integrity Research Journals

Journal of Public Health and Diseases
Volume 8(2), pages 62-68, June 2026
Article Number: 517E70F11
ISSN: 2705-2214
https://doi.org/10.31248/JPHD2026.188
https://integrityresjournals.org/journal/JPHD

Full Length Research

Health profile assessment outcome among pregnant women in Nembe LGA, Bayelsa State, Nigeria

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Received Date: 08 May 2026 | Accepted Date: 10 June 2026 | Published Date: 30 June 2026

ABSTRACT: This study assessed the maternal health profile of pregnant women during pregnancy in Nembe Local Government Area, Bayelsa State. A descriptive study design was adopted, and 178 participants who voluntarily agreed to be part of this study were selected using structured questionnaires. Instruments used for data collection included a sphygmomanometer, stethoscope, bathroom weighing scale, meter rule, microhematocrit reader, capillary tubes and hematology analyzers to obtain all the required parameters considered for this study. The findings revealed that a high proportion of the pregnant women were educated and possessed adequate knowledge regarding the importance of maintaining good health during pregnancy. Trading (58.43%) and Christianity (84.27%) were identified as the predominant occupation and religion practiced among the respondents. Most respondents systolic and diastolic blood pressure values ranges between 100–110 mmHg and below 60–65 mmHg while only 2.81% and 1.12% of the women were hypertensive. The mean arterial pressure of the respondents ranged between 74.03 to 88.89 mmHg. In terms of haemoglobin concentration, 42.13% and 39.33% of the respondents had values within 13–14 g/dl and 14.1–15 g/dl. Packed cell volume results showed that 51.69% had values between 31–35%, 17.4% had 36–40%, and 3.37% had values above 40%, while 27.53% had values below 30%. The anthropometric indices were 22.68 kg/m² and 24.75 kg/m² that are within normal range, whereas 28.22 kg/m² and 30.92 kg/m² were overweight and obese. In conclusion, the findings from this study are encouraging; however further studies should incorporate the nutritional status of pregnant women and emphasize the importance of regular medical check-ups in the study area. Adequate knowledge of antenatal care (ANC) during pregnancy contributes significantly to good maternal and fetal health outcomes. The government should also implement public enlightenment campaigns aimed at improving maternal health in the Nembe Local Government Area of Bayelsa State.

Keywords: Health, Nembe, outcome, pregnancy, weight.

INTRODUCTION

Pregnancy is the rapidly developing period of an embryo that attaches itself to the endometrium from the last menstrual cycle in about 40 weeks (Curtis *et al.,* 2011; Graves *et al.,*2018). Poor maternal health during pregnancy is usually accompanied by complications like anaemia, preterm birth and maternal death (WHO, 2007).

Despite improvements in maternal healthcare services, pregnant women continue to experience preventable health challenges due to inadequate antenatal care and poor nutrition. Regular antenatal care and early identification of poor maternal health are strategies for improving pregnancy outcomes and reducing maternal mortality (Egbuniwe *et al*., 2016; Nwabueze *et al.,* 2023). Nigeria bears a significant proportion of the maternal health burden in Africa, with Bayelsa State, inclusive and particularly in Nembe LGA, where maternal health challenges remain a public health issue despite the presence of health facilities (Oweibia *et al.,* 2025).

Limited health awareness and inconsistent utilisation of antenatal services affect the health status of pregnant women (Uvoh *et al.,* 2025a). Pregnancy-induced hypertension and premature delivery restrict infant growth with complications that provide a signal regarding the cardiovascular adaptability of the physiological stress of the mother. Pregnant women maintaining regular ANC will help to identify early signs of pregnancy-induced complications like diabetes, etc. (Graves *et al.,* 2018). Mortality rate associated with complications from pregnancy due to hypertension, either prior to pregnancy or during pregnancy and other hypertensive effects have been on the rise (Arantes *et al.,* 2016). Pregnant women developing complications such as hypertension, reduced birth weight, packed cell volume, proteinuria, dyspnea and maternal death in Bayelsa state are on the increase due to environmental pollution (Ikeh-Tawari *et al.,* 2013). Ibrahim *et al.* (2012) also observed a maternal mortality ratio of 717.4 in every 100,000 births due to complications in the Niger Delta region. Therefore, the objective of this study is to assess the maternal health profile among pregnant women during their pregnancy period in Nembe LGA, Bayelsa State.

MATERIALS AND METHODS

This study employs a cross-sectional descriptive qualitative research method with a semi-structured questionnaire to obtain the required data.

Study location

The study was conducted in Nembe Local Government Area of Bayelsa State, Nigeria.

Study population and sample size

One hundred and seventy-eight pregnant women were randomly selected within Opu-Nembe and Basambiri communities in Nembe Local Government Area of Bayelsa State for this study. The sample size was calculated using Jaykaran and Tamoghna's formula with an estimated proportion of 11.98% from previous studies regarding poor maternal health care during pregnancy among pregnant women in some communities in Bayelsa state (Onokpite *et al*., 2024; 2025).

$N = pq/ (e/1.96)^2$

Where n = sample size not yet known, PQ = proportion of regular respondents regarding poor maternal health care during pregnancy. e = margin of sampling error tolerated at 95% degree confident interval, at 5% of 0.05. q =100 – p.

$N = 11.98x88.02/(5/1.96)^2$

n=1,054/6.50

= 162.15 participants

Adjusting for non-response rate of 10%

= 10/100 X 162.15 = 0.1 x 16.15= 16.215

Sample size =162.15+16.215

178 respondents will be recruited as participants for this study as the sample size.

Inclusion criteria: Only confirmed pregnant women residing in Nembe local government area and pregnant women within the ages of 18-45 years were allowed to participate in this study after obtaining informed consent from them.

Exclusion criteria: Pregnant women below 18 and above 45 years, including those residing outside the Nembe local government area, were excluded from this study. Also excluded were non-pregnant women.

Instrument for data collection

Data for this study were collected using a structured questionnaire designed to obtain relevant information from the respondents. Anthropometric and physiological measurements, including weight, height, blood pressure, and pulse rate, were also obtained using standard procedures.

Sources of data

The study utilised primary data obtained directly from the respondents through questionnaire administration and physical measurements.

Table 1. Demographic variables amongst the study population.

S/N	Variables	Category	Frequency (n)	%
1	Age (years)	18-22	44	24.72
		23-27	57	32.02
		28-32	40	22.47
		33-37	20	11.24
		38-42	17	9.55
2	Marital Status	Single	92	51.69
		Married	86	48.31
3	Educational Status	Primary	15	8.43
		Secondary	82	46.07
		Tertiary	81	45.50
4	Occupation	Trading Farming	104	58.43
		Civil Servant	36	20.22
		Farming	38	21.35
5	Religion	Christianity	150	84.27
		Muslim	5	2.81
		ATR	23	12.92

Key: ATR = African Traditional Religion (Source: Field survey, 2026).

Weight and Height Measurement

Body weight of the respondents was measured using a calibrated Camry mechanical bathroom scale (Model BR912, China) and recorded in kilograms (kg). Height was measured in meters (m) using a calibrated meter rule with respondents standing upright without shoes. A 10 cm ruler was used to align the hair at the occipital region to ensure accurate measurement.

Measurement of blood pressure

Blood pressure was measured using an Acuson mercurial sphygmomanometer (England) fitted with an appropriate cuff size. Measurements were taken from either the left or right arm after the respondents had rested for approximately 10 minutes in a seated position. The highest reading obtained was recorded.

Pulse rate measurement

Pulse rate was assessed from the radial artery at the anatomical snuff box while the respondent was in a sitting position. The pulse count was taken for 60 seconds and recorded in beats per minute.

Data analysis

Data were analysed using SPSS version 25.0, Chicago, USA and results expressed using frequency, tables and standard deviation.

Ethical consideration

Before conducting this study, institutional ethical approval was duly obtained from the Research and Ethnics Committee.

RESULTS

Table 1 shows that the women within the ages of 23-27years (32.02%) were the most respondents, followed by age 18-22 years (24.72%) and 28-32years (22.47%). The marital status was closely related, i.e., single (51.69%) compared to married respondents (48.31%). Their educational status was mainly secondary (46.07%) and tertiary (45.50%). The respondents were predominantly Christians (84.27%).

The results in Table 2 show that the perfusion pressure (MABP) was above 70 mmHg across the various age groups, i.e., between 74.03- 88.89 mmHg among the respondents, while the pulse rates were above 80 beats per minute. The systolic blood pressure was 123 mmHg and diastolic 71 mmHg among pregnant women within the ages of 38-42years. Also, pregnant women within the ages of 18-22, 23-27 and 28-32 years had blood pressures of 97/62, 101/61 and 101/67 mmHg, respectively.

Table 3 shows the anthropometric indices of respondents

Age (yrs)	Systolic BP (mmHg)	Diastolic BP (mmHg)	MABP	Pulse (b/m)
18-22	97.69±10.13	62.22±8.33	74.04±3.34	85.31±10.12
23-27	101.18±8.57	61.82±11.68	74.94±6.00	84.86±11.81
28-32	101.25±9.57	67.86±11.22	74.96±5.13	87.78±10.12
33-37	104.00±10.75	66.67±12.25	79.11±4.33	85.86±12.63
38-42	123.33±8.17	71.67±7.53	88.89±0.97	86.65±11.10
P-value	0.00	0.03	0.00	0.13

NB: Low Systolic & Diastolic blood pressure: <90/60 (mmHg); Normal: 90-119/69-79 (mmHg); Pre-hypertension: 120-139/80-89 (mmHg); Hypertension: >140/90 (mmHg); MABP = Mean arterial blood pressure [Source: **(**ESC/ESH, 2024) Classification].

Table 3. Anthropometric indices of the respondents according to age (years).

Variable	Age				P-value
	18-25	26-30	31-35	36-42	
Weight (kg)	60.30±5.23	62.47±11.97	73.14±16.15	75.25±15.47	0.00
Height (m)	1.56±0.04	1.66±0.06	1.61±0.08	1.56±0.05	0.08
BMI (kg/m²)	24.75±3.71	22.68±5.67	28.22±6.34	30.92±7.55	0.04

NB: Significant is considered at p- values <0.05.

Table 4. PCV/ HB values of the study population.

Variable	Age				P-value
	18-25	26-30	31-35	36-42	
Pack cell volume (%)	33.06±3.69	33.46±3.65	35.38±5.34	31.63±3.80	0.04
Hemoglobin (g/dl)	13.71±0.84	13.59±0.62	14.01±0.61	14.29±0.42	0.00

NB: Significant is considered at p- values <0.05.

Table 5. Systolic blood pressure of the respondents.

S/N	Variable [Systolic (mmHg)]	Frequency (n)	Percentage (%)
1	< 100	34	19.101
2	100-110	90	50.562
3	111-115	-	-
4	116-120	29	16.292
5	121-125	2	1.124
6	126-130	5	2.809
7	131-139	13	7.303
8	>140	5	2.809

Source: Field survey 2026.

according to age group. Mean body weight increased with age, from 60.30 ± 5.23 kg among respondents aged 18–25 years to 75.25 ± 15.47 kg among those aged 36–42 years, with a significant difference across the age groups (p = 0.00). Height did not differ significantly among the age groups (p = 0.08). BMI also increased with age, ranging from 22.68 ± 5.67 kg/m² in respondents aged 26–30 years to 30.92 ± 7.55 kg/m² among those aged 36–42 years, and the difference was statistically significant (p = 0.04).

Table 4 shows that respondents within the category of age 36 and above had the lowest packed cell volume (31.63%) while those aged 31-35 years had the highest PCV of 35.38% among the study population.

Table 5 indicates that the most respondents' systolic blood pressure falls within 100-110 mmHg (50.562%), followed by respondents with 80-90 mmHg (19.101%), and

Table 6. Diastolic blood pressure of the respondents.

S/N	Variable [Diastolic blood pressure (mmHg)]	Frequency (n)	Percentage (%)
1	<60	57	32.02
2	60-65	72	40.45
3	66-70	32	17.98
4	71-79	-	-
5	80-89	15	8.43
6	>90	2	1.12
Total		178	100

Source: Field survey 2026.

Table 7. Packed cell volume of the respondents.

S/N	PCV (%)	Frequency (n)	Percentage (%)
1	<30	49	27.53
2	31-35	92	51.69
3	36-40	31	17.41
4	>40	6	3.37

Source: Field survey 2026.

less than 100 mmHg. The least among the group was 121-125 mmHg of 1.12% among the study population in Nembe LGA.

Table 6 shows participants with a diastolic blood pressure of 40.45% (60-65 mmHg). This was closely followed by respondents (32.02%) whose blood pressure falls within less than 60 mmHg.

Table 7 shows 51.69%, 27.53% among respondents having PCV of 31-35 and less than 30 per cent values. However, the least PCV percentage value was among respondents with >40 (3.37%) in Nembe LGA.

DISCUSSION

The demographic survey from this study shows that pregnant women within the ages of 23-27 years make up the highest percentage population (32.02%) in this study, while those aged 38-42 years make up the least percentage (9.55%). Their marital status shows 51.69% and 48.31% are single and married, which is not in agreement with the previous study of 71.875% married and 25.000% single conducted in Yenagoa among women (Uvoh *et al.,* 2025b). This study also shows that the respondents are educated because 46.07% and 45.50% has obtained secondary and tertiary education certificates, respectively. Trading (58.43%) was the main occupation of the women, followed by farming (21.35%) and civil service work (20.22%), while Christianity was the major religion practised in Nembe Local Government Area of Bayelsa State. It is a well-known fact that socio-cultural factors play a key role in influencing the cardiovascular outcome of pregnant women (Mgbahurike *et al.,* 2021).

Hemoglobin

The study observed normal haemoglobin concentrations across all age groups of pregnant women. The findings further revealed that pregnant women aged 36–42 years had the lowest packed cell volume (PCV) value of 31.63% but recorded the highest mean haemoglobin level of 14.29 g/dl, with a statistically significant difference ($p = 0.00$). In addition, none of the respondents had haemoglobin levels below 12 g/dl. The findings of this study differ from those reported by Ahmed *et al*. (2018), who observed a reduction in haemoglobin levels among pregnant women compared with non-pregnant women, although the difference was not statistically significant in their study.

Blood pressure

Observations from this study showed that most respondents had systolic blood pressure within the range of 100–110 mmHg (50.56%). Other respondents recorded systolic blood pressure values of less than 100 mmHg (19.10%), 116–120 mmHg (16.29%), 126–130 mmHg (2.81%), 131–139 mmHg (7.30%), and above 140 mmHg (2.81%). For diastolic blood pressure, the highest proportions were observed among respondents with values of 80–90 mmHg (8.43%) and above 90 mmHg (1.12%), while the remaining

respondents had values within the normal range.

The prevalence of hypertension among pregnant women in Nembe Local Government Area observed in this study (2.81%) differs from the findings of Akhigbe *et al*. (2025), who reported hypertension prevalence rates of 9.6% and 8.0% among pregnant women attending antenatal care at the Niger Delta University Teaching Hospital (NDUTH), Yenagoa, Bayelsa State. Similarly, Uvoh *et al*. (2021b) reported a hypertension prevalence of 2.33% among pregnant women in Yenagoa during the third trimester, while lower prevalence rates were observed during the first trimester (0.33%) and second trimester (0.66%). Variations in blood pressure across different stages of pregnancy have also been documented by Rebelo *et al*. (2015).

The mean statistical values obtained in this study revealed significantly higher blood pressure among pregnant women aged 38–42 years, with a mean value of 123.33/71.67 mmHg, although these values still fell within the normal range. Lower mean systolic blood pressure values were recorded among pregnant women aged 33–37 years (104.00 mmHg), 28–32 years (101.25 mmHg), 23–27 years (101.18 mmHg), and 18–22 years (97.69 mmHg). A similar age-related increase was also observed in diastolic blood pressure among the respondents in Nembe Local Government Area. These findings are consistent with the study by Uvoh *et al*. (2021a,c), who also reported significant increases in both systolic and diastolic blood pressure with increasing maternal age among pregnant women in Bayelsa State.

Furthermore, adequate knowledge of the importance of antenatal care (ANC) during pregnancy contributes positively to maternal and fetal health outcomes. This supports the findings of Nwabueze *et al*. (2023), who emphasised that proper utilisation of ANC services promotes healthier outcomes for both mothers and their unborn children.

Anthropometric

The anthropometric parameters show normal weight among pregnant women within the ages of 18-30years, overweight among 31-35 years and obese among 36-42 years. However, pregnant women typically develop increased body weight due to increased blood volume to meet fetal demands, in addition to pregnancy-related organ growth, including the developing embryo/fetus (de Haas *et al*., 2016). Anthropometric studies of women before pregnancy are vital for maternal health outcomes during pregnancy (Michael *et al*., 2016; Agofure *et al*., 2019). Hence, Uvoh *et al* (2021a) concluded in his research study that weight gain patterns during pregnancy are most likely related to pre-pregnancy body mass index, thus healthy pregnant women having normal BMI of 18.5-24.9k g/m² before pregnancy are expected to experience increase weight of about 11.3-16 kg ie 1kg to 1.5 kg during the first trimester and 1.5-2 kg/m² during second trimester monthly till birth. Though younger adults are expected to gain more weight due to increased tissue growth (Nordin *et al.,* 2018).

Packed cell volume

The packed cell volume (PCV) of the study population showed a gradual increase across the age groups from 18–25 years to 31–35 years, with mean values of 33.06%, 33.46%, and 35.38%, respectively, among pregnant women in Nembe Local Government Area. However, a decline in PCV value was observed among pregnant women aged 36–42 years, with a mean value of 31.63% compared to the other age groups. The findings of this study differ from those of Akhigbe *et al*. (2025), who reported 36.4% mild anaemia and 22.8% moderate anaemia among pregnant women in Bayelsa State. In contrast, the present study recorded 27.53% mild anaemia with no cases of moderate anaemia. Similarly, a study conducted at the Federal Medical Centre (FMC), Abuja, reported that 24.5% and 1.2% of expectant mothers had moderate and mild PCV levels, respectively, while 74.6% had normal PCV values (Ubosi *et al*., 2024).

Conclusion

This study revealed that the overall maternal health status of pregnant women in Nembe Local Government Area was generally satisfactory. Most of the respondents were educated and demonstrated positive health indicators during pregnancy, including normal haemoglobin concentration, packed cell volume, blood pressure, and anthropometric measurements. Although a small proportion of the pregnant women were hypertensive and some older age groups showed increased blood pressure and obesity, the majority of the values recorded remained within normal physiological ranges. The findings also suggest that educational attainment and proper utilisation of antenatal care services may have contributed positively to the favourable maternal health outcomes observed among the respondents.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

ACKNOWLEDGEMENT

We sincerely acknowledge the moral, academic and fatherly supportive role of Prof Barclays Ayakoroma F to the overall success of this study.

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