

Knowledge, Attitude, and Practice on Antenatal Care Among Pregnant Women and its Association With Sociodemographic Factors: A Hospital-Based Study

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Abstract

Knowledge, attitude, and practices (KAP) for an antenatal check-up during pregnancy is a key indicator of a healthcare facility in a community. Antenatal care (ANC) is a useful practice for lowering infant and maternal mortality. Therefore, the present study was planned to estimate knowledge, attitudes, and practices regarding ANC among pregnant women and determine its association with sociodemographic factors. This hospital-based cross-sectional study was conducted on 400 pregnant women through convenience sampling from March 2020 to February 2021. A semistructured questionnaire included sociodemographic and obstetrical history, and scored questionnaire on KAP was used. The analysis included parametric, nonparametric, and Pearson correlation coefficient tests. The finding of the study revealed that pregnant women had average knowledge (96%), positive attitudes (98.75%), and good practices (58.5%) toward ANC. The level of overall knowledge had a positive correlation with the practices toward ANC ($r=0.18$, $P<0.001$). The sociodemographic association showed that age, type of family, education, and occupation had a significant association with awareness and practices about ANC. Furthermore, the practice of ANC in our study area was low despite good knowledge and attitude toward ANC. Further, exploratory studies are required and need to be planned to improve practices in prenatal care and ultimately improve their health.

Keywords

antenatal care (ANC), cross-sectional study, knowledge, attitude, practices, pregnancy

Introduction

Healthy mothers and children are the real wealth of society (World Health Organization [WHO]).¹ Pregnancy is a difficult time in a woman's life, as she changes from daughter to mother a couple of times. Becoming a mother necessitates significant self-reconstruction.² Pregnancy is not a disease, but it is a health risk in which all maternal systems are significantly altered to allow for the survival and development of the conceptus. Still, these alterations can also result in ailments such as morning sickness, heartburn, and constipation.³ During pregnancy, a healthy diet and lifestyle are essential for the growth of a healthy baby and can have long-term health benefits for the infant.⁴ The classical Unani literature also provides details regarding antenatal care (ANC; *Tadābir-i-Hawāmil*), safe motherhood, and treatment of minor ailments during pregnancy and other complications related to pregnancy. Unānī scholars surmised the importance of a healthy lifestyle and a healthy diet for safe motherhood during the antenatal period (ANP).

According to the WHO, approximately 810 people die every day due to complications during pregnancy and child-birth.⁵ According to the 2011 Census, India's maternal mortality rate accounts for a staggering 212 per 100 000 live births. Hemorrhage, obstructed labor, asthma, and other disorders are common causes.⁶ India has the world's highest number of births per year (27 million), but it also has the highest maternal mortality rate (300–500 per 1,00,000

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births), with 75 000 to 150 000 maternal deaths per year.⁷ Hence, ANC plays a significant role in public health to prevent maternal and neonatal morbidity and mortality in the world. It aims to avoid congenital disabilities, preterm labor, neural tube defects, anemia, and poor maternal health by providing routine check-ups and planning the appropriate nutritious diet, appropriate treatment for pregnancy-related complications, and fluid intake for pregnant women.⁸ Globally 62% of pregnant women receive WHO recommending a minimum of 4 visits for pregnant women in 2010–2016.⁹ One of the most critical components of India's family welfare program has been the promotion of maternal and child health. It is necessary to promote safe motherhood by providing excellent ANC to reduce maternal and child mortality rates.¹⁰ According to the National Family Health Survey, the Full ANC is defined as at least 3 visits for ANC testing, at least 1 Tetanus toxoid (TT) injection received, and 100/tablet/iron and folic acid (IFA).⁴

Supplementing pregnant women with folic acid, calcium, and essential vitamins during the ANP, as well as providing the mother with care and knowledge, can help the family resolve pregnancy complications and promote breastfeeding.¹¹

The knowledge, attitude, and practices (KAP) survey measures knowledge, attitude, and social practices. KAP obstetric examination during pregnancy is an important indicator of a community healthcare facility. The KAP study reveals what people know, how they feel, and how they act.¹² Very few studies have been conducted in India on this aspect of maternal health so details are not available. This study aims to determine the knowledge attitudes, and practices of pregnant women regarding the various aspects of ANC and its association with sociodemographic factors.

Material and Methods

Study design, and setting and duration to complete the trial. A hospital-based cross-sectional study was conducted to determine the knowledge, attitudes, and practices related to the ANC among pregnant women in the National Institute of Unani Medicine, Bengaluru, Karnataka from March 2020 to February 2021. This cross-sectional study took 1 year to complete because of the lockdown imposed due to COVID-19. The institutional ethical committee approves the trial.

Participants

Sampling and eligibility criteria. A total of 400 pregnant women were selected through a convenience sampling technique. Pregnant women who were between the age group of 18 and 45 years with any gestational age visiting our hospital were included. Pregnant women who were willing to give written consent and eligible to participate in the study were included.

Procedure for data collection. A predesigned semistructured interview schedule was prepared for the collection of data

through face-to-face interviews. The interview of each pregnant woman took 20 min. The first section of the schedule included sociodemographic data that included name, spouse name, age, gestational age, address, contact number, occupation, education, habitat, religion, height, weight, body mass index, type of family, dietary habits, physical work, sleep, and Kuppaswamy's socioeconomic scale for socioeconomic status. The second section included obstetrical history. The third section included KAP questions from the previous study.¹⁰ The knowledge questionnaire included 18 questions, attitude included 15 and practices included 13 questions. The fourth section included awareness about the complications during pregnancy and the fifth section included services provided in the hospital (see the Supplemental file for the schedule).

Knowledge. The questions related to knowledge included ANC understanding, check-ups, immunizations, investigations, nutritional supplements, risk factors for pregnancy, contraception, and personal habits. Each parameter was given 1 mark for the correct answer and 0 marks if the answer was incorrect. The total score was 44 converted to percentage. Knowledge level was graded as high (75%), average (50%-75%), and low (<50%). Pregnant women who scored more than 75% were considered to have higher knowledge, who scored between 50% and 75% were considered to have average knowledge, and pregnant women who scored <50% were considered to have low knowledge.

Attitude. The attitude questions included were a perception of the attitude of respondents to a place of delivery, the effect of smoking on mother and fetus, ANC enrolment, visits, motivation, investigations, dietary changes, alcohol, drug abuse, medical problems, contraceptive use, and IFA. Each attitude questionnaire was rated using a 5-point Likert rating scale strongly agree, agree, neutral, disagree, and strongly disagree. Score 5 for strongly agree and score 1 for strongly disagree. A few questions related to attitude including the concept of delivery, the effect of smoking on the mother and fetus, and the effects of alcohol on the health of the mother and fetus were given the opposite scoring. The total score was 66 converted to percentage. The attitude was graded as positive (75%), neutral (50%-75%), and negative (<50%). Pregnant women with a <50% attitude score were described to have a negative attitude, between 50% and 75% score were considered to have a neutral attitude, and >75% score was considered to have a positive attitude regarding the ANC.

Practices. Questions related to practices included ANC visits, changes in diet during pregnancy, IFA pills, smoking, alcohol, self-medication, vaccination with TT injection, and use of contraceptives. Each question was given a score of 1 for good practice and 0 if the practice was not found appropriate. Therefore, the total score for practice-related questions was 21, converted into a percentage. The question "get used to the number of visits carried

2 scores" (<3 visits = 0, 3–5 visits = 1, and >5 visits = 2). The question related to practice using the IFA tablet was given a score of 5 (0–49 = 1, 51–99 = 2, 100–149 = 3, 150–200 = 4, >200 = 5). Practice level was graded as good (75%), adequate (50%–75%), and insufficient (<50%) practices. Pregnant women who achieved <50% score were considered to have an insufficient level of practice, and 50%–75% were considered to have considered having a good level of practice.

Sample Size Calculation

For the purpose of estimating the sample size, the prevalence was taken as 50%, the confidence level as 95% and the total margin (d) error was set to 5% (eg, Alpha = 0.05) using the formula:¹³

$$n = \frac{Z^2 P(1 - P)}{d^2}$$

Statistical Analysis

Data was analyzed using statistical software Microsoft Excel and online calculators which are available on the website vassarstats.net. The chi-square test, one-way analysis of variance, unpaired t -test, and Pearson coefficient correlation test have been used to determine the value of study parameters on a categorical scale and between 2 or more groups.

Results

Demographic Parameters

The mean age of pregnant women was 25 ± 4.52 years. The majority of pregnant women (72.25%) were between 20 and 30 years of age followed by <20 years (15.75%). Most of the pregnant women (83%) lived in nuclear families and 84% were from urban areas (Table 1).

Socioeconomic Status

The majority of the pregnant women were from the lower and upper–lower class (49.25%) (Table 2). Table 2 summarized the education and occupation of the pregnant women and their head of family.

Obstetric History

The mean age at marriage was 24 ± 15.55 years. The majority of the pregnant women 88.25% (353) were married between 16 and 25 years of age. The mean age at first pregnancy was 26 ± 14.14 years. 31.25% (125) were primigravida and 68.75% (275) were multi gravida. The majority of pregnant women were in mid-trimester (47%) (see Table 3)

Table 1. Distribution of Pregnant Women According to Demographic Data.

Variables	No. of pregnant women ($n = 400$)	Percentage (%)
Age		
Mean \pm SD	25 ± 4.52	
<20	63	15.75
21–30	289	72.25
31–40	48	12
Religion		
Hindu	55	13.75
Muslim	345	86.25
Habitat		
Rural	64	16
Urban	336	84
Type of family		
Joint	68	17
Nuclear	332	83
Diet		
Veg	9	2.25
Non veg	0	0
Mixed	391	97.75
Appetite		
Good	381	95.25
Low	19	4.75
Poor	0	0
Sleep		
Disturbed	28	7
Normal	372	93
Body mass index (BMI) (kg/m^2)		
Mean \pm SD	24.8 ± 5.09	
<18.5	44	11
18.5–24.9	200	50
25–29.9	107	26.75
≥ 30	49	12.25
30.0–34.9	40	10
35.0–39.9	9	2.25
Total	400	100

Overall KAP of ANC of Pregnant Women

Precisely, 96% of pregnant women had an average knowledge, 98.75% had a positive attitude, and 58.5% had good practice (see Table 4).

Overall KAP of Pregnant Women Regarding ANC and its Association with Sociodemographic Data

Table 5 shows that the overall KAP of pregnant women regarding ANC had no significant association with age, type of family, occupation, education, parity, and socioeconomic status (SES; $P > 0.05$).

Association Between Sociodemographic Data and Knowledge of Pregnant Women Regarding ANC

Table 6 summarizes the association between sociodemographic data and knowledge. There was a significant

Table 2. Socioeconomic Status of Pregnant Women.

Variables	Pregnant women (n = 400) No. (%)	Head of the family (n = 400) No. (%)
Education		
Illiterate (1)	37 (9.25)	65 (16.25)
Primary school (2)	68 (17)	73 (18.25)
Middle school (3)	82 (20.5)	71 (17.75)
High school (4)	120 (30)	109 (27.25)
Intermediate or diploma (5)	51 (12.75)	38 (9.5)
Graduate/postgraduate (6)	39 (9.75)	34 (8.5)
Professional (7)	3 (0.75)	10 (2.5)
Occupation		
Unemployed/homemakers (1)	385 (96.25)	0 (0)
Elementary occupation (2)	1 (0.25)	27 (6.75)
Plant and machine operators and assemblers (3)	0 (0)	102 (25.5)
Craft and related trade workers (4)	8 (2)	114 (28.5)
Skilled agricultural and fishery workers (5)	0 (0)	4 (1)
Skilled workers and shop and market sales workers (6)	0 (0)	87 (21.75)
Clerks (7)	4 (1)	8 (2)
Technicians and associate professionals (8)	2 (0.5)	10 (2.5)
Professionals (9)	0 (0)	21 (5.25)
Legislators, senior officials, and managers (10)	0 (0)	27 (6.75)
Socioeconomic class		
	Pregnant women	Percentage
Upper (I)	8	2
Upper middle (II)	54	13.5
Lower middle (III)	140	35
Upper lower (IV)	197	49.25
Lower (V)	1	0.25
Total	400	100

Table 3. Obstetric History of Pregnant Women.

Variables	No. of pregnant women (n = 400)	Percentage (%)
Age at marriage (years)		
Mean \pm SD	24 \pm 15.55	
≤ 15	16	4
16-25	353	88.25
26-35	31	7.75
Age at first pregnancy (years) n = 250		
Mean \pm SD	26 \pm 14.14	
≤ 18	46	18.4
19-24	158	63.2
25-30	42	16.8
31-36	4	1.6
Parity		
Primi	125	31.25
Multi	275	68.75
Gravida		
Mean \pm SD	4.5 \pm 4.94	
1	128	32
2-4	244	61
5-7	25	6.25
8 or more	3	0.75
Gestational age (days)		
First trimester	90	22.5
Second trimester	188	47
Third trimester	122	30.5
Total	400	100

Table 4. Overall Knowledge, Attitude, and Practices of Antenatal Care (ANC) of Pregnant Women.

Knowledge, attitude, and practices	No. of pregnant women (n=400)	Percentage (%)
Knowledge		
<50% (not knowledgeable)	10	2.5
50%-75% (average knowledge)	384	96
>75% (knowledgeable)	6	1.5
Mean \pm SD	62.5 \pm 17.67	
Attitude		
<50% (negative attitude)	0	0
50-75% (neutral attitude)	5	1.25
>75% (positive attitude)	395	98.75
Mean \pm SD	84 \pm 11.31	
Practices		
<50% (Poor)	1	0.25
50%-75% (Fair)	165	41.25
>75% (Good)	234	58.5
Mean \pm SD	85.71 \pm 13.4	

association between type of family and investigation during pregnancy ($P=0.02$), pregnant women's education with knowledge about TT injection ($P=0.001$), investigation during pregnancy ($P=0.02$), and diet, IFA ($P=0.01$). Pregnant women's occupation also showed a significant association with diet, IFA ($P=0.0003$). While age, parity, and SES did not show any significant association ($P>0.05$). The level of comprehensive knowledge had a good relationship with the ANC-targeted practices ($r=0.18$, $P<0.001$).

Association Between Sociodemographic Data and Attitude of Pregnant Women Regarding ANC

The study showed a statistically significant association between pregnant women's education and attitude about investigations, screening, blood pressure check-ups, and ultrasonography (USG) during pregnancy ($P=0.05$). Whereas age, type of family, parity, and SES showed nonsignificant association ($P>0.05$) with attitude regarding ANC (Table 7).

Association Between Sociodemographic Data and Practices of Pregnant Women Regarding ANC

The study showed a significant association between age and contraceptive practices ($P=0.0002$), type of family and pregnant women's education with ANC visits ($P=0.01$), and pregnant women's occupation with contraception ($P=0.002$) whereas other sociodemographic parameters showed nonsignificant association with practices regarding ANC ($P>0.05$) (Table 8).

Correlation Between Pregnant Women's KAP Scores

In our study, the level of overall knowledge had a significant positive correlation with the practices towards ANC ($r=0.18$, $P<0.001$), whereas it has a negative correlation with the attitude of pregnant women ($r=-0.035$, $P<0.001$) (Table 9).

Discussion

Major Findings

The majority of the pregnant women had average knowledge, positive attitude, and good practice scores, respectively, toward ANC. As adequate knowledge and a positive attitude are a must for the adoption of good practices about ANC. Whereas previous studies conducted by Patel et al¹⁰ showed 58%, 100%, and 69.3% had adequate knowledge, good attitude, and good practices toward ANC and Ibrahim et al¹⁴ showed 86%, 96.0%, and 76.3% pregnant women had a high level of knowledge, positive attitude and good practice score regarding ANC, respectively. The discrepancy among the different study results could be explained by the differences in the sampled population, the data collection tools, and the difference in the scoring system. The level of overall knowledge had a significant positive correlation with the practices toward ANC ($r=0.18$, $P<0.001$). Similar studies conducted in Maharashtra and Libya showed that the level of overall knowledge had a significant direct correlation with the practices toward ANC.^{10,14} Those who had adequate or good knowledge about ANC care had adopted good practices.

Sociodemographic Data of Pregnant Women and its Association With ANC

In our study, the mean age was 25 ± 4.52 years and there was a statistically significant association between age and practice of diet and IFA intake, ANC visits, and contraception. A similar study done by Patel et al¹⁰ and Sanjel et al¹⁵ showed that mean age was 24 ± 3.45 and 25.62 ± 3.38 years and there was a statistically significant association between age and knowledge of IFA intake tablets. This may be explained by the fact that mothers between the ages of 15 to 30 years do not have enough information on maternal healthcare services while those of age above 30 years were aware of the healthcare services due to their previous pregnancies. The majority of the pregnant women 83% lived in nuclear families and there was a statistically significant association between the type of family and knowledge of investigations during pregnancy and practices related to ANC visits. Those residing in nuclear families had more knowledge than those living in joint families. A similar study found that ANC was higher in nuclear families.¹⁶ Educational status in our study was 90.75% and only 2.25% were working, which was in concordance with the

Table 5. Association of Knowledge, Attitude, and Practices Regarding ANC with Demographic Factors.

Parameters	Category	Knowledge				Attitude				Practices			
		Not Knowledgeable	Average Knowledgeable	Knowledgeable	Mean \pm SD	Neutral Attitude	Positive attitude	Mean \pm SD	Poor	Fair	Good	Mean \pm SD	
Overall		10 (2.5)	384 (96)	6 (1.5)	62.5 \pm 17.67	5 (1.25)	395 (98.75)	84 \pm 11.31	1 (0.25)	165 (41.25)	234 (58.5)	85.71 \pm 13.4	
Age	<20 (n = 30)	2 (6.66)	26 (86.66)	2 (6.66)	P-value 0.14	0 (0)	30 (100)	P-value 0.41	0 (0)	14 (46.66)	16 (53.33)	P-value 0.94	
	20-29 (n = 297)	5 (1.6)	273 (91.91)	19 (6.39)		5 (1.6)	292 (98.31)		1 (0.33)	122 (41.07)	174 (58.58)		
	30-40 (n = 73)	5 (6.84)	63 (86.3)	5 (6.84)		0 (0)	73 (100)		0 (0)	29 (39.72)	44 (60.27)		
Type of family	Nuclear (n = 332)	8 (2.4)	302 (90.96)	22 (6.62)	P-value 0.31	5 (5.88)	327 (98.49)	P-value 0.67	1 (0.3)	143 (43.07)	188 (56.62)	P-value 0.23	
	Joint (n = 68)	4 (5.88)	60 (88.23)	4 (5.88)		0 (0)	68 (20.48)		0 (0)	22 (32.35)	46 (67.64)		
Occupation (respondent)	Housewife (n = 383)	11 (2.87)	347 (90.6)	25 (6.52)	P-value 0.77	5 (1.3)	378 (98.69)	P-value 0.52	1 (0.26)	157 (40.99)	225 (58.74)	P-value 0.87	
	Working (n = 17)	1 (5.88)	15 (88.23)	1 (5.88)		0 (0)	17 (100)		0 (0)	8 (47.05)	9 (52.94)		
Education (respondent)	Illiterate (n = 37)	1 (2.7)	36 (97.29)	0 (0)	P-value 0.24	2 (5.4)	35 (94.59)	P-value 0.11	0 (0)	17 (45.94)	20 (54.05)	P-value 0.79	
	Literate (n = 363)	11 (3.03)	326 (89.80)	26 (7.16)		3 (0.82)	360 (99.17)		1 (0.27)	148 (40.77)	214 (58.95)		
Parity	Primipara (n = 147)	4 (2.72)	132 (89.79)	11 (7.48)	P-value 0.81	1 (0.68)	146 (99.3)	P-value 0.75	0 (0)	61 (41.49)	86 (58.5)	P-value 0.75	
	Multi (n = 253)	8 (3.16)	230 (90.9)	15 (5.92)		4 (1.58)	249 (98.4)		1 (0.39)	104 (41.1)	148 (58.49)		
Socioeconomic status	I (n = 8)	0 (0)	8 (100)	0 (0)	P-value 0.88	0 (0)	8 (100)	P-value 0.95	0 (0)	3 (37.5)	5 (62.5)	P-value 0.87	
	II (n = 54)	2 (3.7)	49 (90.74)	3 (5.55)		1 (1.85)	53 (98.14)		0 (0)	21 (38.88)	33 (61.11)		
	III (n = 140)	2 (1.42)	130 (92.85)	8 (5.7)		1 (0.71)	139 (99.28)		1 (0.71)	63 (45)	76 (54.28)		
	IV (n = 197)	8 (4.06)	174 (88.32)	15 (7.6)		3 (1.52)	194 (98.47)		0 (0)	78 (39.59)	119 (60.4)		
	V (n = 1)	0 (0)	1 (100)	0 (0)		0 (0)	1 (100)		0 (0)	0 (0)	1 (100)		

No. (%); chi-square test; P > 0.05, not significant.

Table 6. Association Between Sociodemographic Data and Knowledge Regarding ANC.

Parameters	Frequency	Knowledge																							
		Understanding of ANC			About TT Injection			Investigations during pregnancy			Diet, IFA			Smoking, alcohol, infections, and medicine			Danger Signs			Methods of contraception					
		Mean ± SD	P-value		Mean ± SD	P-value		Mean ± SD	P-value		Mean ± SD	P-value		Mean ± SD	P-value		Mean ± SD	P-value		Mean ± SD	P-value				
Age	30	4 ± 1.217	0.92	1 ± 0.85	0.18	6 ± 0.183	0.40	5.1 ± 1.432	0.86	4 ± 0	0.009*	2.1 ± 1.202	0.68	0.5 ± 0.629	0.18	2.9 ± 0.993		4 ± 0.13		4 ± 0		2.1 ± 1.202	0.68	0.5 ± 0.629	0.18
	20-29	4.7 ± 0.92		1.5 ± 0.667		6 ± 0.058		5.9 ± 1.096		4 ± 0		2.9 ± 0.993		0.9 ± 0.648		3 ± 1.021		4 ± 0		3 ± 1.021		3 ± 1.021		0.9 ± 0.648	
	30-40	4.8 ± 0.901		1.5 ± 0.709		6 ± 0.2		5.6 ± 1.359		4 ± 0		3 ± 1.021		1.2 ± 0.462				4 ± 0						1.2 ± 0.462	
Type of family	68	4.76 ± 1.04	0.29	1.28 ± 0.84	0.59	5.99 ± 0.12	0.02*	5.32 ± 1.62	0.55	4 ± 0	0.18	2.81 ± 1.15	0.90	0.85 ± 0.63	0.15			4 ± 0		2.88 ± 1.02		2.88 ± 1.02		0.85 ± 0.63	0.15
	Nuclear	4.68 ± 0.94		1.52 ±		5.99 ± 0.11		5.85 ± 1.06		3.99 ± 0.12		2.88 ± 1.02		0.95 ± 0.64				3.99 ± 0.12		2.88 ± 1.02		2.88 ± 1.02		0.95 ± 0.64	
Parity	147	4.56 ± 1.06	0.36	1.34 ± 0.81	0.66	5.99 ± 0.08	0.88	5.66 ± 1.2	0.71	3.99 ± 0.08	0.18	2.55 ± 1.11	0.29	0.54 ± 0.68	0.99			3.99 ± 0.08		2.55 ± 1.11		2.55 ± 1.11		0.54 ± 0.68	0.99
	Multi	4.77 ± 0.89		1.57 ± 0.62		5.98 ± 0.12		5.81 ± 1.18		3.99 ± 0.13		3.05 ± 0.95		1.16 ± 0.48				3.99 ± 0.13		3.05 ± 0.95		3.05 ± 0.95		1.16 ± 0.48	
Respondents education	37	4 ± 1.18	0.97	1.24 ± 0.64	0.0001*	6 ± 0	0.02*	5.46 ± 1.28	0.01*	4 ± 0.12	0.18	2.73 ± 1.3	0.26	0.84 ± 0.65	0.42			4 ± 0.12		2.73 ± 1.3		2.73 ± 1.3		0.84 ± 0.65	0.42
	Literate	4.77 ± 0.91		1.51 ± 0.71		5.99 ± 0.12		5.79 ± 1.18		3.99 ± 0.11		2.88 ± 1.01		0.94 ± 0.63				3.99 ± 0.11		2.88 ± 1.01		2.88 ± 1.01		0.94 ± 0.63	
Respondents occupation	383	4.67 ± 0.94	0.75	1.49 ± 0.7	0.73	5.99 ± 0.1	0.42	5.78 ± 1.12	0.0003*	3.99 ± 0.1	0.18	2.86 ± 1.04	0.34	0.92 ± 0.63	0.30			3.99 ± 0.1		2.86 ± 1.04		2.86 ± 1.04		0.92 ± 0.63	0.30
	Housewife	5.35 ± 1.06		1.29 ± 0.85		5.94 ± 0.24		5.24 ± 2.19		3.94 ± 0.24		3 ± 1.12		1.12 ± 0.7				3.94 ± 0.24		3 ± 1.12		3 ± 1.12		1.12 ± 0.7	
	Working	5.63 ± 1.06	0.14	1.63 ± 0.52	0.08*	6 ± 0	0.72	6.75 ± 0.46	0.23	4 ± 0	0.98	3.5 ± 0.53	0.43	1 ± 0.76	0.92			4 ± 0		3.5 ± 0.53		3.5 ± 0.53		1 ± 0.76	0.92
SES	8	4.65 ± 1.18		1.2 ± 0.86		6 ± 0		5.22 ± 1.48		3.96 ± 0.27		2.7 ± 1.16		0.76 ± 0.7				3.96 ± 0.27		2.7 ± 1.16		2.7 ± 1.16		0.76 ± 0.7	
	I	4.84 ± 0.83		1.59 ± 0.67		5.99 ± 0.12		5.9 ± 1.03		4 ± 0		2.92 ± 0.97		0.96 ± 0.62				4 ± 0		2.92 ± 0.97		2.92 ± 0.97		0.96 ± 0.62	
	II	4.57 ± 0.94		1.47 ± 0.67		5.98 ± 0.12		5.76 ± 1.18		3.99 ± 0.07		2.85 ± 1.06		0.96 ± 0.62				3.99 ± 0.07		2.85 ± 1.06		2.85 ± 1.06		0.96 ± 0.62	
	III	5 ± 0		2 ± 0		6 ± 0		6 ± 0		4 ± 0		2 ± 0		1 ± 0				4 ± 0		2 ± 0		2 ± 0		1 ± 0	
	IV																								
	V																								

Abbreviations: ANC, antenatal care; TT, Tetanus toxoid; IFA, iron and folic acid. One-way analysis of variance and unpaired t-test; *P < 0.05, statistically significant; P > 0.05, statistically not significant.

Table 7. Association Between Sociodemographic Data and Attitude Regarding ANC.

Parameters	Frequency	Attitude									
		Antenatal check-up, booking, and follow-up		Screening BP and USG		Dietary habits and IFA supplementation		Home and hospital deliveries		Smoking and alcohol	
		Mean \pm SD	P-value	Mean \pm SD	P-value	Mean \pm SD	P-value	Mean \pm SD	P-value	Mean \pm SD	P-value
Age											
	<20	10.8 \pm 1.424	0.18	14.23 \pm 2.825	0.48	8.533 \pm 0.776	0.38	4 \pm 0	0.71	8 \pm 0	0.67
	20-29	10.68 \pm 1.381		14.47 \pm 1.993		8.576 \pm 0.674		3.963 \pm 0.3		7.96 \pm 0.492	
	30-40	10.47 \pm 1.908		14.25 \pm 2.91		8.616 \pm 0.952		3.918 \pm 0.493		8 \pm 0	
Type of family	Joint	10.38 \pm 1.73	0.36	14.38 \pm 2.192	0.99	8.647 \pm 0.686	0.67	3.956 \pm 0.403	0.19	8 \pm 0	0.15
	Nuclear	10.71 \pm 1.44		14.42 \pm 2.265		8.566 \pm 0.749		3.958 \pm 0.318		7.964 \pm 0.465	
Parity	Primi	10.63 \pm 1.35	0.17	14.58 \pm 2.05	0.32	8.626 \pm 0.66	0.86	4.007 \pm 0.08	0.26	8 \pm 0	0.72
	Multi	10.66 \pm 1.57		14.31 \pm 2.36		8.553 \pm 0.78		3.929 \pm 0.41		7.953 \pm 0.53	
Respondents education	Illiterate	10.51 \pm 1.3	0.46	14.3 \pm 2.11	0.05*	8.622 \pm 0.92	0.92	3.811 \pm 0.66	0.78	8 \pm 0	0.37
	Literate	10.67 \pm 1.51		14.42 \pm 2.27		8.576 \pm 0.72		3.972 \pm 0.28		7.967 \pm 0.44	
Respondents occupation	Housewife	10.69 \pm 1.46	0.60	14.41 \pm 2.23	0.51	8.564 \pm 0.74	0.74	3.956 \pm 0.34	0.01*	7.969 \pm 0.43	0.15
	Working	9.765 \pm 1.95		14.35 \pm 2.69		8.941 \pm 0.66		4 \pm 0		8 \pm 0	
SES	I	10.3 \pm 2.19	0.60	13.8 \pm 1.49	0.07	9.25 \pm 0.71	0.46	4 \pm 0	0.81	8 \pm 0	0.61
	II	10.5 \pm 1.54		13.9 \pm 2.34		8.59 \pm 0.77		4 \pm 0		8 \pm 0	
	III	10.8 \pm 1.63		14.9 \pm 2.23		8.62 \pm 0.66		3.98 \pm 0.25		8 \pm 0	
	IV	10.6 \pm 1.34		14.2 \pm 2.22		8.52 \pm 0.77		3.93 \pm 0.42		7.94 \pm 0.6	
	V	12 \pm 0		15 \pm 0		8 \pm 0		4 \pm 0		8 \pm 0	

Abbreviations: ANC, antenatal care; BP, blood pressure; USG, ultrasonography; SES, socioeconomic status. One-way analysis of variance and unpaired t-test; *P < 0.05, statistically significant; P > 0.05, statistically not significant.

Table 8. Association Between Sociodemographic Data and Practices Regarding ANC.

Parameters	Frequency	Practices									
		Diet and IFA		ANC Visits		Smoking, Alcohol and Medicine		Contraception			
		Mean \pm SD	P-value	Mean \pm SD	P-value	Mean \pm SD	P-value	Mean \pm SD	P-value		
Age											
<20	30	8.3 \pm 1.29	0.06	4.03 \pm 0.81	0.08	2.97 \pm 0.18	0.19	0.03 \pm 0.18	0.002*		
20-29	297	8.07 \pm 1.27		3.98 \pm 0.81		2.99 \pm 0.08		0.26 \pm 0.44			
30-40	73	7.73 \pm 1.27		3.75 \pm 0.78		3 \pm 0		0.41 \pm 0.5			
Type of family											
Joint	68	8.16 \pm 1.19	0.89	3.9 \pm 0.83	0.01*	3 \pm 0	0.57	0.26 \pm 0.44	0.45		
Nuclear	332	8 \pm 1.29		3.95 \pm 0.8		2.99 \pm 0.09		0.27 \pm 0.45			
Parity											
Primi	147	8.16 \pm 1.25	0.31	4.03 \pm 0.84	0.95	2.98 \pm 0.14	0.35	0.03 \pm 0.18	0.53		
Multi	253	7.95 \pm 1.29		3.89 \pm 0.78		3 \pm 0		0.41 \pm 0.49			
Respondents education											
Illiterate	37	7.89 \pm 1.41	0.37	4.05 \pm 0.81	0.01*	2.97 \pm 0.16	0.08	0.24 \pm 0.43	0.71		
Literate	363	8.04 \pm 1.26		3.93 \pm 0.8		2.99 \pm 0.07		0.27 \pm 0.45			
Respondents occupation											
Housewife	383	8.03 \pm 1.26	0.70	3.95 \pm 0.8	0.40	2.99 \pm 0.09	0.08	0.27 \pm 0.44	0.002*		
Working	17	3.71 \pm 0.92		3 \pm 0		0.29 \pm 0.47					
SES											
I	8	8.5 \pm 1.07	0.46	3.88 \pm 0.64	0.95	2.88 \pm 0.35	0.89	0.13 \pm 0.35	0.42		
II	54	8.26 \pm 1.05		4.02 \pm 0.79		3 \pm 0		0.17 \pm 0.38			
III	140	7.79 \pm 1.35		3.86 \pm 0.82		2.99 \pm 0.08		0.26 \pm 0.44			
IV	197	8.11 \pm 1.27		3.97 \pm 0.8		2.99 \pm 0.07		0.31 \pm 0.46			
V	1	9 \pm 0		5 \pm 0		3 \pm 0		0			

Abbreviations: ANC, antenatal care; IFA, iron and folic acid; SES, socioeconomic status. One-way analysis of variance and unpaired t-test; *P < 0.05, statistically significant; P > 0.05, statistically not significant.

Table 9. Correlation Between Pregnant Women's Knowledge, Attitude, and Practices Scores.

Variables	R	P
Knowledge versus attitude	-0.035	<0.001*
Knowledge versus practices	0.18	<0.001*
Attitude versus practices	-0.038	<0.001*

r = Pearson's coefficient.

*Statistically significant at $P \leq 0.05$.

previous studies.^{10,17} Agarwal et al¹⁸ found that ANC was very low for illiterate women and among those whose husbands were illiterate and nonskilled workers. These findings were similar to our findings where educated women were better acquainted with many aspects of prenatal care. Also, there was a significant association between education and TT injection, intake of diet, IFA, and investigations, ANC visits during pregnancy. Women with higher education were doing better practices in terms of visits, diet, and IFA intake. This shows that there was a significant impact of the level of education on the knowledge and practices of ANC. Educated women are expected to be more likely to be aware of their health status and to seek health information. Literacy promotes women's independence, self-esteem, and decision-making about personal and children's health. Educated women are more likely to seek out quality services and have a greater capacity to use health-care providers that provide better care.¹⁹ In terms of knowledge and practice, upper-lower-class women had better knowledge about maternal care and better practices regarding diet, visits, and other care. Women in general at the highest social and economic levels practiced better. In our study, education and SES were having significant associations with ANC knowledge and practices, which is in line with the previous study that reported pregnant women with higher education and who belonged to upper and middle SES were having good knowledge and doing good practices.¹⁰

Other studies also showed that pregnant women with upper and middle SES were more aware of the antenatal service which was consistent with our results.^{4,10,18} Maximum respondents (95.35%) had institutional deliveries, similar findings were found by Eram et al²⁰ 80%, Kaur et al²¹ 81%, Gupta et al²² 79.1%, Bej²³ 96.3%, Shafqat et al²⁴ 82.03%, and Roy et al²⁵ also reported that 84.9% of deliveries were made to health facilities. The results of the current study were slightly higher than other studies showing a healthy trend for institutional delivery in research studies such as the Government of India presented Janani Suraksha Yojana on April 12, 2005, to reduce maternal and infant mortality by promoting childbirth in health facilities, and to focus on institutional care for women living in poverty. In addition, improving maternal health was one of the Millennium Development Goals being carried out in health institutions.

Strength, Limitations, and Future Recommendations

The strength of the study was it is the first KAP hospital-based study done in an urban area of Bangalore. The sample size was obtained by using the appropriate formula. All pregnant women responded to 100% questions asked during the interview without any dropouts.

The limitation of the study, it cannot be generalized as the study was conducted in an urban area of India. There is a possibility of recall bias among pregnant women as a nonprobability sampling technique was applied in the study.

It is recommended that the study can be replicated for external validity generalization, a comparative study can be conducted among rural and urban pregnant women and fill the gaps in KAP between them. Furthermore, a similar study can be done by using other research designs to know about the adequate practices regarding ANC which cannot be recognized by cross-sectional studies. Improving educational opportunities for women will help them to learn and in turn, empower them to make independent decisions.

Conclusion

In our study, the majority of the pregnant women had average knowledge and good practices. Most of them had a positive attitude toward ANC. The level of overall knowledge of the respondents about ANC had a significant positive correlation with their practices during pregnancy. A large number of deliveries (95.25%) took place in governmental institutions. The practice of ANC in our study area was low despite good knowledge and attitude toward ANC. So exploratory studies are required for specific intervention programs that need to be planned and conducted to improve their ANC practices and eventually improve their health status.

Ethical Statement

Authorization for the conduct of the study was obtained from the scientific review committee and Institutional Ethical Committee (IEC No. NIUM/IEC/2018-19/TST/01, dated 22 March 2019). Written informed consent was obtained from the included pregnant women.

Authors contributions

All three author(s) worked in conceptualizing, documentation, demonstration, validation, drafting, and approving the same for publication.

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Supplemental Material

Supplemental material for this article is available online.

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