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Resource – Limited Settings and Process of Antenatal Care Provision by Midwives in Awka – South Local Government Area, Anambra State, Nigeria

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Absract

A health system which does not meet the minimum standard constitutes health hazard or threat to the consumers of services from such health facility. The aim of the study was to assess resource – limited settings and process of antenatal care provision by midwives in Awka - South Local Government Area (LGA), Anambra State, Nigeria. The objectives of the study were to determine the resource – limited settings for provision of antenatal care (ANC) by midwives in Awka - South LGA, Anambra State, Nigeria, to determine the process of antenatal care provision by midwives in Awka South LGA, Anambra State, Nigeria and to find out the health factors that affect antenatal care provided by midwives in Awka South LGA, Anambra State, Nigeria. The study was cross – sectional research design. The sample size constituted the entire population of the study which were 31 primary Health Centers, 1 Secondary Health Facility, 1 Tertiary Health Facility, (total = 33 Healthcare Facilities) plus 112 midwives, and 165 pregnant women). Multistage sampling technique was used for the study. Two Instruments were adopted for data collection in this study. Data generated from the study were analyzed using descriptive and inferential statistics at significance level of 0.05. The result showed resource adequacy in the secondary and tertiary health facilities (100% and 63.1% respectively) and inadequacy (38.7%) in primary health facilities. Across all the health facility levels, service delivery practices among midwives during antenatal care of pregnant women, 75% were rated as poor; of all services assessed 25% were categorized as good. Secondary health facility lacked presence of midwives officially on call at all times. Antenatal care provided by the midwives had no significant association with the midwives' years of experience, p–value 0.50. Conclusively, the study revealed a substantial disparity in resource availability and adequacy across health facility levels. Recommendations given included; Primary health facilities need to be adequately equipped, regular supervision of midwives' practices in order to identify areas of deficiencies; also training and retraining of midwives should be on going in order for them to be up to date with current best practices.

Keywords: Resource – Limited Settings, Antenatal Care Provision, Midwives, Awka – South, LGA, Nigeria.

Introduction

A health system which does not meet the accepted norms set by WHO or governmental organization can be called a low-resource setting (LRS) for healthcare [1,2] identified nine major themes that describe a low – resource setting which include financial pressure, suboptimal healthcare service delivery, underdeveloped infrastructure, paucity of knowledge, research challenges and considerations, restricted social resources, geographical and environmental factors, human resource limitations and influence of beliefs and practices. [3] Stated that antenatal care model aims to provide pregnant women with respectful, individualized, person - centered care at every contact

and to ensure that each contact delivers effective, integrated clinical practices (interventions and tests), provides relevant and timely information, and offers psychosocial and emotional support by practitioners with good clinical and interpersonal skills working in a well-functioning health system. Based on the evidence that perinatal deaths increase with only four antenatal care visits and that an increase in the number of antenatal contacts, regardless of the country, is associated with an increase in maternal satisfaction, [3] Recommends a minimum of eight contacts: five contacts in the third trimester, one contact in the first trimester, and two contacts in the second trimester. [3] Assumes each country will tailor the new model to its context based on the country's defined core package of care services and consensus on what care is provided at each contact. Contact implies an active connection between a pregnant woman and a health-care provider that is not implicit with the word "visit" [3].

It should be noted that the list of interventions like dietary, maternal and fetal assessment among others are to be delivered at each contact and details about where (the exact health facility) they are delivered and by whom (which health provider nurse, nurse assistant, midwife etc.), are not meant to be prescriptive but, rather, adaptable to the individual woman and the local context, to allow flexibility in the delivery of the recommended interventions [4,5] stated that several approaches to antenatal care are used in different countries including the traditional approach, goal directed antenatal care, focused antenatal care (FANC) and basic antenatal care (BANC). Some countries structure and develop their own approaches to suit their unique circumstances [5].

Other countries might simply adopt an approach existing elsewhere. This could create problems if the situations differ. In the case of any difference from the focused antenatal care model, an additional contact is now recommended at 20 weeks of gestation, and an additional three contacts are recommended in the third trimester, (the period from 28 weeks of gestation up to delivery), [5]. This represents the period of greatest antenatal risk for mother and baby. At these third-trimester contacts, antenatal care providers should aim to reduce preventable morbidity and mortality through systematic monitoring of maternal and fetal well-being, particularly in relation to hypertensive disorders and other complications that may be asymptomatic but detectable during this critical period [4].

Any intervention that is missed at an antenatal contact, for any reason, should in principle be included at the next contact [4,6] Stated that when seeking antenatal care services, mothers must typically enter an environment they are not familiar with and have to find their way around the facility in order to locate outpatient services. They can also feel nervous during ANC visits, as clinical spaces can be unwelcoming and crowded, and they might not be well informed about the process. Similarly, poorly planned or overcrowded spaces can affect mothers' willingness to return to the facility for postnatal care check-ups [6].

Significant social, cultural, economic and professional barriers can prevent the provision of quality ANC in low- and middle-income countries (LMICs) [7,8] stated that the most cited factors impacting antenatal care are socioeconomic status, education, and poor quality of antenatal care, and that to mitigate the barriers that prevent utilization of maternal health services, policy makers, women utilizing antenatal care, and global organizations should attempt to collaborate to enact policy changes at the local level. It is against this background that this study was conducted to determine resource – limited settings and process of antenatal care provision by midwives in Awka – South LGA Anambra State, Nigeria.

Research Questions

1. What is the resource – limited settings for provision of ANC in Awka – South LGA Anambra State, Nigeria?
2. What is the process of ANC provision by midwives in resource – limited settings in Awka South LGA, Anambra State, Nigeria?
3. What are the health factors that affect ANC provided midwives in resource – limited settings in Awka South, LGA, Anambra State, Nigeria?

Hypothesis

1. There is no significant association between the ANC provided by midwives in resource – limited settings in Awka South LGA, Anambra State, Nigeria and the midwives' year of experience.

Materials and Method

Design

The research design for this study was cross – sectional design. In cross – sectional research, researcher observe the variables without influencing them [9,10] used cross – sectional research design in their study on 'How effective is Antenatal care in preparing mothers for newborn care? An exploratory survey of lactating women in a rural Nigerian district.

Sampling Technique

Multistage sampling technique was used for the study.

Stage 1: All the Government – owned Healthcare Facilities in Awka - South LGAs in Anambra State that provide Antenatal services were purposively selected. This is to avoid skipping facilities that were either resource – limited or otherwise. Hence all the 33 Government – owned Healthcare Facilities (31 PHCs, 1 Secondary Healthcare facility and 1 Tertiary Healthcare Facilities) were selected for the study.

Stage 2: Purposive sampling was adopted to select all the 112 midwives working across all the Healthcare Facilities selected for the study. This was because they all counted in the resources that were assessed during data collection.

Stage 3: Purposive sampling was used to select Clients (expectant women who visited the selected Healthcare Facilities for Antenatal services. 5 Clients were selected from each of the selected Government – owned Health Facilities [11]. The total Clients selected from all the 33 Government – owned Health Facilities were 165.

Instrument for Data Collection

- Three (3) Checklists and one Questionnaire were used for data collection in this study. They were Facility Inventory Checklist, Antenatal care Observation Checklist, Checklist for assessing health facility factors that affect antenatal care, and Questionnaire on Client Exit Interview.

- Facility Inventory Checklist was adapted from Service Provision Assessment Survey Inventory Questionnaire developed by United Nations development fund [12]. The number of items in Facility Inventory Checklist are seventeen (17), The instrument has codes for the various options / observations; Yes /No, Always Available/Sometimes Interrupted, Large Buildings / Well – Designed, Mid-Sized One-Story Buildings, One Story Building Well Ventilated, Syringes / Other Basic Vital Tools, Human Resources Dependent On Number Of Pregnant Women, One Or More Midwives. Information elicited from the items of the instrument include whether midwife is present at the facility at all time, their means of communication (cellular phone or any other device), source of water, whether the facility is connected to national electricity grid among others. The instrument was used to collect data on the extent to which material / physical resources were available in the facilities. The response options for the items Yes / No, Availability / Non-available, Functional / Non-functional respectively. The scoring is 1 point for any response.

- Antenatal care Observation Checklist was used to determine the process of antenatal care; it was adapted from WHO (2013) antenatal care observation checklist. The number of items in Antenatal care Observation Checklist are fifteen (15), The instrument has codes for the various options / observations; Yes / No, Routinely Diagnose And Treat Sties, Diagnose But Refer Elsewhere For Treatment, No Diagnosis/ Treatment/ Referral. Information elicited from the sections of the instrument include whether the health worker introduced herself and the title, whether client was called by her appropriate name or title, asked about client's name, medication the client was taking, date that client's menstrual period began, number of prior pregnancies, asked about vaginal bleeding, fever, headaches swollen face or hands, convulsion, whether health worker washed her hands prior to examination and others. The scoring was 1 point for any option chosen or applicable on the checklist.

- Checklist for assessing Health Facility factors that affect antenatal care was adapted from Service Provision Assessment Survey Inventory developed by United Nations Development Fund [12]. Information elicited from the items include: the location of the antenatal care, availability of items like digital BP apparatus, manual BP apparatus, stethoscope, measuring tape, adult and infant weighing scale etc, and availability of drugs like Iron tablets, folic acid tablets, tetanus toxoid injection and others. Data collected with this instrument also formed part of the Facility Inventory. The response options in the instruments are: Available / Not Available for the checklist and Yes / No options. Scoring is 1 point for any response.

- Questionnaire on Client Exit Interview was used to collect data from pregnant women who receive antenatal care in order to determine areas of suboptimal antenatal care they received and areas that need quality improvement. It was also adapted from [12] Service Provision Assessment Survey Inventory. Client exit Interview has twenty-four (24) items. The instrument has codes for the various response options; Yes / No, Number Of Weeks, Number Of Visits, Yes Enough/Yes, But Not Enough, At This Facility, Other Facility, At Home, At Tba's Home, Inconvenient Operating System, Bad Previous Experience, More Expensive, Was Referred, All The Time, Most Of The Time, A Few Time, A Problem, Not A Problem. Information elicited from the items of the Questionnaire include how many weeks pregnant the client is, if the client card indicate that she

has received tetanus toxoid injection, if the client visit to the facility was the first time, if client has decided where to deliver her baby, if client felt she was treated with respect and others. Scoring is 1 point for any response

Reliability of the Instrument

Reliability tests for the instruments were done. It involved a study of 10% of the health care facility where antenatal care services are provided in Nnewi North LGA, which included the health facility, 19 midwives and 14 pregnant women that receive care from the midwives. The participants did not constitute part of the sample for the study. The data collected were coded for statistical analysis, split – half test was done, and the data were subjected to Cronbach Alpha test. A coefficient of 0.873 was obtained for the checklists while 0.923 was obtained for Client Exit Interview Questionnaire. The reliability indices were high and were therefore considered adequate for the study. The overall reliability result was 0.898.

Ethical Consideration

The research was approved by the ethics and research committee of the Health facilities where the study was conducted. Written consents were obtained from the respondents before administering the instruments. Letters of introduction were addressed to the Heads of Department in the Health facilities. The researchers visited the selected health facilities and obtained permission to gain access to the respondents who were assured that their participation in the study was voluntary. Good rapport was established between the respondents and the researchers and they were assured that their responses will not be revealed, that is, confidentiality was ensured.

Method of Data Collection

The researchers presented copies of ethical clearance to the heads of the selected Healthcare Facilities to obtain their permission and allow them access to the Health facilities. Two (2) research assistants were engaged for each Health facility for the study by the researchers. They were briefed about the purpose of the study in order to gain understanding about their role concerning the study. Collection of data were done on the days of antenatal clinic for each facility. 33 copies of the Facility inventory checklist for the facilities, 112 copies of the antenatal care observation checklist for the midwives and 165 copies of questionnaire on client exit for the clients, all were used as stipulated for data collection. The return rate was 100% for the facility inventory checklist, antenatal care observation checklist, instrument for health facility factors, questionnaire for assessing midwives training, supervisory, and organizational support.

Method of Data Analysis

Data generated from the study was analyzed using descriptive and inferential statistics. Descriptive statistics of frequency distribution and percentages were used in analyzing the demographic data and answering the research questions. Hypothesis was tested using Chi - square test to determine association between antenatal care provided by midwives in resource – limited settings in Awka South, LGA and the midwives' year of experience at 0.05 level of significance.

Results

Table 1: Sociodemographic Variables of the Respondents.

Section A: Sociodemographic Distribution of the Midwives in the study. (n =112)

Variables	Categories	Primary n=93 n(%)	Secondary n=5 n(%)	Tertiary n=14 n(%)	Total n(%)	Mean Age/ SD
Age in years	25-34	18(19.4)	0(0)	6(42.9)	24(21.4)	
	35-44	34(36.6)	4(80)	4(28.6)	42(37.5)	
	45-54	23(24.7)	1(20)	1(7.1)	25(22.3)	
	More than 55	18(19.4)	0(0)	3(21.4)	21(18.8)	41.88±9.38
Years of experience	Less than 1	27(29)	1(20)	7(50)	35(31.3)	
	5-Jan	52(55.9)	3(60)	5(35.7)	60(53.6)	
	10-Jun	4(4.3)	1(20)	0(0)	5(4.5)	
	15-Nov	2(2.2)	0(0)	1(7.1)	3(2.6)	
	More than 15	8(8.6)	0(0)	1(7.1)	9(8)	

Marital status	Married	86(92.5)	5(100)	12(85.7)	103(92)	
	Divorced	2(2.2)	0(0)	0(0)	2(1.8)	
	Single	3(3.2)	0(0)	1(7.1)	4(3.6)	
	Widowed	2(2.2)	0(0)	1(7.1)	3(2.6)	
Are you in-charge of antenatal care services?	Yes, antenatal	31(33.3)	1(20)	1(7.1)	33(29.5)	
	No	62(66.4)	4(80)	13(92.9)	79(70.5)	
Total					112(100%)	
Section B: Respondents' Pregnant Women Attending Antenatal Care					(n=165)	
Age (years)	18-25	29(18.7)	1(20)	3(60)	33(20)	
	26-35	91(58.7)	3(60)	1(20)	95(57.6)	
	36-45	35(22.6)	1(20)	1(20)	37(22.4)	30.35± 5.95
What is the Highest Level of School You Attended	Primary	11(7.1)	0(0)	0(0)	11(6.7)	
	Secondary	123(79.4)	4(80)	5(100)	132(80)	
	Tertiary	21(13.5)	1(20)	0(0)	22(13.3)	
	No formal education	0(0)	0(0)	0(0)	0(0)	
Marital Status	Yes, currently married	148(95.5)	4(80)	4(80)	156(95.5)	
	Not married but living with a man	4(2.6)	1(20)	0(0)	5(3)	
	No, not in union	3(1.9)	0(0)	1(20)	4(2.4)	
Information About Visit – Antenatal Care						
How Many Weeks Pregnant is the Client	First trimester	5(3.2)	0(0)	0(0)	5(3)	
	Second trimester	54(34.8)	1(20)	0(0)	55(33.3)	
	Third trimester	96(61.9)	4(80)	5(100)	105(63.6)	25.87± 7.28
Is this Your First Pregnancy	First pregnancy	61(39.9)	3(60)	0(0)	64(38.8)	
	Have been pregnant before	94(56.97)	2(1.2)	5(3.3)	101(61.4)	
	Total	155(93.1)	5(3.03)	5(3.03)	165(100%)	

Table 4.1: Presented the sociodemographic characteristics of midwives and pregnant women across primary, secondary, and tertiary health care facilities in terms of age, years of experience, marital status, and educational level. etc. Most midwives in primary facilities were aged 35-44 and had 1–5 years of experience. Tertiary facilities had younger midwives with 50% having less than 1 year of experience. Secondary facilities had more midwives aged 35–44. Most midwives were married across all levels. 33.3% of midwives in primary health facilities held managerial roles and were in charge of antenatal care, while this was less common in secondary and tertiary facilities.

As shown in Section B, in primary facilities, most of the respondents' pregnant women were aged 26–35, had secondary education, and were in their third trimester. Tertiary facilities had more young pregnant women (18–25) and all were in their third trimester. Education levels were 13.3% in tertiary health care facility and 80% in secondary facilities. 95.5% of the pregnant women in primary facility were married, and multiparity was 56.97% in primary health facilities.

Research Question 1: What Is The Resource – Limited Settings For Provision Of Antenatal Care By Midwives In Awka South LGA, Anambra State, Nigeria.

Table 2: Resources available at the health facilities (33 facilities) in Awka-South LGA. (n=33)

Variables	Categories	Primary n(%)	Secondary n(%)	Tertiary n(%)	Total n(%)
Presence of midwife at the facility at all times or officially on call	Yes	18(58.1)	1(100)	1(100)	20(60.6)
	No	13(41.9)	0(0)	0(0)	13(39.4)
Cellular telephone or a private cellular phone at the facility	Yes	12(38.7)	0(0)	1(100)	13(39.4)
	No	19(61.3)	1(100)	0(0)	20(60.6)
Access to email or internet via computer, mobile phones	Yes	7(22.6)	0(0)	1(100)	8(24.2)
	No	24(77.4)	1(100)	0(0)	25(75.8)
Most commonly used water source for the facility	Piped into facility	7(22.6)	0(0)	0(0)	7(21.2)
	Public tap / standpipe	5(16.1)	0(0)	0(0)	5(15.2)
	Tub well / borehole	10(32.3)	0(0)	1(100)	11(33.3)
	Unprotected dug well	0(0)	0(0)	0(0)	0(0)
	No water source	9(29)	1(100)	0(0)	10(30.3)
Water outlet from the water supply availability	Onsite	21(67.7)	0(0)	1(100)	22(66.7)
	Within 500m of facility	5(16.1)	0(0)	0(0)	5(15.2)
	Beyond 500m of facility	5(16.1)	1(100)	0(0)	6(18.2)
Water was available from that source at the time of the survey	Yes	25(80.6)	1(100)	1(100)	27(81.8)
	No	6(19.4)	0(0)	0(0)	6(18.2)
Facility connected to the national electricity grid	Yes	28(90.3)	0(0)	1(100)	29(87.9)
	No	3(9.7)	1(100)	0(0)	4(12.1)
Other sources of electricity in the facility	Yes	21(67.7)	1(100)	1(100)	23(69.7)
	No other source	10(32.3)	0(0)	0(0)	10(30.3)
Other sources of electricity in the facility (multiple sources apply)	Fuel-operated generator	16(61.5)	1(100)	0(0)	17(51.5)
	Battery-operated generator	6(23.1)	0(0)	0(0)	6(18.2)

	Solar system	4(15.4)	0(0)	1(100)	5(15.2)
Is the generator functional?	Yes	20(64.5)	1(100)	1(100)	22(66.7)
	No	11(35.5)	0(0)	0(0)	11(33.3)
Is fuel (or a charged battery) available today for the generator?	Yes	13(41.9)	0(0)	0(0)	13(39.4)
	No	18(58.1)	1(100)	1(100)	20(60.6)
Is the solar system functional?	Yes	12(38.7)	0(0)	1(100)	13(39.4)
	No	19(61.3)	1(100)	0(0)	20(60.6)
Is there charged battery storage today?	Yes	2(6.5)	0(0)	0(0)	2(6.1)
	No	29(93.5)	1(100)	1(100)	31(93.9)
During the past 7 days, was electricity (excluding any back-up generator) available during the times when the facility was open for services, or was it ever interrupted for more than 2 hours at a time?	Always available	0(0)	0(0)	0(0)	0(0)
	Sometimes interrupted	31(100)	1(100)	1(100)	33(100)
Tertiary institution; large buildings well-designed in terms of space, layout and privacy	Yes	N/A	N/A	0(0)	N/A
	No	N/A	N/A	1(100)	N/A
Secondary health facilities: mid-sized, one-story building with adequate space	Yes	N/A	0(0)	N/A	N/A
	No	N/A	1(100)	N/A	N/A
Primary health facility: one story building, well-ventilated	Yes	4(12.9)	N/A	N/A	N/A
	No	27(87.1)	N/A	N/A	N/A
Tertiary institution; ultrasound and other diagnostic tools	Yes	N/A	N/A	1(100)	N/A
	No	N/A	N/A	0(0)	N/A
Secondary facility; ultrasound, syringes, infusion and infusion set and other basic vital tools	Yes	N/A	1(100)	N/A	N/A
	No	N/A	0(0)	N/A	N/A
Primary facility; bp apparatus, thermometer, patient cots, syringes, infusion and infusion set, guidelines for pregnancy and child management	Yes	24(77.4)	N/A	N/A	N/A
	No	7(22.6)	N/A	N/A	N/A
Tertiary institution; human resources depend on the specific context and the number of pregnant women seeking care	Yes	N/A	N/A	1(100)	N/A
	No	N/A	N/A	0(0)	N/A

Secondary institution; one or more midwives	Yes	N/A	0(0)	N/A	N/A
	No	N/A	1(100)	N/A	N/A
Primary health facility; at least one midwife	Yes	29(93.5)	N/A	N/A	N/A
	No	2(6.5)	N/A	N/A	N/A
Overall result	Resource limited	12(38.7)	0(0)	0(0)	12(36.4)
	Adequate	19(61.3)	1(100)	1(100)	21(63.6)

NB: N/A = Not Applicable

Key; 0 – 49%, Gross limitation, 50 – 69% Moderate limitation, while 70 – 100% is Resource adequate.

Table 2: Presented data on the availability of resources in the 33 health facilities across Awka South LGA. The presence of midwives at the facility at all times or on official call was reported in only 60.6% of the facilities, while the remaining 39.4% lacked this critical availability. Telecommunication was 39.4% had access to cellular phones, and internet connectivity was available just 24.2% of the facilities. Regarding water supply, tube wells or boreholes were the most common source (33.3%), followed by pipe water (21.2%). 30.3% of facilities had no water source. 66.7% had water outlets on site, 81.8% had water available at the time of the survey. Electricity from the national grid was available in 87.9% of facilities, but interruptions lasting more than two hours occurred in all surveyed facilities. Fuel-operated generators were the most common alternative power source (51.5%), followed by battery-operated (18.2%) and solar systems (15.2%). However, only 39.4% of facilities had functional solar systems, and 6.1% had charged batteries available. Diagnostic tools and building standards were lacking—only one tertiary facility had ultrasound equipment, and 12.1% of primary health facilities.

The table also presented a summary assessment of the adequacy of resources across the surveyed health facilities. Only 63.6% of facilities were considered to have adequate resources for antenatal care provision, while 36.4% were rated as inadequate. Notably, all inadequately resourced facilities were primary health centers (38.7% of them).

The overall result showed 100% and 61.3 % resource adequacy in the secondary and tertiary facilities respectively, and 38.7% inadequacy (resource – limitation) in the Primary health facilities.

Research Question 2: What is The Process of Antenatal Care Provision By Midwives in Resource – Limited Settings in Awka South LGA, Anambra State, Nigeria.

Table 3: Service delivery by midwives in the health facilities. (n=112)

Variables	Categories	Primary n(%)	Secondary n(%)	Tertiary n(%)	Total n(%)
Did the midwife worker greet the client (and others present) in a friendly and respectful manner?	Yes	33(35.5)	1(20)	4(28.6)	38(33.9)
	No	60(64.5)	4(80)	10(71.4)	74(66.1)
Did the midwife worker introduce her/himself and title (midwife, nurse, etc.)	Yes	35(37.6)	1(20)	2(14.3)	38(33.9)
	No	58(62.4)	4(80)	12(85.7)	74(66.1)
Did the midwife call the client by her appropriate name or appropriate title?	Yes	75(80.6)	5(100)	5(35.7)	85(75.9)
	No	18(19.4)	0(0)	9(64.3)	27(24.1)

Did the midwife ask about or the client mention any of the following facts?					
Client's age	Yes	38(40.9)	3(60)	6(42.9)	47(42)
	No	55(59.1)	2(40)	8(57.1)	65(58)
Medication the client is taking	Yes	74(79.6)	5(100)	6(42.9)	85(75.9)
	No	19(20.4)	0(0)	8(57.1)	27(24.1)
Date that client's last menstrual period began	Yes	71(76.3)	5(100)	6(42.9)	82(73.2)
	No	22(23.7)	0(0)	8(57.1)	30(26.8)
Prior pregnancies	Yes	31(33.3)	1(20)	4(28.6)	36(32.1)
	No	62(66.7)	4(80)	10(71.4)	76(67.9)
Number of prior pregnancies	Yes	49(52.7)	3(60)	4(28.6)	56(50)
	No	44(47.3)	2(40)	10(71.4)	56(50)
Did the midwife or client discuss any of the following complications for prior pregnancies?					
Heavy bleeding during or after delivery	Yes	23(24.7)	1(20)	3(21.4)	27(24.1)
	No	70(75.3)	4(80)	11(78.6)	85(75.9)
Anemia	Yes	52(55.9)	0(0)	4(28.6)	56(50)
	No	41(44.1)	5(100)	10(71.4)	56(50)
High blood pressure	Yes	19(20.4)	0(0)	0(0)	19(17)
	No	74(79.6)	5(100)	14(100)	93(83)
Convulsions	Yes	0(0)	0(0)	0(0)	0(0)
	No	93(100)	5(100)	14(100)	112(100)
Multiple pregnancies (twins or above)	Yes	18(19.4)	1(20)	1(7.1)	20(17.9)
	No	75(80.6)	4(80)	13(92.9)	92(82.1)
Prolonged labor	Yes	15(16.1)	1(20)	1(7.1)	17(15.2)
	No	78(83.9)	4(80)	13(92.9)	95(84.8)
Caesarean section	Yes	6(6.5)	1(20)	0(0)	7(6.3)
	No	87(93.5)	4(80)	14(100)	105(93.8)
Assisted delivery (forceps, ventouse)	Yes	13(14)	1(20)	1(7.1)	15(13.4)
	No	80(86)	4(80)	13(92.9)	97(86.6)
Prior neonatal death (death of baby less than 1 month old)	Yes	16(17.2)	0(0)	3(21.4)	19(17)
	No	77(82.8)	5(100)	11(78.6)	93(83)
Prior stillbirth (baby born dead that does not breathe or cry)	Yes	19(20.4)	0(0)	3(24.3)	21(18.8)
	No	74(79.6)	5(100)	12(85.7)	91(81.3)
Prior abortion/miscarriage (loss of pregnancy)	Yes	21(22.6)	3(60)	0(0)	24(21.4)
	No	72(77.4)	2(40)	14(100)	88(78.6)
Did the midwife ask about or the client mention any of the following for current pregnancy?					
Vaginal bleeding	Yes	13(14)	3(60)	3(21.4)	19(17)
	No	80(86)	2(40)	11(78.6)	93(83)
Fever	Yes	62(66.7)	4(80)	5(35.7)	71(63.4)
	No	31(33.3)	1(20)	9(64.3)	41(36.6)
Headaches or blurred vision	Yes	38(40.9)	4(80)	4(28.6)	46(41.1)
	No	55(59.1)	1(20)	10(71.4)	66(58.9)
Swollen face or hands	Yes	47(50.5)	4(80)	3(21.4)	54(48.2)
	No	46(49.5)	1(20)	11(78.6)	58(51.8)
Convulsions or loss of consciousness	Yes	0(0)	0(0)	0(0)	0(0)
	No	93(100)	5(100)	14(100)	112(100)

Severe difficulty breathing	Yes	16(17.2)	2(40)	3(21.4)	21(18.8)
	No	77(82.8)	3(60)	11(78.6)	91(81.3)
Persistent cough for 2 weeks or longer	Yes	15(16.1)	2(40)	0(0)	17(15.2)
	No	78(83.9)	3(60)	14(100)	95(84.8)
Severe abdominal pain	Yes	15(16.1)	0(0)	2(14.3)	17(15.2)
	No	78(83.9)	5(100)	12(85.7)	95(84.8)
Foul smelling discharge	Yes	22(23.7)	0(0)	4(28.6)	26(23.2)
	No	71(76.3)	5(100)	10(71.4)	86(76.8)
Frequent or painful urination	Yes	40(43)	2(40)	5(35.7)	47(42)
	No	53(57)	3(60)	9(64.3)	65(58)
Whether the client has felt a decrease or stop in fetal movement.	Yes	0(0)	0(0)	0(0)	0(0)
	No	93(100)	5(100)	14(100)	112(100)
If there are any other problems the client is concerned about	Yes	87(93.5)	5(100)	6(42.9)	98(87.5)
	No	6(6.5)	0(0)	8(57.1)	14(12.5)
Did the midwife wash his/her hands with soap or use alcohol hand rub prior to examination?	Yes	21(22.6)	1(20)	3(21.4)	25(22.3)
	No	72(77.4)	4(80)	11(78.6)	87(77.7)
Did the midwife perform any of the following procedures?					
Take client's blood pressure in sitting or lateral position	Yes	90(96.8)	5(100)	7(50)	102(91.1)
	No	3(3.2)	0(0)	7(50)	10(8.9)
Examine hands for edema	Yes	20(21.5)	3(60)	2(14.3)	25(22.3)
	No	73(78.5)	2(40)	12(85.7)	87(77.7)
Perform or refer for urine test	Yes	85(91.4)	5(100)	6(42.9)	96(85.7)
	No	19(20.4)	0(0)	2(14.3)	16(14.3)
Check for signs of anemia	Yes	84(90.3)	5(100)	5(35.7)	94(83.9)
	No	9(9.7)	0(0)	9(64.3)	18(16.1)
Palpate the client's abdomen for uterine height	Yes	89(95.7)	5(100)	7(50)	101(90.2)
	No	4(4.3)	0(0)	7(50)	11(9.8)
Listen to the client's abdomen for fetal heartbeat	Yes	89(95.7)	5(100)	7(50)	101(90.2)
	No	4(4.3)	0(0)	7(50)	11(9.8)
Perform or refer for a syphilis test	Yes	71(76.3)	4(80)	7(50)	82(73.2)
	No	22(23.7)	1(20)	7(50)	30(26.8)
Did the midwife ask about or the client mention her HIV status	Yes	47(50.5)	2(40)	5(35.7)	54(48.2)
	No	46(49.5)	3(60)	9(64.3)	58(51.8)
Counseling and outcome					
Counseling on recommended minimum of 8 ANC visits for each pregnancy	Yes	2(2.2)	0(0)	1(7.1)	3(2.7)
	No	91(97.8)	5(100)	13(92.9)	109(97.3)
Did the midwife use any visual aids for health education or counseling during the consultation?	Yes	2(2.2)	0(0)	0(0)	2(1.8)
	No	91(97.8)	5(100)	14(100)	110(98.2)
Did the midwife speak using easy-to-understand language for the client?	Yes	90(96.8)	5(100)	6(42.9)	101(90.2)
	No	3(3.2)	0(0)	8(57.1)	11(9.8)

Did the midwife look at the client's health card/ booklet, either before beginning the consultation or while collecting information or examining the client	Yes	90(96.8)	5(100)	7(50)	102(91.1)
	No	3(3.2)	0(0)	7(50)	10(8.9)
Did the midwife write on the client's health card?	Yes	55(59.1)	3(60)	5(35.7)	63(56.3)
	No	38(40.9)	2(40)	9(64.3)	49(43.8)
Do antenatal care providers in this facility routinely diagnose and treat STI	Routinely diagnose and treat STIs	57(61.3)	2(40)	5(35.7)	64(57.1)
	Diagnose but refer elsewhere	36(38.7)	3(60)	9(64.3)	48(42.9)
	Refer elsewhere in facility for diagnosis and treatment	0(0)	0(0)	0(0)	0(0)
	Refer outside facility for diagnosis and treatment	0(0)	0(0)	0(0)	0(0)
	No diagnosis/ treatment/ referral	0(0)	0(0)	0(0)	0(0)
Do you have the national antenatal care guidelines available	Yes, observed	2(2.2)	0(0)	0(0)	2(1.8)
	No, not observed	91(97.8)	5(100)	14(100)	110(98.2)
Overall Level of Antenatal care	Poor	70(75.3)	4(80)	10(71.4)	84(75)
	Good	23(24.7)	1(20)	4(28.6)	28(25)

Key: Result; 0 – 49%, Poor Antenatal care, 50% and above is Good Antenatal care.

Table 3: Shows the service delivery practices among midwives during antenatal care of pregnant women. Basic client engagement practices showed that 33.9% of midwives greeted clients respectfully, and the 33.9% introduced themselves. The use of the client's appropriate name was 75.9%. Regarding clinical history-taking, 75.9% of midwives asked about medications, and 73.2% asked about the last menstrual period. 50% inquired about the number of previous pregnancies, and 32.1% asked about prior pregnancies. Screening for complications of prior pregnancies were 24.1% asked about heavy bleeding, 50% asked about anemia, and none inquired about convulsions. For current pregnancy symptoms, common danger signs were only 41.1% asked about headaches or blurred vision, 48.2% indicated / examined for swollen hands/face, and none asked fetal movement. Hand hygiene indicated that 22.3% of midwives inquiry about washing hands or using alcohol rubs. While most facilities performed essential procedures like taking blood pressure (91.1%) and palpating the abdomen (90.2%), assessments like urine tests (85.7%) and syphilis tests (73.2%) were inconsistently done. Counseling services showed that 2.7% informed clients about the recommended eight ANC visits, and 1.8% used visual aids. Communication showed with 90.2% using easy-to-understand language, but documentation was inconsistent, with 56.3% recording on health cards. Across all facility levels, 75% of the services were rated as poor. Among primary health

facilities, 75.3% provided poor care, while secondary and tertiary facilities had slightly better outcomes, with 80% and 71.4% classified as poor respectively. Generally, 25% of all services assessed were categorized as good.

Research Question 3: What are The Health Facility Factors That Affect Antenatal Care Provided By Midwives in Resource – Limited Settings in Awka South LGA, Anambra State, Nigeria.

Table 4: Health facility factors that affect antenatal care provided by midwives in resource – limited settings in Awka South LGA. (n=33)

Variables	Categories	Primary n(%)	Secondary n(%)	Tertiary n(%)	Total n(%)
Is this the same location as the outpatient service site?	Yes	25(80.6)	1(100)	1(100)	27(81.8)
	No	6(19.4)	0(0)	0(0)	6(18.2)
Digital BP apparatus	Available	18(58.1)	1(100)	0(0)	19(57.6)
	Not available	13(41.9)	0(0)	1(100)	14(42.4)
Manual BP apparatus	Available	22(71)	1(100)	1(100)	24(72.7)
	Not available	9(29)	0(0)	0(0)	9(27.3)
Stethoscope	Available	24(77.4)	1(100)	1(100)	26(78.8)
	Not available	7(22.6)	0(0)	0(0)	7(21.2)
Measuring tape	Available	27(87.1)	1(100)	1(100)	29(87.9)
	Not available	4(12.9)	0(0)	0(0)	4(12.1)
Adult weighing scale	Available	27(87.1)	1(100)	1(100)	29(87.9)
	Not available	4(12.9)	0(0)	0(0)	4(12.1)
Fetal stethoscope/pin nard	Available	25(80.6)	1(100)	1(100)	27(81.8)
	Not available	6(19.4)	0(0)	0(0)	6(18.2)
Iron tablets	Observed	23(74.2)	1(100)	1(100)	25(75.8)
	Not observed	8(25.8)	0(0)	0(0)	8(24.2)
Folic acid tablets	Observed	22(71)	1(100)	1(100)	24(72.7)
	Not observed	9(29)	0(0)	0(0)	9(27.3)
Combined iron and folic acid tablet	Observed	17(54.8)	1(100)	0(0)	18(54.5)
	Not observed	14(45.2)	0(0)	1(100)	15(45.5)
Calcium tablets	Observed	23(74.2)	1(100)	1(100)	25(75.8)
	Not observed	8(25.8)	0(0)	0(0)	8(24.2)
Antenatal multiple micronutrient supplements	Observed	21(67.7)	1(100)	1(100)	23(69.7)
	Not observed	10(32.3)	0(0)	0(0)	10(30.3)
Sp for IPTP	Observed	22(71)	1(100)	1(100)	24(72.7)
	Not observed	9(29)	0(0)	0(0)	9(27.3)
Tetanus toxoid vaccine	Observed	23(74.2)	1(100)	1(100)	25(75.8)
	Not observed	8(25.8)	0(0)	0(0)	8(24.2)
Insecticide treated bed nets and/or ITN vouchers	Observed	0(0)	0(0)	0(0)	0(0)
	Not observed	31(100)	1(100)	1(100)	33(100)
You have seen openly displayed breastmilk substitutes and related products	Displayed	0(0)	0(0)	0(0)	0(0)
	Not displayed	31(100)	1(100)	1(100)	33(100)
Overall Level of equipment	Very poor	8(25.8)	0(0)	0(0)	8(24.2)
	Moderate	2(6.5)	0(0)	0(0)	2(6.1)
	Adequate	21(67.7)	1(100)	1(100)	23(69.7)

Key: Result; 0 – 49%, Very poor level of equipment, 50 – 69%, Moderate level of equipment, while 70 – 100% is Resource adequate.

Table 4: Presented various factors that affected the delivery of antenatal care by midwives in the facilities in Awka – South LGA. It showed that 81.8% of facilities conducted ANC services in the same location as outpatient services. Basic equipment availability 57.6% had a digital blood pressure apparatus, while 72.7% had a manual one. Stethoscopes were available in 78.8% of facilities, and measuring tapes and adult weighing scales were each available in 87.9%. Fetal stethoscopes (pin nards) were available in 81.8% of facilities. Essential supplements such as iron tablets (75.8%), folic acid (72.7%), and calcium (75.8%) were generally available. However, 54.5% had combined iron and folic acid tablets. Although 72.7% had sulfoxide-pyrimethamine (SP) for IPTp and 75.8% had tetanus toxoid vaccines, none of the facilities had insecticide-treated bed nets or openly displayed breast milk substitutes.

Hypothesis

1. There is no significant association between antenatal care provided by midwives in resource – limited settings in Awka – South LGA Anambra State, Nigeria and the midwives' years of experience.

Table 5: Chi – Square test of Association between midwife's years of experience and their quality of antenatal care.

		Poor antenatal care	Good antenatal care	X^2	P
Years of experience	<1	27(77.1)	8(22.9)	3.35	0.50
	1-5	46(76.7)	14(23.3)		
	6-10	4(80)	1(20)		
	11-15	1(33.3)	2(66.7)		
		Their			
	>15	6(66.7)	3(33.3)		

*** = significant p-value at <0.05**

There is no significant association between the ANC provided by midwives in resource limited settings in Awka-South LGA of Anambra State and the midwife's years of experience. Therefore, we accepted the null hypothesis because the result indicated Chi – square of 3.35 with p – of 0.50.

Discussion

Research Question 1: What is the Resource – Limited Settings for Provision of Antenatal Care in Awka-South, LGA, Anambra State, Nigeria.

Result on the availability of resources in 33 health care facilities across Awka - South LGA, showed that midwives were present in (60.6%) of the facilities at all times or on official call while the remaining 39.4% lacked this critical availability (Table 2). This might be because the facilities were government – owned, and as such midwives were employed to render antenatal care unlike facilities that are private – owned, were untrained personnel carry out such services. The overall result showed 100% resource adequacy in the secondary and tertiary health facilities respectively, with 61.3% and 38.7% inadequacy (resource – limitation) in the primary health facilities, indicating a substantial disparity in resource allocation between facility levels. These findings were in line with the findings of [13] on their study on Unravelling 'low – resource settings': a systematic scoping review with qualitative content analysis in Cape town, South Africa. The themes that emerged from their study relate to financial pressure, suboptimal healthcare service, underdeveloped infrastructure and others. They concluded that the review may lay the foundation for healthcare administrators, clinicians, researchers and other stakeholders to move away from assumptive umbrella terms, and more actively and purposefully engage with resource limitations in their respective contexts. More importantly, improving understanding of the concept of low resource settings may aid in the transferability of research findings from one setting to another, through improved

transparency and reporting.

Research Question 2: What is the Process of Antenatal Care Provision by Midwives in Resource – Limited Settings in Awka- South, LGA, Anambra State, Nigeria.

Findings from the study showed the service delivery practices among midwives during antenatal care of pregnant women. Across all facility levels indicated most (75%) of the services were rated as poor (Table 3). Among Primary health, most (75.3%) provided poor care while secondary and tertiary facilities had slightly better outcomes with 80%, majority of the midwives 68 (86.1%) had poor antenatal care and 71.4% classified as poor respectively. Generally, only 25% of all services assessed were categorized as good (Table 3). This means that care rendered by most midwives in Awka LGA, Anambra state were not quite in line with the [4] process of antenatal care, most the midwives did not counsel the pregnant women on the recommended minimum of 8 antenatal visits and did not use visual aids for health education or counselling etc. These findings are in line with the study conducted by [14] determinants of frequency and contents of antenatal care visits in Bangladesh: assessing the extent of compliance with the [4] recommendations. They concluded that unsatisfactory level of coverage of and content of antenatal care visits have been observed in Bangladesh, incorporating identified risk factors into short- and long-term strategies would help improve the coverage and contents, and thus quality of antenatal care services. The study also conforms to the findings of [15] who reported variable performance of routine antenatal care services, and that poor performance was observed for appropriate history taking, attention for client's well – being and others. The study was in contrast with the findings from the study by [16] on enhancing focused antenatal care in Ghana: an exploration into perceptions of practicing midwives, they concluded that the midwives in the study perceived focused antenatal positive, and that it contributed to the quality antenatal care delivery.

Research Question 3: What are the Health Facility Factors That Affect Antenatal Care Provision by Midwives in Resource – Limited Settings in Awka-South, Lga, Anambra State, Nigeria.

Findings from the study showed overall availability of essential antenatal equipment in the facilities. No secondary or tertiary facilities fell into very limited or limited categories, emphasizing the disparity in equipment availability across facility levels (Table 4). The study is in line with the study conducted by [17] on dissecting antenatal care inequalities in Madhesi, western Nepal. They concluded that a significant number of mothers had initiated antenatal care late and received suboptimal care. The findings from study is also in line with the study conducted by [18] on input, process and output factors contributing to quality of antenatal care services in Kathmandu, Nepal. From their findings they concluded that several input and process factors influenced the provision and utilization of optimum quality antenatal care services like availability of trained workforces, commodities and guidelines.

Hypothesis 1: There Would be no Significant Association Between the Anc Provided by Midwives in Resource – Limited Settings in Awka South LGA, Anambra State, Nigeria and the Midwives' Year of Experience.

The absence of significant association between the midwives' years of experience and the antenatal care they provided (table 5) calls for criticism. In the researchers' opinion, there is need to assess these experienced midwives to ascertain why their performance was not in commensurate with the ANC they rendered [18], in their study on levels and determinants of quality ANC in Bangladesh, noted that trained and experienced midwives at the field level with sufficient logistic support, should be effectively engaged in order to ensure quality antenatal care.

Conclusion

The findings from the study revealed a substantial disparity in resource availability between facility levels, some midwives at primary health facilities were short of most resources like water, electricity, telephone and so on. There was no functional ambulance or other vehicle for emergency transportation stationed across all health facilities, and no written plan for natural disaster emergency across all health facilities. In addition, there was no significant association between the antenatal care provided by the midwives in resource – limited settings and the midwives years of experience.

Recommendations

Based on the findings of the study, the followings were recommended:

1. Primary health facilities need to be adequately equipped.
2. Regular supervision of midwives practices in order to identify areas of deficiencies and for such to be properly addressed.
3. Antenatal care service delivery is to be planned in such a way that waiting time will not be a problem and cost of service is expected to be affordable by the pregnant women.

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