www.jcimcr.org

JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Review Article

Open Access, Volume 2

Evaluation of antenatal care utilization studies in Nigeria from 1990-2020: A narrative review

***Corresponding Author: Nwabanne Amarachi Triumph & Ogbonna Brian Onyebuchi**

Department of Clinical Pharmacy and Pharmacy Management, Faculty of Pharmaceutical Sciences, Nnamdi Azikiwe University, Awka, Nigeria.

Email: nwabanneamarachi@gmail.com & bo.ogbonna@unizik.edu.ng

Received: Sep 21, 2021

Accepted: Dec 17, 2021

Published: Dec 24, 2021

Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/1509

Keywords: antenatal care; services; service utilization; nigeria; narrative review; maternal Health; health survey.

Abbreviations: ANC: Antenatal Care; NDHS: Nigeria Demographic and Health Survey; NARHS: National HIV & AIDS and Reproductive Health Survey; WHO: World Health Organization; FANC: Focused Antenatal Care; PHC: Primary Health Centre; LGA: Local Government Area; MDG: Millenium Development Goal; SDG: Sustainable Development Goal.

Abstract

Background: In Nigeria and other developing countries, there are still recorded high cases of maternal and perinatal mortality rates which can be attributed to the general under utilization of antenatal care (ANC) services which varies across variables. Antenatal care still remains the proven approach targeted to improving the quality and efficacy of ANC and also improving the overall health outcome of mother and child. The new model recommends a minimum of 8 contacts during the entire course of a woman's pregnancy in order to reduce drastically incidences of maternal and perinatal mortality and to also enhance the woman's experience of care during pregnancy.

Objective: This study presented an overview of Antenatal Care Service Utilization Studies and Services in Nigeria and generated information for intervention and policy making.

Methods: This study reviewed an overview of antenatal care services and its utilization in Nigeria imploring the use of a narrative review style literature writing. The literature search was conducted on computerized databases. Search terms were used singly, in combination, and truncation to select and synthesize articles. The studies selected included those written in the English Language that was carried out in Nigeria with clear study design and properly stated year of publication which fell within the stated years of 1990 to 2020. The data obtained were subjected to descriptive statistics of frequency and percentage and was also subjected to comparative assessment using the Oxford and Scottish Benchmarks for Study Standard.

Results: A total of 54 articles met the criteria and were used for the study. The highest incidence of the articles selected were studied Nation-wide (40.74%). This was followed by the southwest (27.78%). South-south and southeast had the same number of articles selected (9.26%), while the north-central had the highest number (7.41%)of articles sited in the north, with north-east and north-west being (3.70%) and (1.85%) respectively. Only one article on antenatal care services and its utilization was cited before the year 2000 (1.85%) while the highest number of studies (79.63%) which were conducted out between 2011 and 2020. The studies were found to fall within the lower half of the Oxford and Scottish benchmarks for the hierarchy of studies and study standards.

Conclusion: Antenatal Care service utilization in Nigeria are still at their teething stage. Most of the incidence of the studies conducted were nation-wide and in southwest. The leading study design carried out were cross-sectional descriptive surveys which fell within the lower half of two standard benchmarks (Oxford and Scottish) for the hierarchy of studies.

Introduction

It is no news that countries in the Sub-Saharan region possess a high number of maternal and infant mortality as compared with most other developed countries of the world. Therefore, the Millennium Development Goal (MDG) and Sustainable Development Goal (SDG) gave a great deal of emphasis to health and well-being of all, especially as concerns infants and pregnant mothers. The 5th MDG was also targeted at promoting maternal health aimed at reducing maternal mortality by three quarters and improving universal access to reproductive health. In like manner, the 3rd SDG was aimed at global reduction of maternal mortality ratio to about less than 70 per 100,000 live births and also a great decline in neonatal mortality and under-5 mortalities to 12 and 25 per 1000 live births respectively in all countries. Utilization coupled with early commencement and achieving the adequate number of times of Antenatal Care (ANC) is therefore a key and proven way to achieving these goals [1].

Antenatal Care (ANC) is therefore a clinical assessment carried out on mother and fetus during pregnancy to ensure that only the best possible health outcome is achieved both for the mother and the unborn child. It is very crucial and imperative for the health of both the mother and the developing unborn baby during pregnancy. The activities conducted during ANC is required component of maternal health as it deals with identifying complications and any possible danger signs during the entire period of a woman's pregnancy [2]. It's activities exposes the pregnant mothers to counselling and relevant educational tips about their own health and also care of their unborn children.

Focused Antenatal care was designed to be a goal and client-oriented service which necessitated at least four ANC visits for the pregnant mothers during each pregnancy. WHO requires that pregnant women should have a minimum of eight ANC as opposed four visits so as to efficiently identify complications immediately as they occur and also significantly reduce perinatal and maternal mortality. However, despite the availability and importance of ANC services, 36% of pregnant women worldwide still visit antenatal clinic less than four times during their entire length of pregnancy whereas some don't even attend at all. Across sub-Saharan only about 71 percent of the pregnant mothers' population attend ANC at least once, however, only about 44% of them attend ANC clinic four or more times. The Nigeria Demographic Health Survey (NDHS) 2013 accounted that only about 61% of women attended ANC during pregnancy, showing a marginal increase of 3% as compared record from the NDHS 2008 [3].

WHO made a latest recommendation, the 2016 ANC Model, which served as an intervention package targeted at improving the quality and efficacy of ANC and also improving the overall health outcome of mother and child. The new model recommends a minimum of 8 contacts during the entire course of a woman's pregnancy in order to reduce drastically incidences of maternal and perinatal mortality and to also enhance the woman's experience of care during pregnancy. In Nigeria, only 5 out of 10 women had about 4 or more ANC during their entire course of pregnancy thus resulting to lack of progress in achieving reduction in maternal and child mortality [4].

In Nigeria and other developing countries, there are still recorded high cases of maternal and perinatal mortality rates which can be attributed to the general underutilization of antenatal care services. About 600,000 women were recorded dead due to pregnancy related problems globally per year, of which a total number of 52,900 of the total sum of maternal deaths are recorded in Nigeria. This is approximately 10% of the maternal deaths globally whereas Nigeria only sums up to about 2% of the world's entire population. Consequently, in Nigeria, woman chance of dying from pregnancy and child delivery is 1 in 13. The maternal mortality in Nigeria is seen to be approximated to 800/100,000 live births associated with significantly distinct urban-rural variations; 351/100,000 live births postulated for urban inhabitants and 828/100,000 for rural inhabitants. This variation is extensively large as compared with some developed countries like Sweden, Finland etc [5]. This study presented an overview of Antenatal Care Service Utilization studies and Services in Nigeria and generated information for intervention and policy making.

Methods

Study area: The study covered antenatal care utilization studies carried out in Nigeria.

Review question: What is the trend and dynamics of antenatal care utilization in Nigeria?

Study population and type of studies included: The search was carried out on PubMed and Google Scholar. Manual search was done for studies that met the inclusion criteria. This ensured retrieval of relevant studies while focusing on the study objectives.

Eligibility criteria

- Studies published in English language.
- Peer-reviewed papers were eligible for inclusion.
- Antenatal care utilization studies conducted in Nigeria irrespective of the region.
- Studies with defined protocol and study design either experimental or non-experimental.
- Studies with no conflict of interest stated.
- Studies that provided other information that may help to understand antenatal care utilization.
- Studies with clearly stated and defined research design.

Ineligibility criteria

- Studies without clearly defined period, duration, sample size and location were discarded
- Studies with methodological flaws
- Studies with incomplete data.

Study design: The study was a narrative overview of antenatal care utilization studies in Nigeria.

Risk of bias: The included studies were assessed for subjects and sampling selection bias, reporting bias before selection.

Condition and domain studied: Antenatal Care studies and articles that described antenatal care utilization activities in Nigeria.

Information source: Search was conducted using Google Scholar and PubMed. Data extraction was done in accordance with the standard reporting protocol for narrative reviews [6].

Data items and summary measures: The data obtained were sought for study location, design, sample size, year of publication, inclusion criteria, exclusion criteria, year of publication, study instrument, title of publication. Articles that met the inclusion criteria irrespective of their year of publication were selected.

Context: The study covered antenatal care utilization studies carried out in Nigeria from 1990 to 2020.

Articles search process: The figure below (Figure 1) represents a graphical illustration of how the search was conducted. The keywords related to the title of the study was used for the search. PubMed and Google Scholar were used to search for studies and articles on antenatal care utilization in Nigeria published between 1990 and 2020. Additional words found appropriate and relevant to the title and objective of the study were utilized. A total of 877 articles were obtained, 105 came from PubMed and 772 articles from Goggle Scholar. These articles were assessed for eligibility based on the inclusion criteria.

Study period and duration: The study lasted from July to August, 2021 and covered peer reviewed articles published from January 1990 to December, 2020.

Ethical approval: Ethical approval is not applicable here. However, only studies with ethical approval were included and utilized in the review process.

Data analysis: Data was summarized with descriptive statistics.

Study articles selection process: A total of 877 articles were obtained, 105 came from PubMed and 772 articles from Goggle Scholar. These articles were assessed for eligibility based on the inclusion criteria. Overall, 482 studies which felled outside the scope of pharmaceutical care were discarded giving rise to 395 articles. On further screening, 256 articles with invalid and incomplete study design were eliminated, and another 85 articles with incomplete follow up data which gave rise to 54 studies used for the review.

Data extraction instrument, pilot testing, and data extraction process

Data Extraction design was adapted from a similar study carried out in Nigeria by Ogbonna *et al* (2019) [7]. Data was extracted by careful consideration of the articles, elimination of irrelevant or incomplete ones that did not meet the study objective and criteria. The remaining data were analyzed and pilot tested. Five articles were used for the pilot test and they were not included in the study. Further modifications such as the arrangement of the date items logically and designing of the sheet into an appropriate table format were made to obtain the final instrument. The instrument was approved by an independent assessor after critiquing it by applying it to two independent studies before being used for the data collection.

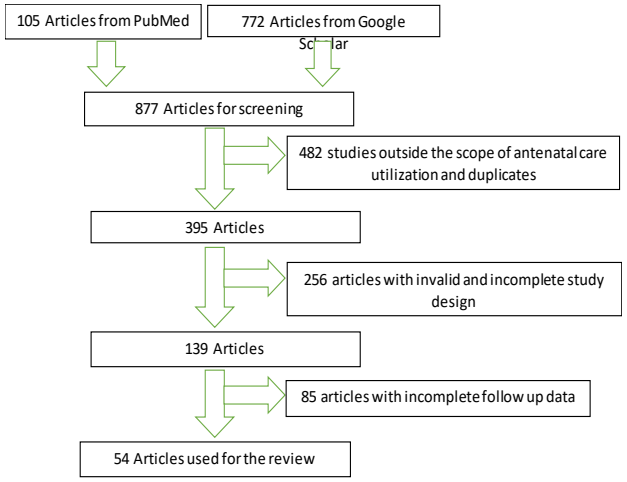

Figure 1: Flow chart.

Table 1: Evidence-based table.

References	Title	Location	Design	Year of Publication	Sample Size	Inclusion	Exclusion	Study Instrument
8	Factors affecting the utilization of antenatal care services in Ibadan, Nigeria	South-west	Cross-sectional-Study	2010	400	Pregnant women attending antenatal clinic	Non-pregnant women and pregnant women not attending the antenatal clinics used	Questionnaire
9	Utilization of Antenatal care and Delivery services in Sagamu, South Western Nigeria	South-west	Descriptive cross-sectional Study	2009	392	Women of childbearing age who had at least one pregnancy carried to term in the past 5 years	Women of non-childbearing age	Questionnaire
10	Wealth and antenatal care utilization in Nigeria: policy implications	Nigeria	Cross-sectional study	2012	6299	Women reported to have had at least one child within 5 years preceding the study	Women not included in the data and who also had children above the time limits of the study	Records from 2012 NARHS Plus
11	Determinants of utilization of antenatal care services in Kumbotso, Northern Nigeria	North-west	Retrospective cross-sectional Study	2005	200	Women of childbearing age in Kumbotso community	Women of childbearing age outside Kumbotso community	Structured Interview
12	Determinants of antenatal care utilization in Emevor Village, Nigeria	South-south	Cross-sectional-Study	2009	200	Women who were pregnant or had previous deliveries	Women of non-childbearing age	Structured Questionnaire
13	Antenatal care satisfaction in a developing country: a cross-sectional from Nigeria	Nigeria	Cross-sectional Study	2018	1336	Pregnant mothers attending ANC in the selected health facilities	Pregnant mothers not attending ANC in the selected health facilities	Semi-structured questionnaire

14	Barriers to antenatal care use in Nigeria: evidences from non-users and implications for maternal health programming	Nigeria	Cross-sectional Study	2015	2199	Respondents who did not use ANC among the total population of women of childbearing age who had at least one child within the last five years before the study year	Respondents who used ANC among the total population of women of childbearing age who had at least one child within the last five years before the study year	Record from 2012 NARHS Plus II
15	Reasons given by pregnant women for the late initiation of antenatal care in the Niger Delta, Nigeria.	South-south	Cross-sectional study	2010	348	Pregnant women presenting at the booking clinic of the department of Obstetrics and Gynaecology from 1st January to July 31st 2007	Pregnant women presenting at the booking clinic of the department of Obstetrics and Gynaecology before and after the study duration	Questionnaire
16	Late antenatal care booking and its predictors among pregnant women in South Western Nigeria	South-west	Descriptive Cross-sectional study	2008	470	Willing respondents attending the select hospital	Non-pregnant and non-willing pregnant women attending the select hospital	Structured questionnaire
17	Assessment of quality of antenatal care services in Nigeria: evidence from a population-based survey	South-west	Population-based Study	2015	13410	Respondents who claim to have used ANC facilities at least once within five years preceding the study year	Respondents who claim to have used ANC facilities at least once within five years within or after the study year	Records from 2013 NDHS
18	Determinants of antenatal care, institutional delivery and postnatal care services utilization in Nigeria	Nigeria	Cross-sectional descriptive study	2015	904 clusters	All women aged 15-49 years present in the selected households a night before the survey	All women aged 15-49 years absent in the selected households a night before the survey	Records from 2013 NDHS
19	Determinants of urban-rural differentials of antenatal care utilization in Nigeria	Nigeria	Population-based study	2014	16178	Women with one or more births five years before the study year	Women with one or more births five years within or after the study years	Records from 2008 NDHS
20	Prevalence and factors associated with underutilization of antenatal care services in Nigeria: A comparative study of rural and urban residences based	Nigeria	A retrospective study	2018	38522	Women aged 15-49 years old present in each of the selected households for at least a night prior to the survey	Women aged 15-49 years old not present in each of the selected households for at least a night prior to the survey	Records from 2013 NDHS
21	Factor's influencing the utilization of antenatal care services among pregnant women in Ife Central LGA, Osun State Nigeria	South-west	Cross-sectional study	2012	102	Pregnant women in Ife Central LGA	Pregnant women not in Ife Central LGA	Questionnaire
22	Determinants of Antenatal Care Services Utilization in Nigeria	Nigeria	Cross-sectional study	2012	21 and 41 clusters respectively	All women ages 15-49 and all men aged 15-49 who were residents of the selected household	All women and men outside the select ages	Records from 2003 and 2008 NDHS
23	Predictors of delayed Antenatal Care (ANC) visits in Nigeria: secondary analysis of 2013 Nigeria Demographic and Health Survey (NDHS)	Nigeria	Cross-sectional study	2017	20,467	Women of reproductive age interviewed during the 2013 NDHS	Women of non-reproductive age and women of reproductive age not interviewed during the 2013 NDHS	Records from 2013 NDHS
24	Antenatal care: a comparison of demographic and obstetric characteristics of early and late attenders in the Niger Delta	South-south	Retrospective cross-sectional study	2005	303	Pregnant women booked in the select hospital during the time of the study	Pregnant women not booked at select hospital during the time of the study	Questionnaire
25	Knowledge and utilization of antenatal care services by women of child bearing age in Ilorin-East local government area, North Central Nigeria	North Central	Descriptive cross-sectional study	2013	355	Women aged 15-49 years in Ilorin East LGA with children less than five years of age	Women aged 15-49 years in Ilorin East LGA with children no child or children above five years	Semi-structured questionnaire
26	Proximate determinants of antenatal care utilization among women in the southeastern Nigeria	South-east	Cross-sectional survey	2012	400	Market women who delivered their last child within the past three years	Market women with no child or had their last child past three years	Semi-structured questionnaire
27	Timing and Utilization of antenatal care service in Nigeria and Malawi	Nigeria	Cross-sectional study	2017	39923	Women aged 15-49 who had given birth in the last five years preceding the survey year.	Women aged 15-49 who had not given birth in the last five years preceding the survey year	Records from NDHS

28	Individual-, household-, and community-level factors associated with eight or more antenatal care contacts in Nigeria: Evidence from Demographic and Health	Nigeria	Cross-sectional study	2020	7936	Women of reproductive age who became pregnant and had given birth after the new guideline of eight ANC contacts was endorsed	Women of non-reproductive age and women of reproductive age who became pregnant and had given birth before the new guideline of eight ANC contacts was endorsed	Records from 2018 NDHS
1	Survival analysis and prognostic factors of the timing of first antenatal care visit in Nigeria	Nigeria	Cross-sectional study	2020	39902	Women who had at least a childbirth or got a pregnancy terminated within the five years preceding the study year	Women who had at least a childbirth or got a pregnancy terminated after the study year	Records from 2013 NDHS
5	Antenatal care services utilization among women of reproductive age in urban and rural communities of South East Nigeria: a comparative study	South-east	Cross-sectional study	2014	600	Women of reproductive age	Women of non-reproductive age	Questionnaire
29	Contextual determinants of maternal health care service utilization in Nigeria	Nigeria	Cross-sectional study	2013	16005	Women aged 15-49 years who had their last delivery in the five years preceding the survey	Women aged 15-49 years who had their last delivery in the five years after the survey	Records from 2008 NDHS
30	Factors associated with inadequate receipt of components and use of ante-natal care services in Nigeria: a population-based study	Nigeria	Population-based cross-sectional study	2018	20405	Women of singleton live-births infants within five years before the study year	Women of singleton live-births infants within five years after the study year	Records from 2013 NDHS
31	Patterns and predictors of Insufficient Antenatal Care Utilization in Nigeria over a Decade: A Pooled Data Analysis Using Demographic and Health Surveys	Nigeria	Cross-sectional study	2020	52,654	Women of reproductive age who reported at least one birth in the five years preceding the surveys	Women of reproductive age who reported at least one birth in the five years after the surveys	Records from 2008, 2013 and 2018 NDHS
32	Seeking evidence to support effort to increase use of antenatal care: a cross-sectional study in two states of Nigeria	Nigeria	Cross-sectional study	2014	15629	Women aged 15-49 years	Women of non-reproductive age and above 49 years	Questionnaire
33	Geographical differentials in uptake of antenatal care services in Nigeria	Nigeria	Cross-sectional study	2018	20192	Women who were pregnant 5 years before the survey	Women who were pregnant after the survey	Records from 2013 NDHS
34	Effect of perception and free maternal health services on antenatal care facilities utilization in selected rural and semi-urban communities of Ondo State, Nigeria	South-west	Cross-sectional Study	2013	460	Women aged 15-49 years who were currently pregnant or had their most recent birth within the previous five years prior the survey	Women aged 15-49 years who were currently pregnant or had their most recent birth within the previous five years after the survey	Semi-structured Questionnaire
35	Antenatal care services utilization in Yobe State Nigeria: Examining predictors and Barriers	North-east	Cross-sectional study	2015	33385	Women between 15 and 49 years of age who had given birth between January 2003 and December 2008	Women who had given birth out the stipulated study range	Records from 2008 NDHS
36	Are the timings and risk factors changing? Survival analysis of timing of first antenatal care visit among pregnant women In Nigeria (2003-2013)	Nigeria	Cross-sectional study	2017	45690	ANC attendance of current pregnancies or the last pregnancies within 5 years preceding the survey irrespective of how the pregnancy ended.	ANC attendance outside the scope of study focus	Records from 2003, 2008, 2013 NDHS
37	Socioeconomic inequalities in maternal health service utilization: a case of antenatal care in Nigeria using a decomposition approach	Nigeria	Descriptive cross-sectional study	2019	18599	Women of reproductive age 15-49 from 2013 NDHS record file	Women of reproductive age not included in the 2013 NDHS record file and women of non-reproductive age	Records from 2013 NDHS

38	Factors influencing initiation of antenatal care in Ibadan, Nigeria	South-west	Cross-sectional study	2011	160	Women attending the antenatal care over the 4-week period of the study	Women not attending the clinic or attended after the study period	Structured questionnaire
39	Socio Demographic Factors Determining the Adequacy of Antenatal Care among pregnant women visiting Ekiti State Primary Health Centres	South-west	Cross-sectional study	2013	400	Pregnant women visiting ANC in PHCs for at least the first time	Pregnant women not attending PHCs at the time of the study and non-pregnant women	Questionnaire
40	Effects of Socio Demographic and Institutional Factors on Utilization of Antenatal Care Services among Pregnant Women in Damaturu, Yobe State, Nigeria	North-east	Cross-sectional study	2018	204	Women (15-49 years) who have given birth within the last 12 months or are pregnant at the time of the study	Women of non-reproductive age or women got pregnant before or after the 12 months or after the study	Questionnaire
41	Determinants of Antenatal Care Utilization in Nigeria	Nigeria	Cross-sectional study	2019	47087	Women of reproductive age of 15 to 49 who had their data present in the selected records	Women of reproductive age of 15 to 49 whose data was not made available in the selected records	Records from 1990, 1999, 2003, 2008 and 2013
42	Antenatal care services utilization among women of reproductive age in semi-urban communities in Orlu LGA, Imo State, Nigeria	South-east	Cross-sectional study	2015	425	Women of reproductive age within the communities of Orlu	Women of reproductive age outside Orlu	Questionnaire
43	Pattern of Antenatal Care Services Utilization in a Mission Hospital in Ogbomoso South-west Nigeria	South-west	Cross-sectional study	2019	442	Antenatal care seekers who attended ANC at the Baptist Medical Centre, Ogbomoso between August 1, 2002 and May 31, 2003	Antenatal mothers not attending The Baptist Medical Centre or attended before or after the duration of the study	Questionnaire
44	Maternal Socio-demographic factors vs Antenatal Care Utilization and Under-five mortality in Nigeria	Nigeria	Cross-sectional study	2020	127202	Birth records from the 2018 NDHS data were used	Birth records from NDHS before and after the study year	Records from 2018 NDHS
45	Non-Utilization of antenatal care services among women of reproductive age in the Niger delta region of Nigeria: Findings from 2595 women	South-south	Descriptive cross-sectional study	2018	2595	Women of reproductive age who were residents of selected communities from the selected LGAs, and who had lived in the community for not less than one year	Women of reproductive age who were non-residents of Rivers State	Interviewer administered questionnaire
46	Regional differences in the optimal utilization of antenatal care in Nigeria	Nigeria	Cross-sectional study	2016	9909	Women aged 15-49 years who had their most recent birth in the last five years prior the survey	Women of non-reproductive age or who had births after the study period	Records from 2013 NDHS
2	Factors affecting utilization of antenatal care services and institutional delivery at Koghum in Jos South, Plateau State, Nigeria	North Central	Community cross-sectional study	2019	200	Women within the age range of 17 and 55 years who were either pregnant or had previous deliveries in the past and resident in Vom, Jos South LGA	Women outside the ages of 17 and 55 and non-resident in Vom, Jos South LGA	Semi-structured questionnaire
47	Proximate predictors of early antenatal registration among Nigerian pregnant women	Nigeria	Cross-sectional study	2010	796	Data of women attending ANC at the select tertiary hospital from July 2006 till December 2007	Pregnant women attending ANC before and after the period of the study at the select hospital	Self-administered open-and closed-ended questionnaire
48	Factors affecting the utilization of Antenatal Care among Pregnant Women in Moba LGA of Ekiti State, Nigeria	South-west	Descriptive cross-sectional study	2016	100	All pregnant women attending ANC clinics in Moba LGA of Ekiti State	Pregnant women not attending ANC clinics	Questionnaire
49	Pattern of antenatal care among antenatal clinic attendees at Alex Ekweme Federal University Teaching Hospital Abakiliki, Nigeria	South-east	Cross-sectional study	2019	258	Pregnant who presented for booking at the antenatal clinic of the hospital from 5th May 2016 to 10th June 2016	Non-pregnant women or pregnant present at antenatal clinic before and after the study duration	Questionnaire

3	Background Determinants of Antenatal Care Utilization among Pregnant women in Akwa Ibom, Nigeria	South-south	Population-based cross-sectional study	2020	1061	Women of ages 15-49 years old and must have given birth in the last 6 months regardless of the outcome of the pregnancy	Women of ages 15-46 who had their last pregnancies before and after 6 months prior to the study	Questionnaire
50	Factors Influencing use of antenatal care and delivery services in Gwagwalada Area Council, Nigeria	North Central	Descriptive cross-sectional study	2014	230	Women aged 15-49 years whose recent birth was within the previous year prior to the survey	Women outside the age range and those whose births were before and after the previous year	Questionnaire
51	Knowledge, utilization and client's satisfaction with antenatal care services in Primary Health Centers, in Ikenne Local Government Area, Ogun State, Nigeria	South-west	Descriptive cross-sectional study	2020	380	Pregnant women who were registered for ANC in PHCs in Ikenne LGA and who were visiting at least the second time	Pregnant women were first timers for ANC in PHCs in Ikenne LGA and those not registered in the PHCs	Questionnaire
4	Uptake of antenatal care among pregnant women in Plateau State Nigeria	North Central	Community-based cross-sectional study	2018	400	Women of reproductive age 15-49 years in the selected communities whose last child birth was within the last three years, had resided in the community greater than three years and gave consent to participate in the study	Women of reproductive age 15-49 years in the selected communities whose last child birth was within the last three years, had resided in the community greater than three years and gave consent to participate in the study but were ill at the time of the study	Questionnaire
52	Perceived cost in the Utilization of antenatal care services by pregnant women in Abeokuta South	South-west	Cross-sectional study	2005	390	Women of child bearing age of 15-49 years within Abeokuta South LGA	Women of non-child bearing age	Questionnaire
53	Determinants of antenatal booking time win a South-western Nigeria setting	South-west	Descriptive cross-sectional study	2007	327	Pregnant women who booked at OAUTHC between January and March 2005	Non-pregnant women and women who booked at the select hospital before and after the duration of the study	Questionnaire
54	Use of Obstetric services in rural Nigeria	South-east	Cross-sectional study	1994	488	Women in Obukpa community who had had at least one pregnancy in the past	Women in Obukpa community who had never been pregnant	Questionnaire
55	Antenatal Care Services Utilization and Factors Influencing it Among Pregnant Women in a Teaching Hospital, Lagos, Nigeria	South-west	Descriptive cross-sectional study	2020	182	Pregnant women attending ANC clinic at the time of the study	Non-pregnant women and pregnant women not present at the ANC clinic at the time of the study	Questionnaire
56	Utilization of antenatal care services as determinants of satisfaction and its challenges in Lagos, Nigeria	South-west	Cross-sectional study	2020	1500	Pregnant women present at the select general hospitals at the time of the study	Non-pregnant women or pregnant women not attending ANC at the select general hospitals	Questionnaire

Table 2: Focus on studies on antenatal care utilization in Nigeria according to geo-political zone distribution.

S/n	Geopolitical zones	No of Studies n (%)	Study Focus
1	North-east	2 (3.70)	ANC Utilization
2	North-west	1 (1.85)	ANC Utilization
3	North central	4 (7.41)	Knowledge and Utilization of ANC
4	South-east	5 (9.26)	ANC Utilization
5	South-south	5 (9.26)	ANC Utilization, Reasons for late initiation
6	South-west	15 (27.78)	ANC Utilization, Late antenatal booking, Assessment of quality
7	Nation wide	22 (40.74)	ANC Utilization, Satisfaction, Barriers, Timing
	Total	**54 (100)**	

Table 3: Assessment of studies on antenatal care utilization in Nigeria based on oxford center for evidence-based medicine's levels of evidence from highest to lowest [57].

S/n	Level of evidence	Definition	n (%)
1	1A	Systematic Review of RCTs	0 (0.00)
2	1B	Individual RCTs	0 (0.00)
3	2A	Systematic review of cohort studies	0 (0.00)
4	2B	Individual cohort studies, Low quality RCT	0 (0.00)
5	2C	Ecological studies	6 (11.11)
6	3A	Systematic review of case-control studies	0 (0.00)
7	3B	Individual case control studies	0 (2.44)
8	4	Case series, poor quality cohort and case control studies	48 (88.89)
	Total		**54(100)**

Table 4: Assessment of antenatal care utilization studies on in Nigeria based on the scottish intercollegiate guidelines network for hierarchy of study type [58].

S/n	Study types according to hierarchy	n (%)
1	Systematic review and Meta-analysis	0(0.00)
2	Randomized controlled trials	0(0.00)
3	Nonrandomized intervention studies	0(0.00)
4	Observational studies	54(100.0)
5	Non-experimental studies	0(0.00)
6	Expert opinion	0(0.00)
	Total	**54(100)**

Table 5: Periodic Distribution of Antenatal Care Utilization studies in Nigeria.

S/n	Period of publication of study	No of Studies n (%)
1	≤2000	1 (1.85)
2	2001-2010	10 (18.52)
3	2011-2019	43 (79.63)
Total		**54 (100)**

Discussion

An overview of antenatal care service utilization in Nigeria

Antenatal are first evolved from the European countries but it was not evidenced based. This was the Traditional ANC model which was developed in the early 1900s. The model only emphasized on the number and frequency of ANC visits which recommended approximately 12 clinic visits, if the woman began ANC in the first trimester. This involved once a month for the first six months, once every two to three weeks for the next two months and once a week until birth. This model was later adapted to Focus ANC by WHO which was developed in 2002. The Focus ANC was goal-oriented in its approach to delivering evidence-based interventions at four critical times during pregnancy. This approach greatly achieved an increase in ANC in the low-and middle-income countries. FANC was later shown not to be promote positive outcomes during pregnancy and perinatal death reduction, therefore leading to a development of a newer model in 2016 by WHO. This model emphasized contact rather than visit and recommended at total number of 8 contacts instead of the ongoing 4-visits and the provision of quality at each contact [59].

Over the years, there has been considerably large underutilization of antenatal care services in Nigeria. This underutilization though varies from region to region likewise state to state. There is also sparse variation between the old and young, rural and urban communities. There have been consistent records from various studies revealing that age, parity and level of education has great effects on ANC utilization as younger women aged below 20 years utilize ANC services much better than older women, Women with secondary school were also found to utilize ANC, have more clinic visits 2-3 times better than women with primary or no education at all [48]. Observational studies were best fit in accessing and analyzing the utilization differentials across various variables in Nigeria this corresponding to distribution of the studies showing a higher incidence of non-experimental studies in the country. This could also be as a result of the relative ease in the conduct of an observational study than experimental studies. Also, due to the reduced cost, manpower and time employed for an experimental study. Most of the studies cited in the work were also carried out within the last two decades as shown in table 1 and 5, recording 18.52% within the decade of 2001 to 2010 and the last following decade (2011-2020) recording 79.63% while the decade of 1999-2000 recording one cited work (1.85%). This is largely owing to the fact than the concept of ANC first evolved from the European countries and was later gradually adapted by the Nigerian government when they adhered to WHO's focused/goal-oriented model which was introduced in 2002 and has furthermore integrated into the Federal Ministry of Health System as an orientation package for Health Care Providers [31].

Description of the ANC utilization and the extent and nature of work done in Nigeria

Table 2 revealed the regional distribution of the articles and the study focus of each region. It showed that the highest number of studies were done Nation-wide (40.74%) followed by the South-west and region (27.78%) of the country. South-south and South-east had an equal distribution (9.26%). The theme of the works conducted nation-wide comprised of Factors affecting ANC utilization, Satisfaction, Barriers and Timing while that of the south-west focused more on Factors of ANC utilization, Assessment of quality and Reasons for late ANC. The studies in the south-south and South-east focused ANC utilization and Reasons for late initiation.

Most of the works were nation-wide because it was relatively easier to carry out population cross-sectional study from already recorded databases mostly obtained from the Nigeria Demographic and Health Survey data as they served as already provisions for conducting pooled analysis. The Nation-wide studies also provided for comparative analysis between regions, states and more also within year. The few studies sited in the northern region mainly focused on Utilization of ANC and Knowledge. Among the Northern region, North Central posed to have higher works (7.41%) carried out as opposed North-east (3.70%) and North-west (1.85%).

Description of ANC activities and comparisons of the studies to the oxford and Scottish benchmarks for the hierarchy of clinical

As shown by Table 4 on the hierarchy of studies, observational studies had all the number of records 100%. Other types of the studies in the hierarchy had no record as observational studies presumably were best fit in accessing and analyzing the utilization differentials across various variables.

Most of the studies cited were surveys carried out using questionnaires as the instrument of study. Although the questionnaires were used directly on the respondents or they were used on the records from the Population Data. A few of the studies involved non-ANC users but most of them were focused on pregnant women. As portrayed by Table 3 on Evidence-based Medicine Evidence level, Case series, poor quality cohort, and case- control studies have the highest score of 88.89% while ecological studies had 11.11% leaving the rest of the study with 0% score. This shows that ANC service utilization activities in Nigeria is still at its primary level.

Conclusion

Many of the articles cited were studies carried out on pregnant women within the reproductive age [15-49]. All the studies conducted were all observational. The distribution of the studies recorded higher incidence of the study conducted nationwide as compared to the various other regions with south-west topping the other regions. The studies fell short of the Oxford and Scottish benchmarks for the hierarchy of studies showing that the Antenatal Care Utilization activities in Nigeria is at its primary level.

Limitations

The possibility of omission due to search and search terms limitations. Some of the studies sited may have some level of bias which escaped elimination which could have an impact on the outcome of the study. The method of presenting tables and data in the present study was purposively chosen for simplicity and clarity even though they could be better presentation formats.

Highlights (Learning points)

1. No narrative review article was found which reviewed the ANC in Nigeria over the past four decades.

2. The study articles on ANC cited since 2020 fell below the higher upper half of the Hierarchy of Study Type Standard Benchmark of Oxford and Scottish benchmarks.

3. Majority of the studies on ANC in Nigeria were carried out nationwide and in the south-western region.

4. The theme of the works conducted nation-wide comprised of factors affecting ANC utilization, satisfaction, barriers and timing while that of the south-west focused more on factors of ANC utilization, assessment of quality and reasons for late ANC. The studies in the south-south and South-east focused ANC utilization and Reasons for late initiation. The few studies sited in the northern region mainly focused on Utilization of ANC and Knowledge.

5. This work is a narrative overview of ANC service utilization in Nigeria. It reviewed a general overview of the ANC activities, revealed the studies conducted on the subject matter, showing the level of the work done and gave a comparison of the available studies with some standard benchmarks for the hierarchy of study type. It also gave recommendations and provided documented information for intervention.

Declarations

Conflict of interest: The authors have none to declare.

Grant/sponsorship: None was obtained.

References

1. Adeniyi FF, Clearance A, Baitshephi M, Ayo SA. Survival analysis and prognostic factors of the timing of first antenatal care visit in Nigeria. Advances In Integrative Medicine. 2019; 6: 110-119.

2. Lilian AO, Ikenna OO, Olufemi OA, Shakir MB, Patrick MN, Olufunmilayo IF and Peter N. Factors affecting utilization of antenatal care services and institutional delivery at Koghum in Jos South, Plateau State, Nigeria. Journal of Public Health and Epidemiology. 2019; 11: 114-122.

3. Ibikunle OO, Asa S, Ibikunle AI and Breiger W. Background Determinants of Antenatal Care Utilization among Pregnant women in Akwa Ibom, Nigeria. Ife Social Sciences Review. 2020; 28: 27-38.

4. Amina M, Esther E, Izu O, Gloria O, Joshua D and Ayaba Z. Uptake of antenatal care among pregnant women in Plateau State Nigeria. World Journal of Research and Review. 2018; 6: 01-06.

5. Duru CB, Eke NO, Ifeadike CO, Diwe KC, Uwakwe KA, Nwosu BO and Chineke HN. Antenatal care services utilization among women of reproductive age in urban and rural communities of South East Nigeria: a comparative study. AFRIMEDIC Journal. 2014; 5: 50-58.

6. Bart NG, Claire DJ and Alan A. Writing narrative literature reviews for peer reviewed journal: secretes of the trade. Clinical Updates. 2006; 5: 101-117.

7. Ogbonna BO, Oparah AC and Odili VU. Pharmaceutical Care Activities in Nigeria from 1970 to 2018: A Narrative Review. Ecronicon Pharmacology and Toxicology. 2019; 7: 789-805.

8. Dairo MD and Owoyokun KE. Factors affecting the utilization of antenatal care services in Ibadan, Nigeria. Benin Journal of Postgraduate Medicine. 2010; 12: 3-13.

9. Iyaniwura CA and Yussuf Q. Utilization of Antenatal care and Delivery services in Sagamu, South Western Nigeria. African Journal of Reproductive Health. 2009; 13: 111-112.

10. Fagbamigbe AF and Idemudia ES. Wealth and antenatal care utilization in Nigeria: policy implications. Health Care for Women International. 2017; 38:

11. Kabir M, Iliyasu Z, Abubakar IS and Asani A. Determinants of utilization of antenatal care services in Kumbotso, Northern Nigeria. National Library of Medicine. 2005; 35: 110-121.

12. Awusi VO, Anyanwu EB and Okeleke V. Determinants of antenatal care utilization in Emevor Village, Nigeria. Benin Journal of Postgraduate Medicine. 2009; 11: 21-16.

13. Dumbiri JO, Sudha X, Mahmud MK, James WH, and Oluwole O. Antenatal care satisfaction in a developing country: a cross-sectional from Nigeria. BMC Public Health. 2018; 18: 1-9.

14. Adeniyi FF and Erhabor SI. Barriers to antenatal care use in Nigeria: evidences from non-users and implications for maternal health programming. BMC Pregnancy and Childbirth. 2015; 15: 1-9.

15. EP Ndidi and IG Osaremen. Reasons given by pregnant women for the late initiation of antenatal care in the Niger Delta, Nigeria. Ghana Medical Journal. 2010; 44: 47-51.

16. Adekanle DA and Isawumi AI. Late antenatal care booking and its predictors among pregnant women in South Western Nigeria. Online J Health Allied Scs. 2008; 7: 1-6.

17. Adeniyi FF and Erhabor SI. Assessment of quality of antenatal care services in Nigeria: evidence from a population-based survey. BMC Reproductive Health. 2015; 12: 1-8.

18. Tukur D and Oche MO. Determinants of antenatal care, institutional delivery and postnatal care services utilization in Nigeria. Pan African Medical Journal. 2015; 21: 1-8.

19. Blessing IB. Determinants of urban-rural differentials of antenatal care utilization in Nigeria. African Population Studies. 2014; 28: 1263-1273.

20. Adewuyi EO, Auta A, Khanal V, Bamidele OD, Akuoko CP, Adefemi K, Tapshak SJ, et al. Prevalence and factors associated with underutilization of antenatal care services in Nigeria: A comparative study of rural and urban residences based. PLOS One. 2018; 13.

21. Onasoga OA, Afolayan JA and Oladimeij BD. Factor's influencing the utilization of antenatal care services among pregnant women in Ife Central LGA, Osun State Nigeria. Pelegia Research Library. 2012; 3: 1309-1315.

22. Emmanuel ON, Nathaniel EU and Chiagozie U. Determinants of Antenatal Care Services Utilization in Nigeria. Developing Country Studies. 2012; 2: 41-52.

23. Ziad EK, Emmanuel KO, Bishwajit G and Sanni Y. Predictors of delayed Antenatal Care (ANC) visits in Nigeria: secondary analysis of 2013 Nigeria Demographic and Health Survey (NDHS). International Journal of Environmental Research and Public Health. 2020; 17: 1-14.

24. Ebeigbe PN and Igberase GO. Antenatal care: a comparison of demographic and obstetric characteristics of early and late attenders in the Niger Delta. Med Sci Monit. 2005; 11: 29-32.

25. Adewoye KR, Musa IO, Atoyebi OA and Babatunde OA. Knowledge and utilization of antenatal care services by women of child bearing age in Ilorin-East local government area, North Central Nigeria. International Journal of Science and Technology. 2013; 3: 188-193.

26. Nwosu BO, Ugboaja JO, Obi-Nwosu AL, Nnebue CC and Ifeadike CO. Proximate determinants of antenatal care utilization among women in the southeastern Nigeria. Nigerian Journal of Medicine. 2012; 21: 196-204.

27. Vincent K, Joseph K, Killian A, Roger A, Sheila B, Siera Vercillo, Jonathan A and Isaac L. Timing and Utilization of antenatal care service in Nigeria and Malawi. Global Public Health. 2017; 12: 711-727.

28. Michael E, Faith OB and Ashibudike FI. Individual-, household-, and community-level factors associated with eight or more antenatal care contacts in Nigeria: Evidence from Demographic and Health. PLOS One. 2020; 15: 1-19

29. Dorothy NO, Clifford OO, Eunice I and Sunday A. Contextual determinants of maternal health care service utilization in Nigeria. Women & Health. 2013.

30. Kingsley EO, Osita KE, Felix AO, Anthony IE and Camille RG. Factors associated with inadequate receipt of components and use of antenatal care services in Nigeria: a population-based study. International Health. 2018; 10: 172-181.

31. Ziad EK, Emmanuel KO, Bishwajit G and Sanni Y. Patterns and predictors of Insufficient Antenatal Care Utilization in Nigeria over a Decade: A Pooled Data Analysis Using Demographic and Health Surveys. International Journal of Environmental Research and Public Health. 2020; 17: 1-14.

32. Khalid O and Angela O. Seeking evidence to support effort to increase use of antenatal care: a cross-sectional study in two states of Nigeria. BMC Pregnancy and Childbirth. 2014; 14: 1-10.

33. Omotayo AH. Geographical differentials in uptake of antenatal care services in Nigeria. Health Care for Women International. 2018; 39: 34-49.

34. Francis AA, Aderonke MO, Adeniyi FF and Ayo SA. Effect of perception and free maternal health services on antenatal care facilities utilization in selected rural and semi-urban communities of Ondo State, Nigeria. British Journal of Medicine & Medical Research. 2013; 3: 681-697.

35. Umar AS and Bawa SB. Antenatal care services utilization in Yobe State, Nigeria: Examining predictors and Barriers. Int J MCH AIDS. 2015; 4: 35-46.

36. Adeniyi FF, Baitshephi M, Lornah L and Clearance A. Are the timings and risk factors changing? Survival analysis of timing of first antenatal care visit among pregnant women in Nigeria (2003-2013). International Journal of Women's Health. 2017; 9: 807-819.

37. Nwosu CO and Ataguba JE. Socioeconomic inequalities in maternal health service utilization: a case of antenatal care in Nigeria using a decomposition approach. BMC Public Health. 2019; 19: 1-11.

38. Abimbola O, Joel OA and Adenike O. Factors influencing initiation of antenatal care in Ibadan, Nigeria. African Journal of Midwifery and Women's Health. 2011; 5: 163-168.

39. Ajayi OI and Osakinle DC. Socio Demographic Factors Determining the Adequacy of Antenatal Care among pregnant women visiting Ekiti State Primary Health Centres. Online J Health Allied Scs. 2013; 12: 1-6.

40. Muhammad IB, Muhammad C, Usman S and Mubarak SG. Effects of Socio Demographic and Institutional Factors on Utilization of Antenatal Care Services among Pregnant Women in Damaturu, Yobe State, Nigeria. International Journal of Tropical Diseases & Health. 2018; 29: 1-9.

41. Rifkatu N and Olanrewaju O. Determinants of antenatal care utilization in Nigeria. Working Paper Series NO 321. 2019: 1-24.

42. Duru CB, Oluoha UR, Uwakwe KA, Diwe KC, Merenu IA, Chineke HN and Emerole CA. Antenatal care services utilization among women of reproductive age in semi-urban communities in Orlu LGA, Imo State, Nigeria. Orient Journal of Medicine. 2015; 27: 1-9.

43. Olufemi TA, Isaac OA, Stephen AA, Adenike A, David AO, Adewumi OD and Titilope AA. Pattern of Antenatal Care Services Utilization in a Mission Hospital in Ogbomoso South-west Nigeria. Journal of Advances in Medical and Pharmaceutical Sciences. 2019; 19: 1-11.

44. Chukwuechefulam KI and Ukoji VU. Maternal Socio-demographic factors vs Antenatal Care Utilization and Under-five mortality in Nigeria. Dender and Behaviour. 2020; 18: 1-9.

45. Omosivie M and Rosemary O. Non-Utilization of antenatal care services among women of reproductive age in the Niger delta region of Nigeria: Findings from 2595 women. Clin Obstet Gynecol Reprod Med. 2018; 4: 1-5.

46. Linda OU, Oyindamola BY, Joshua OA and Ayo SA. Regional differences in the optimal utilization of antenatal care in Nigeria. Science Journal of Public Health. 2016; 4: 43-48.

47. Adesina O, Regina AO, Imran MB, Adenike FB and Babatunde A. Proximate predictors of early antenatal registration among Nigerian pregnant women. Annals of African Medicine. 2010; 9: 222-225.

48. Owoseni JS. Factors affecting the utilization of Antenatal Care among Pregnant Women in Moba LGA of Ekiti State, Nigeria. International Journal of Traditonal and Complementary Medicine. 2016; 1: 0020-0030.

49. Wendy CO, Johnbosco IN, Arinze CI, Nnenna AN, Bridget NC, Paschal CO and Malacy CO. Pattern of antenatal care among antenatal clinic attendees at Alex Ekweme Federal University Teaching Hospital Abakiliki, Nigeria. 2019; 7: 2320-6012.

50. Modupe OO and Grace OE. Factors Influencing use of antenatal care and delivery services in Gwagwalada Area Council, Nigeria. African Journal of Midwifery and Women's Health. 2014; 8: 195-202.

51. Sodeinde K, Onigbogi O, Odukoya O and Abiodun O. Knowledge, utilization and client's satisfaction with antenatal care services in Primary Health Centres, in Ikenne Local Government Area,

Ogun State, Nigeria. Annals of Health Research Knowledge. 2020; 6: 171-183.

52. Onajole AT, Ali FA, Odeyemi KA, Ogunnowo BO and Oridota ES. Perceived cost in the Utilization of antenatal care services by pregnant women in Abeokuta South. The Nigerian Medical Practitioner. 2005; 48: 98-102.

53. AB Adeyemi, ON Makinde, KO Ajenifuja, AS Soyinka, AK Ayinde, BA Ola and M Ofili. Determinants of antenatal booking time win a South-western Nigeria setting. West African Journal of Medicine. 2007; 26: 293-297.

54. Nwakoby BN. Use of Obstetric services in rural Nigeria. J R Soc Health. 1994; 114: 132-136.

55. Iyabo YA, Joel F, Oyediran OO and Erondu CC. Antenatal care services utilization and factors influencing it among pregnant women in a Teaching Hospital, Lagos, Nigeria. Tropical Journal of Health. 2020; 27: 1-6.

56. Iyabo YA, Rosaline OO and Titilayo DO. Utilisation of antenatal care services as determinants of satisfaction and its challenges in Lagos, Nigeria. British Journal of Midwifery. 2020; 28: 242-250.

57. Nikolaos AP, Apostolos AA and John PA. "Relative citation impact of various study designs in the health sciences". Journal of the American Medical Association. 2005; 293: 2362-2366.

58. Mann JJ, Apter A, Dianne C, Jose M, Ann H, Kelvin MM, Andrej M, Ulrich, et al. "Suicide prevention strategies: A systematic review". Journal of the American Medical Association. 2005; 294: 2064-2074.

59. Federal Ministry of Health N (FMoH). Antenatal Care: An Orientation Package for Health Care Providers. FMoH ANC Model. 2017.