



ASSESSMENT OF KNOWLEDGE- PRACTICE GAP AND PREDICTORS OF LOW COMPOSITE KAP AMONG ANTENATAL CAMP PARTICIPANTS, CHITRADURGA-A CROSS-SECTIONAL STUDY.

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Abstract:

Background: Antenatal care is effective in decreasing maternal and perinatal morbidity, however sub, optimal awareness and practices hamper its efficacy in outreach setups. This study was undertaken to explore extent of knowledge, attitude and practice related to antenatal care among women attending an urban outreach camp, explore the existence of a knowledge, practice gap and identify predictors of low composite levels. **Methods:** A camp based cross-sectional analytical study was conducted on 30th September 2025, at an Urban Public Health Center (UPHC). All 61 antenatal women attending the camp were included. Data was collected through a pre-designed questionnaire to evaluate knowledge (5 items), attitude (4 items) and practice (4 items). Composite scores were calculated by converting the scores into percentages. The impact of socio- demographic factors on composite was assessed by applying non-parametric tests, chi square test and binary logistic regression methods. **Results:** The median (interquartile range) composite score was 25.83(19.72, 35.82), with 80.3 percent having low levels. A non-significant knowledge, practice gap was observed (p=0.400). Low maternal education was an independent predictor of low levels (p=0.039). **Conclusions:** Most of them had inadequate levels of awareness and practices, maternal education being the foremost influencing factor.

Key Words: Knowledge, Attitude, Practice (KAP). Composite KAP, Antenatal care (ANC), Education of the mother, High risk pregnancy, Multigravida.

Introduction:

Maternal health continues to be a worldwide major public health problem with preventable maternal morbidity and mortality remaining a challenge globally, more so among the low and middle income countries. Though global efforts have resulted in reductions of maternal deaths, these declines are

irregular and precarious.^{2,3} Antenatal care (ANC) is a lifesaving intervention for the to secure the health of both mothers and the infants through early detection and management of complications and promotion of good childbirth experiences. In fact, quality antenatal care services should address issues beyond mere survival, improving maternal empowerment and wellbeing as well.¹

ANC services are not being used inappropriately or providing good quality care to the extent that potential health benefits have been demonstrated.^{4,5} Socio-economic and demographic variables, primarily maternal educational status, are strong indicators for utilization as well as for quality of ANC services.^{6,7,14} Education enhances knowledge of and information seeking behavior for maternal health services, positively affects decision making skills and strengthens provider, mother relationship quality and patient, provider communication.^{9,10,13} However, the range of KAP related to maternal health services among women who have access to quality maternal health services have not been fully studied.

High risk conditions such as anemia, hypertension, and diabetes not only exacerbate the severity of maternal outcomes but also demand early detection and management during pregnancy.^{15,16,19} Such high risk individuals are likely to benefit the most from appropriate high quality antenatal care.^{18,20} However, while determinants of utilization of maternal health services have been studied in the past, there remains limited knowledge on composite maternal KAP levels and their predictors in urban outreach camp settings. KAP assessment of mothers and predictors like mother's education and High Risk (HR) status are important for planning strategy to improve utilization of maternal health care services.^{4,5,6}

Hence, the present study was carried out to ascertain knowledge, attitude, and practice regarding antenatal care among women attending a camp in urban Public Health Center outreach services and to identify predictors of low composite KAP levels.

Methodology

Study Design and Setting: A camp-based cross-sectional study was organized on 30th September 2025 at Urban Public Health Center under the Swasth Nari Sashakth Pariwarabhiyana. The camp had provided the ANC services comprising of clinical assessment, screening, counselling and health education to the pregnant women of urban field practice area.

Integrated within this one day antenatal care camp is a study that examined the knowledge, attitude and practice (KAP) of ante natal care of the women attending the camp.

Study area: The Urban Primary Health Centre (UPHC), Buddhanagara, where the study was carried out, is the urban field practice area of the Department of Community Medicine, Chitradurga Medical College and Research Institute (CMCRI).

Sampling Method: Total enumeration sampling method was adopted.

Study Population: All the pregnant women attending to ANC camp on the study day, willing to participate and give an informed consent were considered for the inclusion. Total 61 women who met the inclusion criteria were recruited for the study. Exclusion criteria comprised the participants who are visited UPHC for non-ANC services, Unwilling to give consent.

Study Tool and Data Collection: The data collection instrument was a pre-tested structured interviewer administered questionnaire that was developed with the help of experts in Community Medicine. The tool was designed according to the principles of scale development for psychometric measurement based on Cohen's model, resulting in clear operational definitions, objective scoring, and numerical coding for analysis.

It had four sections, including socio-demographic and obstetric characteristics, and knowledge, attitude, and practice parameters of antenatal care. This tool had 4 sections, including socio-demographic and obstetric information, knowledge, attitude and practices of antenatal care. These sections of the tool were socio-demographic and obstetric information, knowledge (5 items), attitude (4 items) and practices (4 items).

Assessment of Knowledge was made by five questions semi-structured multiple choices, regarding

1)Time of first ANC registration, 2)Total number of ANC visitsattendedduring the pregnancy, 3) purpose of providing the IFA tablets during the pregnancy, 4) danger signs 5) importance of TT vaccination during the pregnancy. All correct answers were codedas 1 point and all incorrect and don't know answers were recodedinto0. The maximum total knowledge score was 5.

Attitude assessment includes four statements on a three-point Likert scale where Agree =2, Neutral =1, Disagree =0.One of these statements was negatively wordedand was reverse scored. Theoverallattitudescoreranged from 0 to 8.

Practice was determine don the basis of four behavioural scales that reflected utilization of services, including registration during the first trimester, attendance of the recommended number of ANC visits, consumption of 100 Iron-Folic Acid tablets, and planningforbirth. Proper practice was scored 1, andimproper practice scored 0, giving a total practice score outof 4.

Allscoresofthe domains were transfor medin to percentage because of easycomparison. Additionally,a KAP index was generated by takinganaverage of the percentage scores of the three domainsand giving all three qualweight. KAP swererecordedasbinary to easethe regression analysis and interpretation. The sumofKAPs index was alsoconvertedintobinaryfollowingthe established levels.

The knowledge was categorized as low (score 2; <60%) and adequate (score 3; 60%). The attitude was categorized as unfavourable (score 4; 50%) and favourable (score 5; 62.5%). The practice was categorized as poor (score 2; 50%) and good (score 3; 75%). Binary categorization were used to categorise the KAP index to make regression analysis easier and more understandable. The composite KAP index was dichotomized based on predefined cut-offs.

DATA MANAGEMENT AND STATISTICAL ANALYSIS:

Data were entered into Microsoft excel and retrospective analysis of the camp data was conducted using IBM SPSS Statistics (22 version) following data cleaning and verification. Categorical variables were presented as frequencies and percentage, and continuous variables as mean±standard deviation. Normality was checked with the Shapiro-Wilk test. The knowledge, practice gap was evaluated by compare paired KAP percentage scores with the Wilcoxon signed-rank test and effect size was estimated with Cohen's r. The association of sociodemographic and clinical variables with the low composite KAP index scores were analysed with Chi-square. All of the variables included in the analysis were entered in a logistics regression model and the adjusted odd ratio along with the 95% confidence interval was reported. A p-value< 0.05 was considered significant.

RESULTS:

Table 1: Descriptive Statistics and Tests of Normality of Continuous Variables (KAP Percentage Scores)

Variable	Mean ± SD*	Median	IQR*	Shapiro–Wilk (W)	p-value
Knowledge	32.46 ± 36.91	20	0 – 40	0.764	<0.001
Attitude	41.60 ± 30.76	37.50	25 – 50	0.841	<0.001
Practice	34.84 ± 34.24	25	0– 50	0.847	<0.001
Composite KAP	36.30 ± 30.68	25.83	16.67 – 35.83	0.778	<0.001

SD*=Standard Deviation, IQR*=Inter Quartile Range

Table 1 displays the descriptive data for Knowledge, Attitude, Practice, and composite KAP percentage scores. With a median score of 20.00 (IQR: 0.00–40.00), the mean knowledge score was 32.46 ± 36.91. With a median score of 37.50 (IQR: 25.00–50.00), the average attitude score was 41.60 ± 30.76. The median score was 25.00 (IQR: 0.00–50.00), while the mean score was 34.84 ± 34.24. The median of the composite KAP score was 25.83 (IQR: 16.67–35.83), whereas the mean was 36.30 ± 30.68. The Shapiro-Wilk test revealed that all variables were not normally distributed (p

< 0.001), with distributions skewed toward lower values, indicating participants' usually poor levels of knowledge, attitude, and practice related to prenatal care.

Table 2: Wilcoxon Signed-Rank Test for Knowledge–Practice Gap

Variable	N	Mean Rank	Sum of Ranks	Z	Asymp. Sig. (2-tailed)	Effect Size (r)
Practice % < Knowledge %	21	28.14	591.00	-0.842	0.400	0.108
Practice % > Knowledge %	24	31.08	746.00			
Ties	16					
Total	61					

N*= Total, r*= Cohen's effect size

Table 2 presents the Wilcoxon signed, rank test between the Knowledge and Practice scores. There was no statistically significant difference observed between the two ($Z = -0.842$, $p = 0.400$). The fairly even distribution of the positive and negative ranks indicates the absence of a consistent difference between the two and hence the absence of a significant baseline knowledge practice gap. The effect size was small ($r = 0.11$), indicates the minimal practical difference between Knowledge and Practice scores.

Table 3: Association Between Sociodemographic/Clinical Variables and Low Composite KAP.

Variable	Category	Adequate KAP n (%)	Low KAP n (%)	χ^2	p-value
Age	≤25 years	6 (23.1%)	20 (76.9%)	0.18	0.67
	>25 years	6 (17.1%)	29 (82.9%)		
Education	Low Education	4 (11.8%)	30 (88.2%)	4.52	0.033*
	Higher Education	8 (29.6%)	19 (70.4%)		
Gravida	Prim gravida	5 (20.8%)	19 (79.2%)	0.01	0.91
	Multigravida	7 (18.9%)	30 (81.1%)		
High-Risk Pregnancy	No	3 (37.5%)	5 (62.5%)	0.78	0.377
	Yes	9 (17.0%)	44 (83.0%)		

***: Significant, n*=Total frequency**

Table 3 shows that Chi-square analysis demonstrated that maternal education was significantly associated with composite KAP levels ($\chi^2 = 4.52$, $p = 0.033$), with women having lower educational attainment showing a higher proportion of low composite KAP. No statistically significant associations were observed for age, gravidity, or high-risk pregnancy status.

Table 4: Multivariable Binary Logistic Regression Analysis for Predictors of Low Composite KAP.

Variable	AOR*	95% CI*	p-value	-2 Log Likelihood	Hosmer–Lemeshow Test (p-value)	Nagelkerke R ²
Low Education	3.16	1.06 – 9.40	0.039*	56.84	0.71	0.12
High-Risk Pregnancy	4.00	0.69 – 23.23	0.122			
Age (>25 years)	1.28	0.34 – 4.75	0.71			
Multigravida	1.05	0.29 – 3.83	0.94			

AOR*: Adjusted Odds Ratio, CI*: Confidence Interval

Table 4 explains that in multivariable binary logistic regression analysis, low educational status independently predicted low composite KAP (AOR = 3.16; 95% CI: 1.06–9.40; $p = 0.039$). Although high-risk pregnancy was associated with increased odds of low KAP (AOR = 4.00), the association did not reach statistical significance ($p = 0.122$). The model demonstrated good fit as indicated by the Hosmer–Lemeshow test ($p = 0.71$) and explained 12% of the variance in composite KAP (Nagelkerke $R^2 = 0.12$).

Overall, maternal education emerged as the strongest and statistically significant predictor of low composite KAP in this camp-based population.

DISCUSSION:

This camp-based cross-sectional study evaluated knowledge, attitude, and practice concerning ANC among women attending an urban outreach camp and revealed a preponderance of low composite KAP levels. The observed high proportion of women with low composite KAP corresponded with earlier findings of poor awareness and behaviour in relation to utilization of maternal health services, in resource, constrained settings.^{4,9,10,11} Many community, based investigations have also shown that very few women attending outreach or peripheral clinics received adequate ANC counselling and had high awareness,^{12,13} but some studies have reported better scores among women with continuity of facility based care, apparently because of increased repeated contact with health services.^{5,18}

In the present study no significant knowledge, practice gap was found, unlike the findings from other studies that investigated discrepancy between knowledge and practice. In those studies, knowledge was adequate but practice was inappropriate due to social and cultural norms and accessibility constraints.^{4,6} The fact that knowledge and practice are aligned in the present study may be a reflection of the common socioeconomic background of the camp, going populations, where inadequate knowledge and practices co, exist due to common contextual barriers and not lack of knowledge.

Maternal education was the sole significant independent predictor of low composite KAP, which is consistent with the preponderance of papers showing the effect of education on antenatal care utilization and quality. Educated women may have a heightened appreciation of the relevance of counselling messages, and the skills to maneuver through health systems to access available services and thereby promote maternal health, seeking behavior. Such associations have been found in many low, and middle, income settings.^{6,7,14}

High risk pregnancy status also had a higher Odds ratio (OR) for low KAP, but it was not a statistically significant relationship. Several previous studies have shown that high risk women are generally provided with more counselling and have healthier health seeking behaviour,^{18,2} yet some others have shown that high risk states, like anaemia and hypertension, are still common after antenatal contact and the recognition of risk may not equal increased knowledge and behavioural change.^{15,16,17,19} The lack of significance could also be an artifact of a small sample size and high prevalence of risk factors in the camp.

Maternal age and gravidity were not significantly associated with the composite knowledge, attitude, and practice outcomes in this study. Other community, based studies have also found obstetric experience (gravidity) not to be significantly associated with improved antenatal awareness or practices, further suggesting that multiple pregnancies may not of themselves guarantee improved health literacy without appropriate antenatal counselling.^{4,10} In contrast however, various studies have shown multigravida to have higher antenatal care utilization due to prior knowledge and familiarity with health services.^{5,18} This difference in findings may be partly explained by the outreach camp setting in this study, where socioeconomic status and access to healthcare was similar regardless of gravidity. Several studies have also found maternal age to be independently associated with better ANC utilization, however others have shown no effect after controlling for other variables including maternal education.^{6,14} While education appears to be protective for good

knowledge, attitude and practice levels in the present study, social factors such as education may be stronger determinantsofANC knowledge and practices than determinantssuchasgravidityor age. This regression model accountedfora relativelylowamountof variance, suggesting that social factors like socioeconomic position, cultural practices and availabilityof services shouldalsobeconsidered when trying to account for the levels of KAP found in this sample. Overall, aconsistent them eisthateducational,outrea chand one,to,onecounsellingeffortsneedto beintensifiedinordertoreducesignificantlythelevelsof low KAP.

CONCLUSION:

Poorawareness, attitude and practice levels were mostcommonamong outreach camp attendees for antenatal care. Maternal education levelwasan independent predictor of composite KAP, buthighrisk status wasnot.Focused educational counselling aspart of urban community antenatal caredeliveryis important to enhance maternal health awareness and compliance.

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