Quality of Antenatal Care Service and Factors Associated with Client Satisfaction at Public Health Facilities of Bele Gasgar District

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Abstract

Background: Quality of service and client satisfaction are crucial to increase services utilization. However, there is a paucity of data in this study area. Consequently, this study aimed to assess "Quality of Antenatal Care (ANC) and client satisfaction in Public Health Facilities". **Method**: Facility-based cross-sectional study was conducted from March 11 to April 19, 2019. Systematic random sampling was used to select 366 women. Data were collected through the exit interview, data extraction, and observation. **Result:** Quality of ANC was 30% (95% CI = 25–35). About 55% (95% CI = 50–60) of women were satisfied with the services. Iron/folic acid supplementation (AOR = 2.23, 95% CI;1.30–4.79), measuring weight (AOR = 3.61, 95% CI = 1.40–9.31), travel time >60 min (AOR = 4, 95% CI;2.3–8.16) and 60–120 min (AOR = 3.68, 95% CI = 1.61–8.38), and consultation time (AOR = 2.89, 95% CI = 1.14–7.31) were positively associated with client satisfaction, while health professional initiation to ask question never (AOR = 0.20, 95% CI = 0.08–0.43) and to ask sometimes (AOR = 0.32, 95% CI = 0.16–0.65) were negatively associated. **Conclusion:** Quality of ANC was low while clients' satisfaction was moderately low. Therefore, improvement in the area of input, process, and output is recommended.

Keywords

quality, antenatal care, client satisfaction, Donabedian quality-of-care framework

Background

Antenatal care (ANC) is a care that could be provided to pregnant women by health professionals to uphold and maintain optimal health of women through pregnancy, labor, and puerperium period (1). ANC helps to provide basic preventive and therapeutic care, raise awareness on maternal danger signs, orient to birth preparedness, and improve health-seeking behavior of women (2–4).

Quality of health service is crucial at any time while the quality of ANC is important to increase utilization of other maternal health services (5–8). Good quality ANC service could increase client satisfaction (9,10). Similarly, it has a role to achieve health service goal that aimed at dropping maternal death (11) as evidences show that maternal death is high in countries where ANC coverage is low and where it has poor quality (10,12–15).

Delivery of good quality ANC service necessitates the presence of structures such as infrastructures, adequately trained health professionals, infection control facilities, diagnostic equipment, supplies and essential drugs, and appropriate utilization of guidelines (5–7). Conversely, the limitation of this prerequisite is continued to be challenging in Ethiopia. Research shows that physical infrastructures such as generator, waiting area, private examination room, couch in the ANC room, clean toilet, and water are either not available or nonfunctional. Furthermore, shortage and low qualification of health care providers, scarcity of equipment such as fetoscope, stethoscope, blood pressure apparatus, weight scale, ANC guideline, and thermometer are also not sufficiently available (16,17). In general, scarcity of the

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infrastructures leads ANC seeking women to be referred to private clinic (16). Additionally, gaps in structural readiness of health facilities, inadequacy of key essential supplies, unguaranteed properly equipped and staffed facilities leads to low quality of ANC services (18,19). Consequently, less satisfaction of the women and high dropout from the maternity continuum of care after ANC booking remained a public health problem in Ethiopia (16,19–22).

Moreover, traditional belief, delivering five and above children, high or low maternal age, ignorance, shyness/fear, long distance to health facility, educational status, history of stillbirth, and status of pregnancy are other ANC service use hindering factors in this country (23–25).

Consequently, improved access and better quality ANC service should be considered in Ethiopia (7,26–29) to contribute to the reduction in maternal death from 412/100,000 (30) to 70/100,000 by the end of the Sustainable Development Goals (SDGs) (26). For concerning bodies to take relevant action, availability of organized data-based information is important.

Previously, few studies had been carried out to assess the quality of ANC services in Ethiopia. Nevertheless, the majority of these studies were focused on town and higher-level health institutions. The remaining studies were conducted at higher facilities such as university hospitals (31,32). This study is different in addressing the rural public health facilities where more than three-fourths of Ethiopian populations live (33). It was also conducted using the Donabedian quality-of-care framework by incorporating the three dimensions of health service quality assessment; the structure, process, and outcome (34). It had also added some values; the client satisfaction where it could help to recommend on patient-centered care which is one of the pioneering points to improve the quality of health care services (35).

Methodology

Study Area and Period

Facility-based cross-sectional study was conducted from March 11 to April 19, 2019 at Bele Gasgar Dstrict which is located at 272 km to Southeast from the capital city of Ethiopia. The district had four public health facilities. As it is recommended by World Health Organization to conduct a facility census in the study area where it is small, all the available health facilities were included in this study (36).

Sample Size Determination

Required sample was calculated using Epi Info version 7.1, considering 60.4% proportion of client satisfaction among ANC users (37) in Jimma town, 95% level of confidence interval and error of margin 5%. Finite population correction was done since source population, the ANC users in the district from preceding year was 3,572 < 10,000. For

nonresponse, 10% of the sample was added and the final sample size became 366.

Participant Requirement

Primarily, a list of ANC utilizing women was taken from their registry at Bele Gasgar District Health Office to frame for sampling system. A total of 366 samples were distributed proportionally to all available public health centers (3 health centers and 1 district hospital). Computer-based randomization was done to pick individual women for the interview.

Data Collection Tool and Method

Data collection tool was adapted from "WHO survive availability and readiness assessment (SARA)"(36), "WHO Inventory tool for maternal health supplies(ITMHS)"(38), "Ethiopian standard agency health center requirement (ESA)"(39), "Inventory tool for maternal health supplies (ITMHS)"(38), and other related literatures (17,31,38). The tool for client satisfaction was adapted from the study performed in Bahir Dar town, Ethiopia (31). All the interview tools were prepared in English and translated into the local language Afan Oromo and back to English by two language experts independently.

Data of the availability and functionality of infrastructure and manpower were collected by observation using a resource inventory checklist. Data on the types of ANC visits and client satisfaction were collected through exit interviews at health facilities. Furthermore, 80 pregnant women and ANC service providers were observed for the health care provider and client interaction.

Measurements

Structure was measured using five items (39); presence of health professionals, availability of infrastructures, accessible and functionality of basic equipment, accessibility of essential drugs, and availability of laboratory. The overall structure quality attributes were measured against the standard of yes answer ≥75% to the inventory checklists (36).

Process was measured using the participants' response to service provision questions and observation of consultation sessions. Moreover, client satisfaction was assessed with 5-point Likert scale. During analysis, strongly agree and agree responses were classified as "satisfied" while strongly disagree, disagree, and neutral were classified as "not satisfied". Neutral responses were classified as not satisfied considering that it might represent a fear of expressing dissatisfaction since the interview was done within the health facilities (31). Client satisfaction of less than mean point was categorized as "under satisfied" whereas mean point and above was categorized as "satisfied". Generally, the overall quality of ANC was measured from the summation of these three components using 75% as a cut-off point, where the presence of 75% or more of the recommended components of care indicator items was categorized as "good quality of ANC".

Data Analysis

Double data entry was done in EpiData Manager version 4.4. The data were analyzed using SPSS version 23.0. Descriptive statistics was done to summarize participants' characteristics. Principal component analysis was done for the overall structure quality attributes of the process. Multicollinearity was checked using variance inflation factor. Cox and Snell, Nagelkerke chi squares, as well as Hosmer and Lemeshow test for model adequacy were checked and all results were with a benchmark. Bivariate logistic regression analysis was carried out to select candidate variables for multivariable logistic regression at p-value <.25. Backward stepwise likelihood logistic regression model was constructed to identify factors associated with client satisfaction. AOR, p-value <.05 with 95% CI was used to report the association.

Result

Sociodemographic and Obstetric History of the Respondents

A total of 360 pregnant women participated in the study making a response rate of 98.4%. The mean age of

participants was 25.61 years ($SD \pm 5.05$) while their mean traveling time was 60 min ($SD \pm 7.7$ min) (Table 1).

Structure Attributes

All ANC service delivery points were equipped with necessary equipment such as weight scale, fetoscope, safety box, high-level disinfectant and alcohol, clean and surgical glove, focused antenatal care (FANC) card, registration logbook, examination couch, and sterilizer. Nevertheless, only two health facilities had measuring tape for the ANC unit where others were using finger method to measure fundal height. One health facility was sharing a thermometer with all other units available at that facility. Three health facilities had standing light or torch. None of the health facilities had working ANC guidelines.

Regarding the availability of essential drug supplies, drugs such as amoxicillin, penicillin, iron or folic acid, or both tablet and tetanus toxoid vaccine were available in all health facilities and distributed for free on working days. Two health facilities had sulfadoxine pyrimethamine while three facilities had magnesium sulphate and aldomate. Two facilities had TDF +3TC+ EFV for prevention of mother

Table 1. Distribution of Sociodemographic and Obstetric Characteristics of Respondents.

Variable	Category	N = 360	Percent
Age	<20	68	18.9
	20–24	84	23.3
	25–29	139	38.6
	30–34	45	12.5
	>=35	24	6.6
Educational status	Unable to read and write	101	28.1
	Read and write	65	18.1
	Primary education (1–8)	117	32.5
	Secondary and above education (9–12+)	77	21.4
Occupation	Housewife	135	37.5
	Student	17	4.7
	Farmer	130	36.1
	Merchant	49	13.6
	Government employee	29	8.1
Travel time	<60 min	217	60.3
	60–120 min	91	25.3
	>120 min	52	14.4
Income	< 1,250 ETB	305	84.7
	>= 1,250 ETB	55	15.3
	Parity	Primigravida	108	30.0
	Multigravida	252	70.0
	Multipara	243	67.5
Nulliparous	117	32.5	
Abortion	Yes	53	14.7
	No	307	85.3
Current history of ANC	First	161	44.7
	Second	102	28.3
	Third and above	97	27.0
Previous history of ANC	Yes	195	54.2
	No	165	45.8

Abbreviation: ANC, antenatal care.

Table 2. Distributions of Available Structure Quality Attributes in Antenatal Care (ANC) Services.

Structure	Variable	Available number (%)
Human resource	General practitioner	1 (25)
	Health officer	2 (50)
	Pharmacist	3 (75)
	Laboratory technician	2 (50)
	Environmental health professional	2 (50)
Essential drugs	Magnesium sulphate	3 (75)
	Penicillin	4 (100)
	Sulfadoxine pyrimethamine	2 (50)
	Mebendazole/Albendazole	3 (75)
	PMTCT drug	3 (75)
	Aldomate	3 (75)
Infrastructures	ANC waiting area	1 (25)
	Private counseling/ examination room	4 (100)
	Water in examination room	2 (50)
	Clean toilet	4 (100)
	Electricity	3 (75)
	Ambulance	4 (100)
Basic equipment	Functional thermometer	3 (75)
	Functional standing light/ torch	2 (50)
	Functional measuring tape	2 (50)
Basic laboratory tests	Each[a]	2 (50)

[a]*Syphilis test (VDRL), urine analysis for protein/glucose, blood group/Rh factor test, hemoglobin/hematocrit(Hgb/Hct), and stool examination.*

Table 3. Distributions of Process Quality Attribute of Interpersonal Aspect.

Variable	Category	Frequency (Percent)
N = 360		
Respecting	Yes	356 (98.9)
	No	4 (1.1)
Privacy	Yes	289 (80.3)
	No	71 (19.7)
Confidentiality	Yes	346 (96.1)
	No	14 (3.9)
Initiation to ask question	Always	53 (14.7)
	Never	69 (19.2)
	Sometimes	161 (44.7)
	Usually	77 (21.4)
Time spent in health facility	<60 min	329 (91.4)
	> = 60 min	31 (8.6)
Consultation time	<30 min	298 (82.8)
	> = 30 min	62 (17.2)
Service observation checklist, N = 80		
Health care providers introduced themselves to clients	Yes	8 (10)
	No	72 (90)
Providers call clients by their name	Yes	24 (30)
	No	56 (70)
Providers examined face, hand, and leg for edema	Yes	56 (70)
	No	24 (30)
Providers checked eye conjunctiva for sign of anemia	Yes	72 (90)
	No	8 (10)
Providers palpated abdomen for uterine height	Yes	72 (90)
	No	8 (10)
Providers auscultated fetal heartbeat	Yes	76 (95)
	No	4 (5)

to child transmission of HIV where the remaining two facilitiessend HIV positive women to the nearest hospital.

Concerning the laboratory services, 50% of all basic laboratory tests were available in all facilities. There was shortage of basic tests such as venereal disease research laboratory test (VDRL), urine analysis, blood group/Rhesus (Rh), hemoglobin/hematocrit (HCT), and stool examination in two facilities.

All health facilities had private rooms and ambulances. Two facilities had no water supply in the examination room and one facility had no electric supply. Three facilities had waiting areas though only one facility had a clean toilet.

On the other hand, none of the health facilities had fulfilled the minimum requirement of the standard health care provider. There were shortage of laboratory technologist/technical and pharmacist/druggist highly.

In general, the overall structure quality attributes was 71.4%, where 18 (64%) human resources, 30 (83%) essential drugs, 18 (75%) infrastructure, 51 (85%) basic equipment, and 10 (50%) basic laboratory tests were available (Table 2).

Process Attribute

Almost all 356 (99%) respondents agreed that care providers treat them respectfully. During observation, only 2 (10%) of care providers introduced themselves to women where 90% got to history takingdirectly without greeting (Table 3).

After principal component analysis (PCA) was done, 18 variables explained the whole variability of quality of ANC was 76.6%. Thus, the overall structure quality attributes of the process was 108 (30%) 95% CI = 25–35 (Figure 1).

Client Satisfaction

More than half 198 (55%), 95% CI = 50–60 of respondents were satisfied to the provided ANC service (Table 4).

Factors Associated With Client Satisfaction

Multivariable logistic regression analysis showed that pregnant women who were provided iron pills during one of the visits were two times more likely (AOR = 2.23, 95% CI = 1.31−4.79) satisfied than those who were not provided iron at all. Women who were measured weight were three times more likely (AOR = 3.61, 95% CI = 1.40−9.31) satisfied compared to their counterparts. Women who traveled less than 60 min to reach the health facility were four times
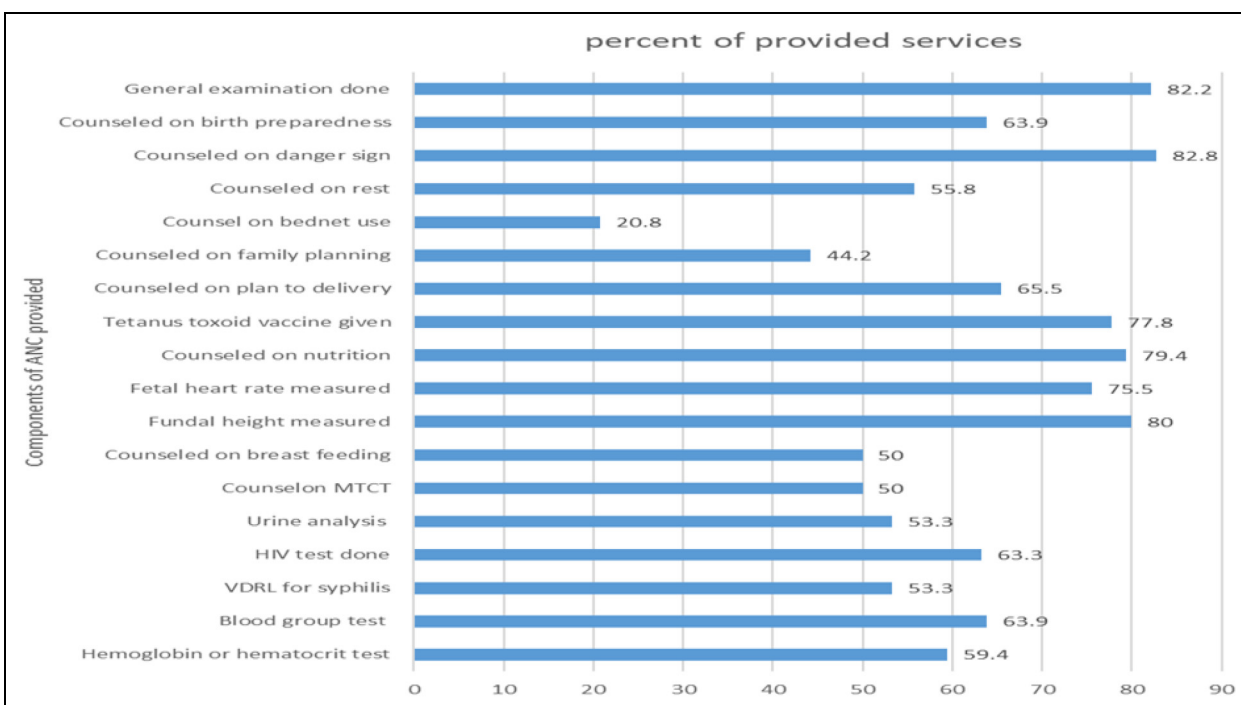
Figure 1. Components of antenatal care (ANC) services done at the four public health facilities.

Table 4. Satisfaction Levels of Pregnant Women on ANC Services Received.

Characteristics	Satisfaction	Frequency (Percent)
Providers greeting was good and politely	Satisfied	124 (34.4)
	Not satisfied	236 (65.5)
Waiting time was fair	Satisfied	104 (28.9)
	Not satisfied	256 (71.1)
Waiting place was adequate and with seats	Satisfied	97 (26.9)
	Not satisfied	263 (73.1)
Cost incurred for the service was fair	Satisfied	284 (78.9)
	Not satisfied	76 (21.1)
Provider was easy to understand	Satisfied	295 (81.9)
	Not satisfied	65 (18.1)
Privacy during consultation was maintained	Satisfied	291 (80.8)
	Not satisfied	69 (19.2)
Providers perform the procedure with cleanliness	Satisfied	292 (81.1)
	Not satisfied	68 (18.9)
ANC clinic has clean latrine and adequate water	Satisfied	156 (43.3)
	Not satisfied	204 (56.7)
You get quality service that you want	Satisfied	301 (83.6)
	Not satisfied	59 (16.4)
Today you received full information about ANC	Satisfied	313 (86.9)
	Not satisfied	47 (13.1)
Continue the rest of ANC visits in this health facility	Satisfied	323 (89.7)
	Not satisfied	37 (10.3)
Recommend ANC service to others	Satisfied	329 (91.4)
	Not satisfied	31 (8.6)

Abbreviation: ANC, antenatal care.

(AOR = 4, 95% CI = 2.3−8.16) and those who traveled between 60 and 1,200 min were almost four times more likely (AOR = 3.68, 95% CI = 1.61−8.38) satisfied than those who traveled more than 1,200 min. Similarly, women whose consultation time was less than 30 min were almost three times more likely (AOR = 2.89, 95% CI = 1.14−7.31)

Table 5. Multivariable Logistic Regression of Factors Association with Client Satisfaction Level.

Factors	Resp.	Client satisfaction		[a]COR (95% CI)	[b]AOR (95% CI)
		Yes	No		
Provider-initiated client to ask question*	Always	16 (30.2)	37 (69.8)	0.20 (0.08−0.35)	0.54 (0.20−1.50)
	Never	33 (48.8)	36 (52.2)	0.34 (0.17−0.69)	0.20 (0.08−0.43)
	Some times	93 (57.8)	68 (42.2)	0.51 (0.28−0.93)	0.32 (0.16−0.65)
	Usually	56 (72.7)	21 (27.3)	1	1
[c]PMTCT	Yes	80 (44.4)	100 (55.6)	0.42 (0.28−0.64)	0.54 (0.31−1.00)
	No	118 (65.6)	62 (34.4)	1	1
Treated bed net	Yes	26 (34.7)	49 (65.3)	0.35 (0.21−0.60)	0.53 (0.26−1.10)
	No	172 (60.4)	113 (39.6)	1	1
Iron/folic acid given*	Yes	161 (56.9)	122 (43.1)	1.43 (0.86−2.36)	2.23 (1.31−4.79)
	No	37 (48.1)	40 (51.9)	1	1
Mebendazole given	Yes	6 (23.7)	16 (72.7)	0.30 (0.11−0.78)	0.32 (0.11−1.00)
	No	192 (56.8)	146 (43.2)	1	1
Weight measured*	Yes	190 (57.1)	143 (42.9)	3.16 (1.34−7.41)	3.61 (1.40−9.31)
	No	8 (29.6)	19 (70.4)	1	1
Travel time*	<60 min	130 (59.9)	87 (40.1)	2.60 (1.40−4.9.)	4 (2.3−8.16)
	60–120	49 (53.8)	42 (46.2)	2.03 (1.01−4.08)	3.68 (1.61−8.38)
	>120 min	19 (36.5)	33 (63.5)	1	1
Consultation*	<30 min	183 (61.4)	115 (38.6)	4.99 (2.67−9.33)	2.89 (1.14−7.31)
	>＝30m	15 (24.2)	47 (75.8)	1	1

[a] Crude odds ratio, [b] Adjusted odds ratio, [c] Prevention of mother-to-child transmission of HIV.
*Significantly associating at p-value <.5.

satisfied than those whose consultation time was 30 or more minutes. Moreover, pregnant mothers who were initiated to ask question on the service never were 80% times (AOR: 0.20, 95% CI = 0.08−0.45) and sometimes were 68% times less likely (AOR = 0.32, 95% CI = 0.16−0.65) satisfied than those who were usually initiated (Table 5).

Discussion

Quality of Antenatal Care and Client Satisfaction

The overall quality of ANC was low 30% [95% CI = 25–35]. Comparable findings were reported in sub-Saharan Africa and Ethiopia (31,40,41). This low quality might be due to the focus of low-income countries on increasing coverage of the service rather than quality of the service (42,43). Additionally, low economic status of the areas and few in-services training to health professionals may also compromise quality of the service. Studies had identified that shortage of infrastructure causes poor quality in the health facilities of Ethiopia (31,40,44–46). It was indicated that poor infrastructures, inadequate skilled staff, stock-outs of consumables, and nonfunctional basic emergency obstetric care facilities are the leading factors of poor quality of maternal health service in less developed countries (18,19,47).

Furthermore, client satisfaction toward the given ANC service was moderately low 55% (95% CI = 50–60). This finding is consistent with the study done in Gondar, Chencha, Demba Gofa of Ethiopia, and in Kenya (17,48–50). Lower satisfaction could be resulted from the shortage of supplies, stocking out of essential drugs, lack of ANC waiting area, absent water supply, and electricity shortage in the facilities (48,51,52). Client and professional communication was poor in this study and this might also reduce client satisfaction.

Factors Associated With Client Satisfaction

Evidence shows that patient satisfaction is highly linked to the quality of services (13,15,53). Moderately low satisfaction in the current study is consistent with the study finding conducted in Jimma. However, it is lower than findings from studies conducted in Egypt and Nigeria, whereas higher than study findingconducted in Demba Gofa. The difference might be due to a subjective nature of the subject matter. Service satisfaction should be best measured with standardized scales and tools. Nevertheless, most of these studies had measured satisfaction using simple yes or no questions where clients' response can be biased and lead to variation from place to place (17,27,37,54).

Pregnant women who were provided iron pills in one of the ANC visits were two times more likely satisfied than those who were not provided at all. This finding is different from the finding in Demba Gofa and Sierra Leone. The variation might be the difference in service provision status. Women need to charge for the supplies in other study areas while it is for free in this study area and free service couldincrease client satisfaction € (48,55). The significant association of this variable can be due to the high importance of iron/folic pills during pregnancy for both the mother and the neonate to reduce maternal complications and for organ development in the fetus (56). Women have this information before going for ANC as it is conveyed to them by health

extension workers with the 16 health extension packages that are delivered home to home in Ethiopia (57).

Women whose weight was measured during one of the ANC visits were three times more likely satisfied than their counterparts. This finding is supportable with study results in China (58). This can be true due to its importance for women to monitor their weight during pregnancy.

Pregnant women who traveled less than 60 min to reach the health facility were four times and those who traveled between 60 and 1,200 min were almost four times more likely satisfied than those who traveled more than 1,200 min. This result is similar to the study in Harar and Kenya (45,49). High probability of satisfaction with less traveling time could be related to less time consumption. Women could be fatigued traveling for a long time and less satisfied with the health service.

Similarly, clients whose consultation time was less than 30 min were almost three times more likely satisfied than those whose consultation time was 30 or more minutes and this is similar with the study result in Bahir Dar, Kenya, and Kazakhstan. This might be due to the fact that pregnant women need short and easy information and want to go back home to their duties (31,49,59). On the other hand, women who were initiated to ask question on the service never were 80% and sometimes were 68% times less likely satisfied than those who were usually initiated. This can be because they may fear and get tensioned to explain their feeling as many of them were less educated.

In summary, poor quality of health services can worsen the low ANC utilization in Ethiopia. However, study in a single district may not be sufficient to explain quality of services where the authors recommend for study including more representative study areas.

Conclusion

The overall quality of ANC services in this study was found to be low. Consequently, this result should motivate policy makers to design interventions that could improve the quality of ANC service. Additionally, proportion of the clients who were satisfied with the service was moderately low, while satisfaction was positively associated with the provision of iron/folic acid pills, measured weight, shorter travel time, and shorter consultation time and negatively associated with health care provider-initiated client to ask question. Thus, the authors recommend the stakeholder should work on increasing the supply of medication, work on reducing traveling time by increasing nearest health facilities, and giving in-services training for health professionals. Further, it is recommended to produce a standard cut-off point to measure the quality of ANC and client satisfaction for low-income countries.

This study did not address customers' self-audit on quality of services for which the authors like to recommend further study addressing this. Moreover, facility-based studies may overestimate client satisfaction and be better conducted in the community in the future.

Authors' Contributions

MA conceptualized and designed the study, supervised data collection, conducted statistical analysis, and interpreted results. BT guided the study and analysis plan and the overall activities. BT prepared the manuscript. All authors approved the manuscript in its final form and have agreed to be accountable for all aspects of the study.

Availability of Data and Materials

All data that support the findings of this study are available in this publication.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval and Consent of Participants

Ethical clearance was obtained from Jimma University Institute of Health Institutional Review Board (IRB). After objective of the study was clarified to the participants, informed verbal consent was obtained from all. Data collectors tick on the space provided in front of "yes I am willing to participate" and collected the data from volunteered participants. No personal identifier is used during data collection.

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Statement of Human Animal Rights

All procedures in this study were conducted in accordance with the Jimma University Institute of Health Institutional Review Board's approved protocols

Statement of Informed Consent

Informed verbal consent was obtained from all study participants for their anonymized information to be published in this article.

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