiterate	6	12	21	0.007
Primary school	13	20	13	
Middle school	15	28	18	
Secondary school	45	54	28	
Diploma degree	15	16	4	
Bachelor's degree	25	25	12	
Above the bachelor's degree	0	1	0	
Place of delivery of the last baby:				
Hospital	65	61	29	0.000
Home	18	37	37	
No have delivery	36	58	30	
Husbands support you in attending ANC:				
Yes	111	143	72	0.000
No	8	13	24	

Table V shows a statistically significant association between overall practice level regarding ANC and

demographic characteristics of pregnant women at P-value \leq 0.05.

TABLE V
ASSOCIATION BETWEEN PRACTICE LEVEL REGARDING ANC AND DEMOGRAPHIC CHARACTERISTICS OF PREGNANT WOMEN ACCORDING TO INFORMATION AND EDUCATION (N = 371)

Items	Level of practice			P-value
	Good practice	Moderate practice	Poor practice	
Information regarding antenatal care:				
Yes	103	125	51	0.000
No	16	31	45	
Source of information:				
Social media	47	45	14	0.000
Health care agency	46	66	23	
Publication mediums	5	2	5	
Other	4	13	9	
No have information	17	30	45	
Health education session on ANC:				
Yes	49	35	21	0.001
No	70	121	75	
In the past three months, have you seen, heard, or read anything about the importance of attending ANC?				
Yes	57	67	32	0.095
No	62	89	64	

IV. DISCUSSION

This study aimed to assess the knowledge, practice, and attitude of pregnant women regarding ANC at Public Hospitals in Sana'a City, Yemen. In this section, we present the major findings of the study and discuss them according to similar studies conducted by other researchers; this helped the researchers to prove that the findings.

The findings are discussed in four parts: Demographic characteristics of pregnant women, knowledge of pregnant women regarding ANC, the practice of pregnant women regarding ANC, and Attitude of pregnant women regarding ANC.

Demographical Characteristics of Pregnant Women Regarding ANC

The current study showed that the most (63%) of the pregnant women's between age group 20-30 years, and about one-third (34.2%) of pregnant women had secondary school in education degree, the majority (86%) of them were living in urban residence places while less than two-thirds (66.3%) of pregnant women had multi-pregnancy, and less than half (41.8%) of them delivered the last baby in the hospital. Also, the majority (87.9%) of pregnant women were supported by their husband towards ANC, the majority (75.2%) of them had information toward antenatal care, and about 36.4% of them had information from a health care agency. These findings agree with other two studies, the first study about KAP of ANC services among women in Dodoma Municipal, Tanzania by [6], which reported that the majority (83.6%) of pregnant women had lived in urban residence place and more than half (55.0%) of them had delivered the last baby in the hospital. Moreover, the current study is in line with [6], who reported

that one-third (33%) of pregnant women had secondary school in education level. These results are not compatible with [6], who found that more than half (66.4%) of pregnant women had a delivery of the last baby in the hospital.

Our findings are in disagreement with nutritional KAP among pregnant women who attend ANC at public hospitals of Addis Ababa, Ethiopia by [11], who reported that the most (70%) of pregnant mothers reported practices of eating fresh vegetables and daily milk consumption respectively.

Knowledge of Pregnant Women Regarding ANC

The current study showed that the majority (95.1%) of pregnant women had good knowledge regarding the vitamin supplement and iron-folic acid, while two-thirds (67.9%) of pregnant women had knowledge about tetanus vaccine injection, while about less than half (44.2%) of pregnant women had poor knowledge regarding the blood screening for HIV infection and the blood screening for hepatitis B infection. About less than two-third (67.6%) of pregnant women had moderate knowledge regarding the regularity schedule of ANC visit according to trimesters of pregnancy, while the most (79%) of pregnant women had correct answer in total knowledge regarding ANC. 21% of them had an incorrect answer. These findings agree with other three studies; the first study is about Knowledge Attitude and Practice Regarding Antenatal Care among Pregnant Women in Rural Area of Lahore by [2], who reported that the majority (92.3%) of those pregnant women had knowledge regarding needs of vitamin supplement. On other hand, this study showed that less than two-third (64.7%) of pregnant women had knowledge about ANC. Furthermore, our result agrees with study "Knowledge and Practices Regarding ANC among Mothers of Infants in an Urban Area of Amritsar", by Punjab [8], who reported that half (50%) of pregnant women had knowledge about the correct doses of tetanus vaccine injection, while the more than half (52%) of the mothers knew the importance of ANC visits. In addition, another study conducted by [5] reported that about one-third (34.8%) of pregnant women did not need to do blood screening for HIV infection during their antenatal clinic check-up. Moreover, our finding supported [11], who reported that the most pregnant women demonstrated adequate knowledge about antenatal exercises. In addition, the current result agrees with the study [12], which mentioned that the majority of women had good knowledge of ANC.

Our findings agree with another study; KAP of Mothers about Perinatal Care by [9], who reported that the majority (88%) of those pregnant women had good knowledge of spacing regarding perinatal care.

Practice of Pregnant Women Regarding ANC

The current study showed that the majority (86.8%) of pregnant women had good practice of vitamin supplement and iron-folic acid and calcium tablets during pregnancy, followed by the majority (84.9%) of them with good practice regarding eating habits changing during pregnancy, 86.5% of them had good practice regarding the antenatal follow-up, while less

than two-thirds (62.2%) of pregnant women had moderate practice regarding the visits to ANC regularity. On the other hand, over two-thirds (67%) of pregnant women had good performance in the total ANC practice. These findings agree with others two studies: The first study is conducted in New Delhi, India by [10] who reported that the most (73.9%) of women had completed 3 antenatal visits. On another hand, this study showed that more than two-thirds (68.5%) of pregnant women had completed four ANC visits and at least one antenatal clinic visit was made by 97.4% of pregnant women. Furthermore, our findings are consistent with study [1] who found that two-thirds (61%) of pregnant women had favourable ANC practices.

Attitude of Pregnant Women Regarding ANC

The current study showed that about two-thirds (68%) of pregnant women had a positive attitude, followed by one third (32%) of the negative attitude regarding ANC. These findings agree with two studies, the first study is about knowledge and practices regarding ANC among mothers of infants in an urban area of Amritsar, Punjab by [8], who reported that the majority (97.9%) of the respondents knew that pregnant women need to go for an antenatal check-up. The second study is about knowledge attitude and practice regarding ANC among pregnant women in the Rural Area of Lahore by [2], who reported that about two-thirds (69.6%) of pregnant women had a positive attitude towards ANC. In addition, our results are compatible with [11], who reported that the women had a positive attitude towards antenatal exercise.

The findings of the current study showed a significant association between overall knowledge level toward ANC and demographic characteristics of pregnant women at P -value ≤ 0.05 . Furthermore, there was a statistically significant association between overall practice level and demographic characteristics of pregnant women, at P -value ≤ 0.05 . These findings are supported with KAP of Mothers about Perinatal Care by [9], who reported statistically the highly significant correct knowledge and attitude for ANC but incorrect KAP regarding the type of diet and time of initiation of nutritious post-delivery. On another hand, this study showed that a significant number of mothers gave correct answers for KAP for ANC, like ANC visits, tetanus toxoid immunization, iron folic acid tablets, nutrition during the ANC period.

V. CONCLUSION

It has been determined that the majority (63%) of pregnant women were in the age group of 20-30 years. Pregnant women made up 86% of the population in urban areas. Multi-pregnancies were found in 66.3% of pregnant women. Less than half of pregnant women (42%) were delivering their last baby in the hospital. More than three-quarters of pregnant women (77.6%) had a high level of knowledge, the majority of pregnant women had a moderate level of practice, and more than two-thirds of pregnant women had a favourable attitude toward prenatal care.

VI. RECOMMENDATIONS

Based on the results of the present study the following can be recommended:

1. We recommended more education and training courses, lecturers and education sessions in clinical facilitators focused on ANC, which relies on evidence-based interventions provided to women during pregnancy by skilled healthcare providers such as midwives, doctors, and nurses.
2. We are motivating pregnant women to develop their careers by studying further and gaining more knowledge and skills in the ANC field.
3. We recommended and encouraged pregnant women to translate their knowledge into practice.
4. We encourage pregnant women to make regular visits during pregnancy, take a tetanus vaccine, extra nutrition, and their commitment to used medication according to medical prescriptions.
5. Further research and a similar study are recommended to include a large sample size of pregnant women in the multi-area in Yemen.
6. We recommended that women obtain documented information about ANC and continue to family planning.

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