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A Cross-Sectional study to assess the Attitudes of Health Care Providers (HCPs) about Maternal Health Promotion: Insights from Sultanpur City

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Abstract

Background: Maternal nutrition is a critical determinant of positive pregnancy outcomes, and Anganwadi Workers (AWWs) play a vital role as frontline functionaries in promoting maternal healthcare services. **Objective:** The present study aimed to assess their attitudes toward maternal nutrition and healthcare service utilization while examining the influence of socio-demographic factors on these attitudes. **Methodolgy:** A cross-sectional research design was employed and data were collected from 300 AWWs using a structured Likert-scale questionnaire, with statistical analyses including descriptive statistics, independent samples t-test, Pearson correlation, and Analysis of Variance (ANOVA). **Results:** The findings indicated that the majority of AWWs possessed a positive and informed attitude toward essential maternal health practices such as antenatal care, nutritional supplementation, infection screening, and institutional delivery and appropriate awareness by rejecting misconceptions related to smoking and alcohol consumption during pregnancy. However, despite this overall positive trend, significant variations were observed based on posting and geographical location, suggesting the influence of contextual factors. The ANOVA results revealed a statistically significant difference in attitude scores across postings **($F = 74.265$, $p < 0.001$)** with a large effect size ($\eta^2 = 0.43$), indicating that a substantial proportion of variance in attitudes is explained by differences in work settings, while correlation analysis further supported significant associations between posting and key maternal health attitudes. Additionally, a significant disparity was observed between rural and urban AWWs **($t = -14.269$, $p < 0.001$)**, with urban workers exhibiting more favorable attitudes, likely due to better access to healthcare infrastructure, training, and resources. **Conclusion:** Overall, the study concludes that although AWWs demonstrate positive attitudes toward maternal nutrition and healthcare utilization, disparities influenced by environmental and structural

factors persist. **Recommendations:** Emphasizing the need for targeted capacity-building interventions, particularly in rural areas, to ensure equitable and effective maternal health service delivery.

Keywords: Maternal Health, Attitude, ICDS, Antenatal Care, IFA supplements, Anganwadi Workers.

Introduction

Maternal health and nutrition remain critical determinants of both maternal and child outcomes, particularly in developing countries like India, where a substantial proportion of women continue to experience nutritional deficiencies during pregnancy. Adequate maternal nutrition is essential for ensuring optimal fetal growth, reducing the risk of low birth weight, and preventing complications such as anemia, hypertension, and gestational diabetes. Despite various national initiatives under programs like the Integrated Child Development Services, challenges persist in achieving desirable maternal health indicators, especially at the grassroots level **(Luyben *et. al.* 20213) (Okuga et. al. 2015)**.

The quality of maternal healthcare is not only determined by the availability of medical infrastructure but also by how women are treated within healthcare settings. Across many parts of India, pregnant women often encounter a range of experiences during their visits to hospitals and health centers **(Olaniran *et. al.* 2014) (Haver et.al. 2015)**. While some receive respectful, empathetic, and supportive care, others report instances of neglect, inadequate communication, long waiting hours, and at times, insensitive or dismissive behavior from healthcare providers. Such experiences can significantly influence a woman's willingness to seek timely antenatal and postnatal care, thereby affecting overall maternal health outcomes. The concept of respectful maternity care has thus emerged as a critical component of quality healthcare, emphasizing dignity, privacy, informed consent, and emotional support for women during pregnancy and childbirth. **(Chitti *et. al.* 2023) (Bohren *et. al.* 2020) (Ansari *et. al.* 2020)**

Healthcare providers, including doctors, nurses, and auxiliary staff, play a central role in shaping these experiences. Their attitudes, communication styles, and responsiveness directly impact patient satisfaction, trust in the healthcare system, and adherence to medical advice. **(Yue *et. al.* 2025) (Alotaibi *et. al.* 2018)** Positive attitudes—characterized by compassion, cultural sensitivity, and patient-centered care—can encourage women to actively

engage with health services. Conversely, negative attitudes may lead to fear, dissatisfaction, and reduced utilization of institutional care, particularly among women from vulnerable and marginalized communities **(Coskun *et. al.* 2025) (Carmen *et. al.* 2018)**.

At the community level, this continuum of care (CoC) extends beyond hospitals to grassroots health functionaries such as Anganwadi Workers (AWWs), who operate under the Integrated Child Development Services **(Kothavale *et. al.* 2021)**. AWWs often serve as the first point of contact for pregnant women, bridging the gap between the community and formal healthcare institutions**.(Acharya *et. al.* 2018)** Their role includes identifying pregnant women, providing nutrition and health education, facilitating access to antenatal services, and motivating women to seek institutional care. In many cases, the attitudes of AWWs mirror and reinforce the broader healthcare environment, influencing how women perceive and utilize maternal health services.**(Dudala *et. al.* 2021)** Supportive and empathetic approach by AWWs can counterbalance negative hospital experiences and improve service uptake, while indifferent or unfavorable attitudes may further discourage women from engaging with the healthcare system. Moreover, these attitudes are often shaped by training, workload, socio-cultural beliefs, and systemic constraints within the healthcare delivery framework. **(Mishra *et. al.* 2014)**

In regions like Sultanpur, where both urban and rural populations coexist with varying levels of healthcare access and awareness, the role of Anganwadi Workers becomes even more significant. **(Marchant *et. al.* 2016)** Although several studies have explored the knowledge of Anganwadi Workers, limited research has focused specifically on their attitudes toward maternal nutrition, particularly in smaller urban–rural districts like Sultanpur. Addressing this gap, the present study aims to assess the attitudes of Anganwadi Workers regarding maternal nutrition in both urban and rural areas of Sultanpur city. The findings are expected to contribute to evidence-based policy formulation and targeted capacity-building interventions for strengthening maternal health services at the community level.

Objectives:

1. To assess the attitude of rural and urban Anganwadi workers on Maternal Nutrition in Sultanpur city.

2. To find out the association between socio-demographic profile and attitude of Anganwadi Workers (AWWs).
3. To compare the attitude of rural and urban Anganwadi workers on Maternal Nutrition in Sultanpur city.

Methodology

Study Design and Setting:

The present study employed a cross-sectional descriptive research design to assess the attitudes of Anganwadi Workers (AWWs) toward maternal nutrition in urban and rural areas of Sultanpur. The study was conducted under the administrative framework of the Integrated Child Development Services, which facilitates maternal and child health services at the community level.

Study Population and Sampling Technique

The study population comprised Anganwadi Workers working in both urban and rural areas of Sultanpur district. A total of 300 AWWs participated in the study, including 111 from urban areas and 289 from rural blocks.

A multistage sampling technique was adopted for the selection of respondents. In the first stage, rural blocks were identified, and approximately 10% of the total Anganwadi Workers from each selected rural block were included to ensure proportional representation. In the second stage, urban Anganwadi Workers were selected based on availability and accessibility with the support of the concerned Child Development Project Officer (CDPO). This approach ensured adequate representation of both urban and rural settings.

Data Collection Procedure

Prior to data collection, formal permission was obtained from the CDPO. With their assistance, Anganwadi Workers were mobilized and gathered at designated locations such as Anganwadi centers or community halls. The purpose of the study was explained, and informed consent was obtained from all participants.

Data were collected using a structured, pre-tested questionnaire designed to assess attitudes toward maternal nutrition and health. The questionnaire was administered in a group setting, and participants were provided with necessary instructions to ensure clarity and accuracy of responses.

Tool Description

The questionnaire consisted of items measuring various dimensions of attitude, including beliefs, perceptions, and behavioral tendencies related to maternal nutrition. Responses were recorded using an appropriate rating scale (e.g., Likert scale), allowing for quantitative assessment of attitudes.

Data Analysis

The collected data were coded, tabulated, and analysed using suitable statistical techniques. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the data. Inferential statistics were applied to compare attitudes between urban and rural AWWs and to identify significant differences, if any.

Table 1: Socio-Demographic Profile of Anganwadi Workers (AWWs) of rural and urban area of Sultanpur city.

Parameters	**Frequency (n)**	**Percentage (%)**
Age		
25-30	5	1.7
30-35	6	2.0
35-40	124	41.3
Above 40	165	55.0
Total	**300**	**100**
Gender		
Female	300	100
Transgender	0	0
Total	**300**	**100**

Nationality		
Indian	300	100
Others	0	0
Total	**300**	**100**
Current Posting		
Urban	111	37.0
Rural	189	63.0
Total	**300**	**100**
Educational Qualification		
Junior High School	1	.03
High School	44	14.7
Intermediate	25	8.3
Graduation	115	38.7
Post-Graduation	114	38.0
Total	**300**	**100**
Religion		
Hindu	186	62
Muslim	58	19.3
Sikh	12	4.0
Christian	24	8.0
Others	20	6.7
Total	**300**	**100**
Marital Status		
Widow	23	**7.7**
Divorced	15	**5.0**
Married	262	**87.3**
Total	**300**	**100**

Employment Status		
Temporary	300	100
Permanent	0	0
Ad-hoc	0	0
Total	**300**	**100**
Experience		
0-5 years	9	3.0
5-10 years	6	2.0
10-15 years	33	11.0
Above 15 years	252	84.0
Total	**300**	**100**
Income		
2500-5000	34	11.3
5000-10000	169	56.3
More than 10000	97	32.3
Total	**300**	**100**
Family Status		
Nuclear	102	34
Joint	198	66
Total	**300**	**100**

The findings of **Table 1** indicate that the study was conducted among 300 respondents, all of whom were females and belonged to Indian nationality. A considerable proportion of participants fell within the age groups of 35–40 years (41.3%) and above 40 years (55.0%), suggesting that the workforce was predominantly middle-aged. In terms of workplace distribution, a majority of them were posted in rural areas (63.0%), while 37.0% served in urban areas. The educational profile reflected a well-qualified sample, with most respondents holding graduate (38.7%) or postgraduate (38.0%) degrees. With respect to religion, the majority were Hindus (62%), followed by Muslims (19.3%), Christians (8.0%), Sikhs (4.0%),

and other religious faiths (6.7%). Marital status analysis revealed that most of the respondents were married (87.3%), while a smaller proportion was widowed (7.7%) or divorced (5.0%). Employment characteristics showed that all the respondents held permanent positions, with the vast majority (84.0%) possessing more than 15 years of professional experience, indicating a stable and long-serving workforce. The income distribution reveals that more than half of the respondents (56.3%) earned between ₹5,000–₹10,000, while 32.3% earned above ₹10,000 and 11.3% reported earnings between ₹2,500–₹5,000. In terms of family structure, two-thirds of the respondents (66.0%) lived in joint families, whereas 34.0% resided in nuclear families.

Table 1: Attitude scores of rural and urban Anganwadi workers on different parameters about Maternal Nutrition

Different parameters indicating attitude about Maternal Nutrition among Anganwadi Workers (AWWs)	**Frequency of AWWs giving response (n)**		**Percent (%)**
	R	**U**	
Does maintaining good health is necessary for women after becoming pregnant.			
Strongly Agree	42	29	100.0%
Agree	121	73	
Strongly Disagree	03	03	
Disagree	23	07	
Does visiting CHCs for check-ups is good to monitor mother's and fetus's health			
Strongly Agree	27	0	100%
Agree	121	111	
Strongly Disagree	5	0	
Disagree	36	0	
Before 3rd month of women's pregnancy antenatal booking should be done			
Strongly Agree	24	14	

Agree	130	75	
Strongly Disagree	05	03	
Disagree	30	19	
Screening of women's blood for infections of diseases like HIV, HBV, etc. should be carried out during their antenatal check-up.			
Strongly Agree	25	07	100%
Agree	128	93	
Strongly Disagree	05	1	
Disagree	31	10	
Should the women's heart and pulse rate be monitored periodically for the occurrence of any disease during pregnancy			
Strongly Agree	27	111	100%
Agree	122	0	
Strongly Disagree	04	0	
Disagree	36	0	
Should the women undergo various tests as advised by doctor to monitor fetal growth.			
Strongly Agree	27	01	100%
Agree	122	108	
Strongly Disagree	04	0	
Disagree	36	02	
Pregnant women should change dietary habit or include more minerals and vitamins in the diet as advised by doctor.			
Strongly Agree	24	90	100%
Agree	127	17	
Strongly Disagree	04	00	
Disagree	34	04	
Supplementation of iron and folic acid tablet are good for mother and fetus development			
Strongly Agree	27	06	100%
Agree	122	93	
Strongly Disagree	04	02	

Disagree	36	10	
Delivery of fetus in hospital is preferred to be best than Home delivery			
Strongly Agree	26	15	100%
Agree	123	73	
Strongly Disagree	05	02	
Disagree	35	21	
Smoking and drinking of mother does not cause any harm to the fetus.**			
Strongly Agree	18	01	100%
Agree	11	15	
Strongly Disagree	30	0	
Disagree	130	95	
Alcohol consumption during pregnancy is good for fetus growth and development			
Strongly Agree	27	14	100%
Agree	121	73	
Strongly Disagree	04	03	
Disagree	37	21	
It is important to screen for maternal nutrition risk factors of all women admitted to the ward in CHC or PHC.			
Strongly Agree	25	15	100%
Agree	123	75	
Strongly Disagree	04	03	
Disagree	37	18	
Screening for maternal nutrition risk factors among pregnant women and giving best advise to them is one of the responsibilities of the midwives.			
Strongly Agree	25	15	100%
Agree	123	75	
Strongly Disagree	04	03	
Disagree	37	18	
Underweight women experience more complications during			

pregnancy and delivery of fetus than normal women			
Strongly Agree	26	15	100%
Agree	122	75	
Strongly Disagree	05	03	
Disagree	36	18	
All pregnant women should be more knowledgeable about the need for an adequate and nutritional diet.			
Strongly Agree	26	15	100%
Agree	121	75	
Strongly Disagree	04	03	
Disagree	38	18	
All women should be counseled and advised on adequate and healthy eating and weight gain during pregnancy.			
Strongly Agree	27	15	100%
Agree	121	75	
Strongly Disagree	04	03	
Disagree	37	18	
All pregnant women who are at risk, including adolescents with HIV, in emergency situations, should receive nutritional support.			
Strongly Agree	28	15	100%
Agree	121	75	
Strongly Disagree	04	03	
Disagree	36	18	
Pre-pregnancy nutrition influences a woman's ability to conceive as it determines fetal growth and development as well as the health and well-being of the woman.			
Strongly Agree	28	15	100%
Agree	120	75	
Strongly Disagree	04	03	
Disagree	37	18	
Good maternal nutrition education from caregivers is important for a successful pregnancy, child delivery, and			

lactation.			
Strongly Agree	27	14	100%
Agree	120	78	
Strongly Disagree	04	03	
Disagree	38	16	

The present study provides important insights about the attitudes of Anganwadi Workers (AWWs) toward maternal nutrition and healthcare service utilization, revealing an overall positive and informed orientation among the respondents.

The findings demonstrate that a large majority of AWWs either agreed or strongly agreed with key statements related to maternal health, such as the necessity of maintaining good health during pregnancy, the importance of antenatal check-ups, early registration, and regular monitoring of maternal and fetal well-being **(Gupta et. al. 2024)**. This widespread agreement indicates that AWWs possess a strong foundational understanding of essential maternal healthcare practices, which is crucial for their role as frontline service providers. Building on this general awareness, the study further highlights that respondents exhibited a clear understanding of clinical and nutritional interventions, including the importance of screening for infections, monitoring vital parameters, undergoing diagnostic tests, and adhering to iron and folic acid supplementation.**(Singh *et. al.* 2024) (Amoakoah *et. al.* 2016)**

Moreover, the strong agreement regarding dietary modifications and nutritional counseling during pregnancy reflects alignment with recommended maternal nutrition guidelines, suggesting that AWWs are well-positioned to promote healthy practices among pregnant women **(Rai *et. al.* 2014)**.

In addition to demonstrating positive attitudes toward appropriate maternal health behaviors, the respondents also showed correct judgment in rejecting harmful misconceptions. The majority disagreed with statements suggesting that smoking or alcohol consumption during pregnancy is harmless, indicating a sound level of risk perception and awareness regarding adverse maternal and fetal outcomes **(Mannava *et. al.* 2015)**. However, despite this overall positive trend, a small proportion of inconsistent responses across certain parameters suggests the presence of minor gaps in attitude, which may be attributed to variations in training exposure, field experience, or access to updated information**.(McCauley *et. al.* 2019)** This observation highlights the need for continuous

training and capacity-building initiatives to ensure consistency in knowledge and practice among AWWs.

While the overall attitude levels were encouraging, further analysis revealed that these attitudes are significantly influenced by contextual factors, particularly the place of posting. Statistical analysis indicated significant differences in attitude scores based on posting, suggesting that the working environment plays a critical role in shaping the perceptions and practices of AWWs. **(Okafor *et. al.* 1994)** This may be due to differences in healthcare infrastructure, supervision, and opportunities for professional engagement across different settings.

Table 2: Association between Socio-Demographic profile and Attitude Score of Anganwadi Workers (AWWs)

Variable	Test	Does visiting CHCs for check-ups is good to monitor mother's and fetus's health	Should the women's heart and pulse rate be monitored periodically for the occurrence of any disease during pregnancy	Should the women undergo various tests as advised by doctor to monitor fetal growth.	Pregnant women should change dietary habit or include more minerals and vitamins in the diet as advised by doctor.
Posting	Pearson Correlation	.171**	.637**	.147**	.509**
	Sig. (2-tailed)	.003	.014	.005	.000

****Correlation is significant at the 0.01 level (2-tailed).**

****Correlation is significant at the 0.05 level (2-tailed).**

Table 2 reveals the analysis of the association between socio-demographic profile and attitude scores of Anganwadi Workers (AWWs) reveals a statistically significant positive relationship between posting and key maternal health attitude parameters. The Pearson correlation coefficients indicate that posting is significantly associated with attitudes toward visiting Community Health Centres for antenatal check-ups **(r = 0.171, p < 0.01),** monitoring maternal vital signs **(r = 0.637, p < 0.05)**, undergoing diagnostic tests for fetal growth **(r = 0.147, p < 0.01)**, and adopting improved dietary practices during pregnancy **(r = 0.509, p < 0.01) (Gopalakrishnan *et. al.* 2025)**. Among these, the strongest correlation was observed for monitoring maternal health parameters, suggesting that the place of posting plays a crucial role in shaping awareness and attitudes related to clinical monitoring during pregnancy. These findings imply that AWWs working in better-resourced or more accessible settings are likely to demonstrate more favorable attitudes due to increased exposure to healthcare facilities, training opportunities, and professional support systems. Overall, the results highlight posting as a significant determinant influencing the attitudes of AWWs toward maternal healthcare service utilization**.(Chandrashekar *et. al.* 2023)**

Table 2: Analysis of Variance (ANOVA) of Posting Scores Based on Attitudes toward Smoking and Fetal Growth

Posting	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	30.031	3	10.010	74.265	.000
Within Groups	39.899	296	.135		
Total	69.930	299			

Calculating Effect Size:

Eta Squared ($n^{2)}$

Formula: $\frac{SS\ (between\ the\ group)}{SS(\ total\ score)}$

Using values from ANOVA test:

SS (Between the group) =30.031

SS (Total score) = 69.930

$$n^2=\frac{30.031}{69.930}$$

$$\mathbf{n^2 \approx 0.43}$$

The analysis of variance (ANOVA) examined differences in attitude scores based on posting revealed a highly statistically significant effect **($F = 74.265$, $p < 0.001$)**, indicating that variations in posting are associated with meaningful differences in attitudes toward smoking and its perceived impact on fetal growth. The between-group variance **(SS = 30.031)** was substantially higher relative to the within-group variance **(SS = 39.899)**, suggesting that group membership (i.e., posting categories) accounts for a considerable proportion of the total variability in attitude scores. Furthermore, the calculated effect size **($\eta^2 = 0.43$)** denotes a large magnitude of effect, implying that approximately 43% of the variance in attitudes can be attributed to differences in posting. This substantial effect underscores the critical influence of contextual and environmental factors on shaping the perceptions of Anganwadi Workers. It can be inferred that differential exposure to healthcare infrastructure, training opportunities, and field-level experiences across postings significantly contributes to the formation of attitudes regarding maternal health risks. Overall, these findings highlight posting as a strong determinant of attitude variability, context-specific interventions to ensure uniformity in awareness and perception among frontline health workers. **(Shishler *et. al.* 2017)**

Table 3: Comparison of Attitude score of Urban and Rural Anganwadi workers about Maternal Nutrition

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Attitude Score	Equal variances assumed	.044	.834	-14.269	298	.000	-4.816	.338	-5.481	-4.152
	Equal variances not assumed			-14.349	234.588	.000	-4.816	.336	-5.478	-4.155

Table 3 revealed a comparison of attitude scores between rural and urban Anganwadi Workers (AWWs) demonstrated a statistically significant difference, highlighting the influence of geographical context on maternal nutrition-related perceptions. The Levene's test confirmed homogeneity of variances ($F = 0.044$, $p = 0.834$), validating the use of equal variances in the independent samples t-test, which revealed a highly significant difference in mean scores ($t = -14.269$, $df = 298$, $p < 0.001$). The negative mean difference (-4.816), along with a narrow 95% confidence interval (-5.481 to -4.152), indicates that urban AWWs possess significantly higher and more favorable attitudes compared to their rural counterparts. This disparity may be attributed to differential access to healthcare infrastructure, greater exposure to training and capacity-building programs, improved supervisory mechanisms, and enhanced availability of informational resources in urban settings. Conversely, rural AWWs may face systemic challenges such as limited institutional support, inadequate training opportunities, and socio-cultural constraints, which may adversely influence their attitudes and practices **(Kirbi *et. al.* 2020)**. These findings underscore the existence of a rural–urban gap in maternal health awareness and emphasize the need for targeted, context-specific interventions aimed at strengthening training, improving resource accessibility, and enhancing supportive supervision in rural areas to ensure equitable and effective maternal health service delivery.

Conclusion

The study concludes that Anganwadi Workers generally exhibit a positive and informed attitude toward maternal nutrition and healthcare service utilization. However, significant differences were observed based on posting and geographical location, with urban workers demonstrating comparatively better attitudes than rural counterparts. Contextual factors such as access to training, healthcare infrastructure, and supervision play a crucial role in shaping these attitudes. Therefore, targeted capacity-building and resource strengthening, particularly in rural areas, are essential to enhance the effectiveness of Anganwadi Workers in promoting maternal health outcomes.

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Author Contribution

Both authors contributed equally to the conception and design of the study, data collection and analysis, interpretation of results, manuscript preparation, critical revision, and final approval, and share full responsibility for the content of the paper.

Declarations

Ethical Approval

The research protocol received ethical clearance from the **Institutional Ethics Review Board (IERB) of University of Allahabad**, **Prayagraj** with the approval number **2022-29DOFCS.**

Data Availability

The data supporting the findings of this study were obtained through a survey and are not publicly available due to the on-going nature of the research. The dataset may be made available from the corresponding author upon reasonable request following the completion of the study.

Informed Consent

A structured written informed consent was obtained from each participant in accordance with ethical guidelines for the study.

Consent to Publish

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Not Applicable

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