Nurturing networks: Connecting the dots between social capital and antenatal care in south Karnataka, India

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ABSTRACT

Introduction: Antenatal care (ANC) is one of the pillars of primary healthcare in India. Timely and appropriate ANC can reduce complications from pregnancy and childbirth. Social capital—the collective benefit for an individual when part of a larger society—has the potential to improve the uptake of ANC services. **Objective:** To assess social capital and its association with ANC utilization in a peri-urban area in south India. **Methodology:** A cross-sectional study was conducted in two sub-center areas of Anekal Taluk in Bangalore Urban District, south India. A total of 350 women were interviewed on socio-demography, obstetric history, ANC utilization, and social capital. A composite index for quality ANC was constructed from various ANC services and social capital was measured using a validated 13-item instrument. Bivariate associations with socio-demographic variables, obstetric factors, and social capital were assessed. Logistic regression models were used to determine the association between quality ANC and social capital after controlling for covariates. **Results:** Mean age was 24.19 ± 3.56 years and mean education was 9.03 ± 4.98 years. Of all the women, 85% were homemakers and 70% belonged to the lower and middle classes. Quality ANC was achieved by 42.8% of the women. Being from Handenahalli subcentre (OR: 2.21; 95% CI: 1.36–3.60), completing secondary (OR: 4.56; 95% CI: 1.86–11.17) or higher education (OR: 5.95; 95% CI: 2.28–15.51), being gainfully employed (OR: 2.18; 95% CI: 1.06–4.48), belonging to middle class (OR: 2.37; 95% CI: 1.24–4.53), and feeling like one belongs to the village (OR: 8.33; 95% CI: 1.73–40.11.53) were significant predictors of achieving quality ANC. **Conclusion:** Even though individual services of the ANC were achieved by more than 80% of women, quality ANC was accomplished by less than half. Apart from factors like education, occupation, and geographic area; social capital factors, like social cohesion, proved to be a strong predictor of quality ANC. Social capital should be leveraged to empower society to further strengthen access to quality ANC services.

Keywords: Antenatal care, healthcare utilization, social capital, society

Introduction

Currently, maternal mortality in India is 130 deaths per 100,000 live births according to a Sample Registration Survey bulletin in 2018.[1] The latest National Family Health Survey (NFHS-5) reports that the neonatal mortality rate (NMR) is 24.9 deaths per 1,00 live births and the infant mortality rate (IMR) is 35.2 deaths per 1,000 live births. Even though there has been a remarkable improvement over the last seven decades, the urban–rural divide is staggering: 18.0 (urban) versus 27.5 (rural) for NMR and 26.6 (urban) versus 38.4 (rural) for IMR.[2]

Timely and appropriate antenatal care (ANC) can reduce complications during pregnancy and childbirth as well as reduce the number of stillbirths and perinatal deaths.[3] ANC includes all services from the confirmation of pregnancy until the point of delivery, including early registration, blood tests, weight measurements, blood pressure monitoring, iron and folic acid supplementation, tetanus toxoid immunization, minimum of four antenatal visits, and health

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education on danger signs.[4] Despite the importance of ANC, there are various challenges to accessing quality ANC, ranging from logistic to social barriers. Maternal education plays an important role in accessing ANC along with economic status, maternal age, media exposure, and maternal autonomy.[5-8]

Social capital—a broad term including social relationships, networks, and values that provides collective benefits for an individual—has been used to operationalize the influence of communities on a variety of outcomes, including health.[9,10] The concept of social capital has been used to explain the influence of social position on the development of human capital, which is usually measured by the level of education.[11] Social capital has also been used to explain the importance of social connectedness on health and access to healthcare.[12-14] The two major conceptualizations of social capital are from Bourdieu and Coleman. Bourdieu emphasized the structural aspects of social capital, which focuses on access to assets that are available to individuals who are members of a social group.[15] Whereas Coleman emphasizes the cognitive aspects of social capital, which focuses on reciprocity exchanges, privileged access to information, and group enforcement of norms.[16] Therefore, structural social capital focuses on what people do and is often objectively verified by assessing individuals' actions and behaviours, whereas cognitive social capital focuses on what people feel and is often subjectively verified by assessing attitudes and perceptions.[13]

Social capital has the potential to support and guide a woman through her antenatal period thereby facilitating a quality care and delivery. This acts as a nurturing network for the pregnant woman where the society as a whole nurtures her pregnancy. Although social capital is well accepted in the public health literature,[17] there is a paucity of data regarding the relationship between social capital and utilization of ANC services in the Indian context. This study aims to assess social capital and its association with ANC utilization in peri-urban India. The results of this study have the potential to inform future social capital strengthening initiatives to improve access to quality ANC.

Methods

Study setting

A cross-sectional study was conducted in two sub-center areas under Sarjapur Primary Health Centre area, Anekal Taluk, Bangalore Urban District in the south of Karnataka. These peri-urban communities are included in the field practice area of a medical college and have a total population of 12,494 residing in 2,795 households. Ethical Clearance was obtained from the institutional ethical committee of St John's Medical College, Bengaluru.

Study participants

Women between the ages of 18 and 49 who had delivered within the last two years, residing in one of the two study areas, were eligible for this study.

Sampling

Based on the fourth National Family Health Survey (NFHS-4) for Karnataka state,[18] where 32.8% of women had full ANC in their last pregnancy, the sample size was calculated with 5% precision and a 95% confidence level to be 339. However, based on the health management information system of the medical college, the number of women who would fulfill this criterion would slightly exceed the sample size, and hence, universal sampling was employed.

Subject recruitment

House-to-house visits were conducted by a team of trained data collectors. Mothers with a child under 24 months were invited to participate in the study. Written informed consent was obtained from all participants. Subjects with neurodevelopmental disability that prevented them from understanding the questions were excluded from the study. Subjects who were not present after two house visits were also excluded from the study. A total of 350 women were interviewed in the two sub-center areas.

Study instrument

A survey was prepared to assess socio-demographic characteristics, maternal and newborn care (including details of ANC during the last pregnancy), water and sanitation, and social capital. The social capital survey instrument developed by Story *et al.*[19] was validated for use in the context of south Karnataka through 12 cognitive interviews. Information obtained during the cognitive interviews (using techniques like paraphrasing and verbal probes in the local language, Kannada) was used to make changes to the original instrument. The full survey was then piloted in a village under a different Primary Health Centre, and final modifications were made.

Outcome variable

Full ANC care was achieved when a woman has a minimum of four ANC visits, received one booster or two tetanus toxoid (TT) injections, and has taken at least 100 days of iron folic acid (IFA) supplementation. Quality ANC was achieved when a woman fulfilled the criteria for full ANC along with getting an early registration of pregnancy; received measurements of weight and blood pressure; underwent an abdominal examination; received routine blood and urine testing; and received counselling regarding obstetric danger signs, birth preparedness, and institutional delivery.[4] These components were included based on the Government of India's National Health Mission's definition of quality ANC.[20] Quality ANC was coded as 1 for women who completed everything in the list and 0 if one of the items was missing. A detailed approach to analysing social capital is explained in Supplementary Material.

Statistical analysis

The data was analyzed using IBM Statistical Package for Social Sciences (SPSS) version 20. The socio-demographic profile was described using frequencies, proportions, mean, standard

deviation, median and inter-quartile range. Bivariate analysis was performed with quality ANC as the outcome variable to look for associations with various independent covariates, including measures of social capital. Variables with a P value <0.10 were entered into a multiple logistic regression model to compute adjusted odds ratios with 95% confidence intervals. P values of <0.05 was considered as statistically significant for all analyses.

Results

Socio-demographic characteristics

Out of the 350 mothers interviewed, 45.6% were from Mugalur subcentre area and the rest were from Handenahalli sub-centre area. Mean age of the study population was 24.19 ± 3.56 years with almost half of them belonging to the age group of 20-24 years. All respondents were married and almost three-fourths belonged to the Hindu religion. Kannada was the native language for 42% of the people and 33% identified with a scheduled caste. Mean years of education was 9.03 ± 4.98 years and more than half (56.7%) completed secondary education. Almost 85% of the women worked in the home without pay (i.e., 'homemakers') and the rest were gainfully employed, among which 'housemaid' was the most common occupation. Based on wealth terciles, 30% were upper, 36% middle, and 34% lower class. The median number births and living children was two, with 17.5% of the women reporting a history of miscarriage or an abortion.

Antenatal care

All the women received ANC, mostly from doctors (92.9%), nurses, Anganwadi Workers (AWW) (57.5%), and ASHAs (40.2%). 94.5% of the women received four or more ANC visits and almost 67% had eight or more ANC visits. Three-fourths of the women reported that their husbands regularly accompany them for these check-ups. Regarding the two other components of full ANC, 98.2% received complete dosages of TT injection and 85.4% received adequate dosages of IFA supplementation. Full ANC was received by 82.9% of the women, whereas quality ANC, as defined by the Ministry of Health and Family Welfare (MOHFW) guidelines,[20] was received by only 42.7% of the women. The proportion of the sample who received each component of quality ANC is shown in Figure 1.

Other services related to ANC, including home visits by an ANM, ASHA, AWW, or community health worker (CHW), was received by 89% of the women. The majority of women reported receiving advice during home visits on the importance of breastfeeding (75.8%) and institutional delivery (70.1%). Advice on cord care (53.3%) and family planning (52.7%) were given to fewer women. Almost all (99.1%) of the deliveries were institutional, and the median amount spent on deliveries was INR 8000 (range: INR 2000–INR 27,000). There was no financial assistance for deliveries for 60% of the women and 21% received assistance from Janani Suraksha Yojana.[21,22] Almost everyone (99.4%) received postnatal care and 95% received it within the first 24 hours. Bivariate analysis between demography and quality

antenatal care was done [Table 1] and the significant variables were included in the regression model.

Social capital

Structural social capital was measured by group membership, social support, and collective action. Almost one-quarter (21.9%) of the women were active members of a social group in the village among which the majority were part of the Government self-help group called 'Stree Shakti' (11.4%), followed by NGO-run microfinancing groups (5.4%), and village-initiated chit fund (i.e., savings and credit) groups (4.3%). Among the 77 women who were members of social groups, 62.3% received support in general through the group, mainly financial support (53.3%), followed by learning new things (28.6%) and vocational training (15.6%). Social support was measured in three areas: emotional support, financial support, and informational support during pregnancy. Emotional support during unfortunate circumstances was received by 68.2% of the women of which 43.4% received support from their husband and immediate family, 8% from others (e.g., village/religious leaders), and 19.4% from both. Financial support during economic losses was available for 91.7% of the women of which 76.8% received support from husband and family, 3.1% from others, and 11.7% from both. Advice and assistance when preparing for birth was present for 96.0% of the women of which 67% received informational support from family, 4% from other sources (e.g., neighbours, friends, NGOs and CHWs), and 24.8% from both. Regarding collective action, only 11.4% of the women joined together with others in their village to address a common issue in the past year and only
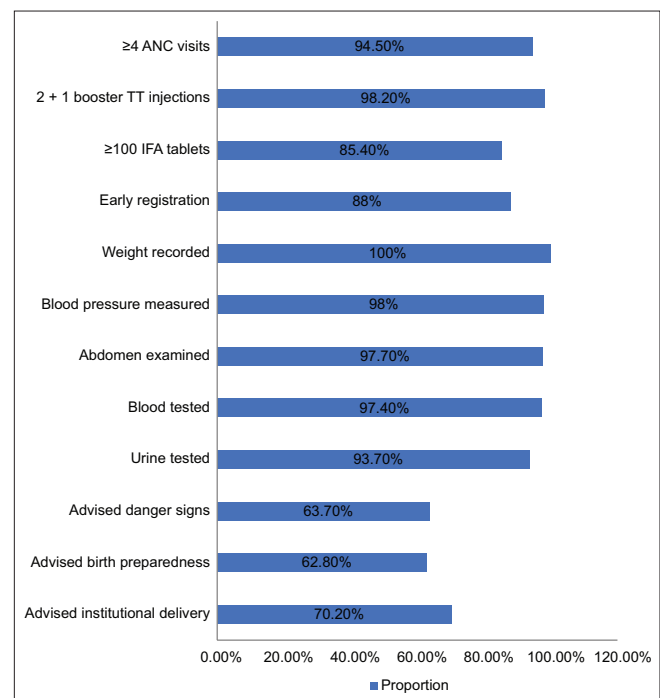

Figure 1: Proportion of women attaining each component of quality ANC

7.1% of the women talked to a panchayat member or other local leaders about a common issue in their village.

Cognitive social capital was assessed according to trust and social cohesion. Regarding trust, 80.0% of the women reported trusting people who lived in their village, 70.5% reported trusting leaders in their village, and only 30.8% reported trusting people they met for the first time. Regarding social cohesion, 36.2% of the women reported thinking that the majority of people in their village would try to take advantage of them, 85.1% reported that people get along well with each other, and 93.7% reported that they feel like they belong in their village. Bivariate analysis with quality ANC was done [Table 2] and the significant variables were included in the regression model.

Regression analysis

Logistic regression analysis [Table 3] showed that women belonging to Handenahalli subcentre area have 2.21 times greater odds (95% CI: 1.36-3.60) of receiving quality ANC compared to women belonging to Mugalur subcentre area. Similarly, women with secondary education (OR: 4.56, 95% CI: 1.86–11.17) or pre-university or higher education (OR: 5.95, 95% CI: 2.28–15.51) have higher odds of quality ANC compared to women with primary education. Also, women who were gainfully employed had 2.18 times higher odds (95% CI: 1.06–4.48) of receiving quality ANC compared to those who were not employed. Women belonging to the middle socio-economic class had 2.37 times higher odds (95% CI: 1.24–4.53) of receiving quality ANC compared to women from a lower class. Regarding social capital, women who felt they belonged to their village had 8.33 times higher odds (95% CI: 1.73–40.11) of receiving quality ANC compared to women who did not feel that they belonged.

Discussion

The socio-demographic characteristics showed the expected distribution in our study areas in terms of education, occupation of women, scheduled caste representation, and socio-economic status.[23] Our study showed 13.7% women completed up to primary education, 56.7% had completed secondary, and 59.4% had a minimum of 10 years of education. NFHS-5 data shows 76.7% of adult women in Karnataka are literate and 50.2% women had 10 years education.[24] Only 15.1% of our study population were gainfully employed showing that the majority of women were homemakers as compared to 37.0% who worked and were paid in cash according to Karnataka NFHS-5.[24]

A minimum of four ANC visits were completed by 94.5% women compared to 90.9% in NFHS-5. Mothers whose birth was protected against neonatal tetanus was 98.2% in our study, which was similar to 93.6% in NFHS-5. Mothers who consumed IFA tablets for more than 100 days was 85.4% compared to 44.7% by NFHS-5. This may be due to the maternal and child

Table 1: Association of quality ANC with independent co-variates					
Variable	**Category**	**Total *n* (%)**	**Quality ANC**		***P***
			Yes **150 (42.7)**	**No** **200 (57.3)**	
Subcenter area	Mugalur	160 (45.6)	51 (31.9)	109 (68.1)	<0.001
	Handenahalli	190 (54.4)	99 (52.1)	91 (47.9)	
Age (in years)	<20	54 (15.4)	19 (35.2)	35 (64.8)	0.438
	20-24	173 (49.6)	78 (45.1)	95 (54.9)	
	25-30	123 (35.0)	53 (43.1)	70 (56.9)	
Caste	Scheduled caste	115 (33.0)	54 (47.0)	61 (53.0)	0.168
	Scheduled tribe	39 (11.1)	18 (46.2)	21 (53.8)	
	Other Backward Caste	140 (39.9)	50 (35.7)	90 (64.3)	
	General	56 (16.0)	28 (50.0)	28 (50.0)	
Education	Up to Primary (1–4 years)	48 (13.7)	9 (18.8)	39 (81.2)	<0.001
	Secondary (5–10 years)	198 (56.7)	92 (46.5)	106 (53.5)	
	Pre-university or higher	104 (29.6)	49 (47.1)	55 (52.9)	
Occupation	Homemaker	297 (84.9)	120 (40.4)	177 (59.6)	0.028
	Gainfully employed	53 (15.1)	30 (56.6)	23 (43.4)	
Socio-economic class based on Standard of Living scores	Upper (34.1–55.0)	106 (30.2)	39 (36.8)	67 (63.2)	0.270
	Middle (28.1–34.0)	127 (36.2)	60 (47.2)	67 (52.8)	
	Lower (7.0–28.0)	117 (33.6)	51 (43.6)	66 (56.4)	
No. of living children	1	142 (40.7)	54 (38.0)	88 (62.0)	0.131
	2 or more	208 (59.3)	96 (46.2)	112 (53.8)	
Previous obstetric complication	Yes	61 (17.4)	23 (37.7)	38 (62.3)	0.105
	No	289 (82.6)	127 (43.9)	162 (56.1)	
Husband accompanied for ANC	Yes	267 (76.1)	118 (44.2)	149 (55.8)	0.364
	No	83 (23.9)	32 (38.6)	51 (61.4)	
Visit by a health worker	Yes	330 (88.9)	150 (45.5)	180 (54.5)	<0.001
	No	20 (11.1)	0 (0)	20 (100)	

Table 2: Association of quality ANC with social capital factors

Variable	Category	Total *n* (%)	Quality ANC		P
			Yes 150 (42.7)	No 200 (57.3)	
Active Member of Social Group	Yes	77 (21.9)	32 (41.6)	45 (58.4)	0.794
	No	273 (78.1)	118 (43.2)	155 (56.8)	
Support Received from social groups (*n*=77)	Yes	48 (62.3)	21 (43.8)	27 (56.2)	0.615
	No	29 (37.7)	11 (37.9)	18 (62.1)	
Emotional support during unfortunate events	Yes	239 (68.2)	99 (41.4)	140 (58.6)	0.426
	No	111 (31.8)	51 (45.9)	60 (54.1)	
Financial support during pregnancy and delivery	Yes	321 (91.7)	136 (42.4)	185 (57.6)	0.538
	No	29 (8.3)	14 (48.3)	15 (51.7)	
Assistance for birth preparedness and delivery	Yes	336 (96.0)	145 (43.2)	191 (56.8)	0.581
	No	14 (4.0)	5 (35.7)	9 (64.3)	
Join together to address a common issue	Yes	40 (11.4)	19 (47.5)	21 (52.5)	0.528
	No	310 (88.6)	131 (42.3)	179 (57.7)	
Talked to leader about an issue	Yes	25 (7.1)	13 (52.0)	12 (48.0)	0.338
	No	325 (92.9)	137 (42.2)	188 (57.8)	
Trusting people in village	Yes	280 (80.0)	127 (45.4)	153 (54.6)	0.059
	No	70 (20.0)	23 (32.9)	47 (67.1)	
Trusting leaders in village	Yes	247 (70.5)	113 (45.7)	134 (54.3)	0.090
	No	103 (29.5)	37 (35.9)	66 (64.1)	
Trust people on first meet	Yes	108 (30.8)	53 (49.1)	55 (50.9)	0.116
	No	242 (69.2)	97 (40.1)	145 (59.9)	
People take advantage of you	Yes	127 (36.2)	52 (40.9)	75 (59.1)	0.585
	No	223 (63.8)	98 (43.9)	125 (56.1)	
People get along with each other	Yes	298 (85.1)	137 (46.0)	161 (54.0)	0.005
	No	52 (14.9)	13 (25.0)	39 (75.0)	
Feel like you belong to the village	Yes	328 (93.7)	148 (45.1)	180 (54.9)	0.001
	No	22 (6.3)	2 (9.1)	20 (90.9)	

Table 3: Logistic regression showing the odds of receiving quality ANC

Factor	Group	Adjusted Odds Ratio	Confidence Interval	P
Subcentre area	Mugalur	-	-	-
	Handenahalli	2.21	1.36–3.60	0.001
Age (in years)	<20	-	-	-
	20–24	1.77	0.86–3.63	0.117
	25–30	1.64	0.78–3.47	0.188
Education	Primary	-	-	-
	Secondary	4.56	1.86–11.17	0.001
	Pre-University and Higher	5.95	2.28–15.51	<0.001
Occupation	No	-	-	-
	Gainfully Employed	2.18	1.06–4.48	0.034
Socio-economic class based on Standard of Living scores	Lower	-	-	-
	Middle	2.37	1.24–4.53	0.008
	Upper	1.65	0.92–2.95	0.090
Previous obstetric complication	No	-	-	-
	Yes	1.28	0.68–2.41	0.436
Visit by a health worker	No	-	-	-
	Yes	1.03	0.89–6.44	0.899
Trusting leaders in the village	No	-	-	-
	Yes	1.19	0.67–2.14	0.543
Trust people in the village	No	-	-	-
	Yes	1.11	0.56–2.17	0.758
People get along with each other	No	-	-	-
	Yes	1.30	0.59–2.92	0.512
Feel like you belong to the village	No	-	-	-
	Yes	8.33	1.73–40.11	0.008

health services run through the community health training centre with CHWs as the focal point and the robust health education campaigns in the study area.

Full ANC as defined as more than four ANC visits, adequate TT doses as required, and more than 100 days of IFA consumption was 82.9%. However, the proportion of women who received quality ANC as defined by the MOHFW guidelines was 42.7%. Based on a recent national sample from India, Singh *et al*.[25] showed that only 23.5% women received adequate ANC. Our study showed there was no significant difference in receiving quality ANC between the different age groups of women. However, a study by Kavitha[26] (also a national sample from India) showed that younger mothers (<20 years of age) are less likely to use ANC services, showcasing the neglected care for adolescent pregnancies. The higher rates of quality ANC and the absence of differences in receiving quality ANC between age groups may be due to the well-established clinical infrastructure that has been established by St. John's Medical College in Sarjapur Primary Health Centre area. Through this, there is both in-center ANC for the women residing in the surrounding villages along with the outreach activities to far away villages where women have difficult in accessing healthcare services.

According to bivariate and logistic regression analyses, our study showed that women who had secondary education or higher were more likely to receive quality ANC compared to women with primary education. This finding is supported by a study by Laishram *et al*.[27] that took place in urban India, which showed that receiving better ANC services was associated with better education. Prior research has also demonstrated that society as a whole improves when the women are educated.[28] For example, women who are educated become more empowered and better understand their health opportunities, which allows them to utilize the best available care.[29]

Our study also demonstrated that being gainfully employed and being middle class (compared to lower class) was associated with receiving quality ANC. Prior studies[13,30-32] in India have also shown that socioeconomic status (as measured by a wealth index) and women's employment are associated with quality ANC. This is likely due to women's access to modern healthcare services that are provided by medically trained personnel and the ability to afford ANC services. Women's employment may also demonstrate enhanced decision-making power and social mobility, which can improve access to quality ANC.[30]

In contrast to some of our findings, Khan and Raza,[30] who conducted a study using the Indian Demographic and Health Survey from 2005-2006, reported that increasing parity reduced the chances of women getting adequate ANC, whereas bad obstetric history increased the likelihood of receiving adequate ANC. In our study, we did not find significant associations, but women who had parity of two or more and women without previous obstetric complications had marginally higher odds of receiving of quality ANC.

The rural-urban divide has also been shown in India as an important predictor of a woman receiving quality ANC, mostly due to better socioeconomic status and higher education levels.[33] Our study did not find any difference based on rurality, but this is likely due to the geographic homogeneity of our sample. Using a national sample from India, Chauhan and Kumar found that women's employment helped reduce the rural-urban gap in access to ANC.[34] Studies have shown that religion and caste have a bearing on receiving quality ANC services, but no similar associations were found in our study.[31,32,34,35]

Social capital has not received as much attention in India when it comes to access to and utilization of maternal and child health services, including ANC.[15] Social capital is an old concept from sociology and political science,[36,37] but the understanding and perspectives continue to evolve with new knowledge and research. As described earlier, there are two ways to conceptualize social capital. The first conceptualization (as described by Bourdieu) views social capital as membership in a social group that allows access to assets embedded in the group.[15] Our study showed that 21.9% of women reported membership in at least one social group and, among them, 62.3% have received support from these groups (e.g., financial support, learning new things, and vocational training). However, there were no significant differences in receiving quality ANC between women who were members of social groups and those who were not. Social support ranged from 68.2% (emotional support) to 96.0% (informational support) and both forms of collective action were less than 12%; however, receiving quality ANC did not significantly differ by social support or collective action. Prior research on social capital in India (using a national sample) demonstrated that social connections to doctors, teachers, and government officials is associated with the receiving four or more ANC visits.[15] However, this study did not measure the quality of ANC services received.

The second conceptualization (as described by Coleman) argues that social capital builds trust and enhances social cohesion for individuals who are within a social structure.[16] Our study showed that women's perceived trust in other people and leaders in their village was greater than their perceived trust in people they met for the first time (i.e., strangers). This is supported by prior literature that demonstrates that trust in known others (i.e., particularized trust) is more common than trust in strangers (i.e., generalized trust).[38] According to the bivariate analysis, both forms of particularized trust (i.e., trust in other people and leaders in their village) were marginally associated with receiving quality ANC ($P < 0.10$). However, trust was not associated with receiving quality ANC after accounting for other co-variates in the logistic regression models. Most women reported that they felt like people in their village got along with each other (85.1%) and that they felt like they belonged to the village (93.7%), and both variables were significantly associated with receiving quality ANC in the bivariate analysis ($P < 0.01$). After controlling for other co-variates in the logistic regression models, women who reported that they felt like they belonged to their village had

significantly higher odds of receiving quality ANC (OR: 8.33; 95% CI: 1.73–40.11). According to Coleman,[16] social cohesion can evoke a sense of solidarity and trust among neighbours, which can, in turn, lead a community to enforce and maintain social norms. If a community promotes norms that emphasize the importance of quality ANC, then access to and utilization of ANC will increase. Therefore, strengthening social cohesion can have a meaningful impact on quality ANC in communities in India.

Conclusion

All women in our study had some form of ANC and full ANC was received by over 80%. However, quality ANC (as defined by the MOHFW) was received by only 42.7% of the women in our study. Perceived social cohesion (i.e., 'feeling like you belong to the village') had a significant effect on receiving quality ANC, even after adjusting for other common predictors of quality ANC. Society as a whole has a significant effect on quality ANC and local administrations, social groups, family, and the women themselves should come together to advocate for the best possible way to ensure access to ANC for women in India.

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Conflicts of interest

There are no conflicts of interest.

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Supplementary Material

Primary Predictor Variables: Social capital is typically dichotomized into two forms: structural and cognitive. Structural social capital primarily reflects Bourdieu's conceptualization of social capital and tends to be objectively verified by measuring individuals' actions and behaviours, including group membership, social support, and collective action. Cognitive social capital aligns more closely with Coleman's conceptualization and tends to be subjectively verified by measuring individuals' attitudes and perceptions, including trust and social cohesion[13]. The 13-item social capital survey instrument assessed structural social capital (group membership [two items], social support [three items], and collective action [two items]) and cognitive social capital (trust [three items] and social cohesion [three items]). For group membership and social support, we asked about the types of groups they belonged to, the support they received from these groups, and who provided social support. Those who were members of at least one group and received support from at least one person, were coded as 1 and those who were not members of any groups or did not receive support were coded as 0. All the other social capital variables had three response options: 'yes', 'sometimes', and 'no'. For these items 'sometimes' is included with 'yes', except for the item *'taking advantage of someone'*, where 'sometimes' is included with 'no'. We conducted bivariate analysis on each item with the quality ANC as the outcome [Table 2] and the significant factors were added to the final regression model.

Covariates: Subcentre area was a binary variable coded as 0 for Mugalur and 1 for Handenhalli. Age was divided into three categories: <20 years, 20-24 years, and 25-30 years. Caste was divided into four categories: scheduled caste, scheduled tribe, other backward caste, and other. Education was divided into three categories: up to primary (1-4 years), secondary (5-10 years), and pre-university or higher. Occupation was a binary variable coded as 0 for a woman who worked at home without pay and 1 for a woman who was gainfully employed. Socio-economic status was determined based on a wealth index, a composite measure of a household's cumulative living standard, calculated using household assets such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities[21]. This was divided into terciles to classify the subjects as upper, middle, and low socio-economic class. Number of living children was a binary variable coded as 0 for one child and 1 for two or more children. Previous birth complication was a binary variable coded as 0 for no previous complication during childbirth and 1 for those who experienced any previous complication during childbirth. Husband accompanied for ANC was a binary variable coded as 0 for women who reported that their husband did not join them during their ANC appointments and 1 if their husband joined them. Lastly, visit by a health worker was a binary variable coded as 0 for women who were not visited by an Accredited Social Health Activist (ASHA) or an Auxiliary Nurse Midwife (ANM) during pregnancy and 1 for women who received at least one visit from and ASHA or ANM.