

Antenatal Care Coverage and the Prevalence of Syphilis, Viral Hepatitis and Human Immuno-Deficiency Virus Infections Among Pregnant Women in Uyo, Nigeria

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ABSTRACT

Objectives: Antenatal care is a form of preventive medical care that contributes towards both maternal and infant health, yet sub-Saharan Africa is among the regions with lowest levels of antenatal care. This present study aimed at investigating the proportion of pregnant women in Uyo, Nigeria who are registered for antenatal care as well as the prevalence of human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis infections across this population. **Methods:** This descriptive cross-sectional study was conducted among pregnant women in Uyo, Akwa Ibom State of Nigeria. Screening for antibodies to HIV, HBV, HCV and Syphilis were performed. A structured questionnaire was administered by three trained interviewers to obtain biodata and socio-demographic characteristics. **Results:** This study observed 53.2% antenatal coverage while the proportion of unregistered cases was 46.8%. Out of 188 enrolled pregnant women, 19 persons were reactive to one of the four screened infections giving a general prevalence of 10%. The distribution of infection types indicates higher rates for HIV and HBV, followed by Syphilis and HCV. Among the infected persons, the present study also observed that only those already registered and accessing antenatal care at conventional health facilities (approximately 37%) were aware of their status and receiving treatment as at the time of the study. **Conclusion:** The prevalence of transmissible infections among the studied population was observed to be 10%. More than half of these transmissible infections among pregnant women occur undetected among those not registered for conventional antenatal care.

Key words: Healthcare, antenatal care, transmissible infections, pregnancy

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INTRODUCTION

Maternal healthcare provision is a basic aspect of national health interest in tackling preventable medical conditions and offering public health interventions (1-3). It is basically made accessible in developed countries but poor funding and slow infrastructural development prevalent in developing nations limit the access to maternal healthcare (4). In fact, some aspects of maternal healthcare such as periconceptional healthcare are yet to be embraced and practiced (5,6). A situation that is attributable to lack of awareness, unplanned approach to pregnancy and financial challenges (4,7). However, much effort is presently directed towards ensuring that pregnant women enroll for antenatal care within the conventional health system. In spite of the globally sustained drive by health organizations, sub-Saharan Africa in which Nigeria is included remains among the regions with lowest levels of antenatal care (8). In Nigeria, inadequate coverage and late enrollment often contribute to pregnancy-related health challenges (9,10). This is a regrettable trend considering that timely enrollment for antenatal care hold the potential of better management and care (11).

Antenatal care is a form of preventive medical care that contributes towards both maternal and infant health (8). It affords the opportunity of timely detection of pregnancy-related challenges and consequently paves way for better management of such existing conditions (8). This realization has made the antenatal care a target for population-based interventions particularly as it relates to nutritional fortification, detection of transmissible infections and prevention of mother-to-child transmission of transmissible infections (11-15). The advocacy for employing this strategy relies

on the assumption of effective antenatal coverage in our population. Conventional healthcare system as we have it, provide medical care at designated facilities, thus only persons that can access these facilities and are also able to meet up with necessary financial requirements opt for such. The challenge from this situation is that a proportion of the population is left unaccounted for, and could be the reservoir for persistent transmissible infections despite efforts towards control and possible eradication. It is therefore necessary to evaluate the extent of coverage achieved periodically as an insight to the proportion of pregnant women reached in the various associated intervention programmes. Additional efforts towards accessing the unreached category would be helpful in designing further interventions to ensure a near absolute coverage. To this end, the present study aimed at investigating the proportion of pregnant women in Uyo, Nigeria who were registered for antenatal care as well as the prevalence of transmissible infections (human immunodeficiency virus, hepatitis B virus, hepatitis C virus and syphilis infections) across this population.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted among pregnant women in Uyo, Akwa Ibom State of Nigeria between September 2020 and February 2021. The subjects comprised pregnant women residing in the study area. Study participants were recruited at places of worship and followed up on their days of appointment at conventional health facilities and non-conventional centers also known as traditional birth homes to confirm whether they had registered for conventional antenatal care. Sample collection was carried out at the centers where the participants were followed up,

while testing of samples took place at the Haematology Laboratory section in Ituk Mbang General Hospital. Ethical approval was duly sought and obtained from The Ministry of Health, Akwa Ibom State in Nigeria. Informed consent was obtained from each study participant.

Each subject's serum was screened for the presence of HIV antibodies using Nigerian national algorithm (16) on HIV screening using Alere Determine (Abbott Laboratories, Tokyo, Japan) and Uni-Gold (Trinity Biotech, Ireland). Antibodies to HBV and HCV and VDRL were detected using immunochromatographic methods (Clinotech Diagnostics, Richmond, Canada). A structured questionnaire was administered by three trained interviewers to obtain biodata and socio-demographic characteristics. Data processing was carried out using SPSS version 22.0. results are presented as numbers and frequencies as percentage.

RESULTS

The study participants were majorly married (95.7%), multiparous (68.6%) and aged 21-30 years (52.7%). The socio-demographic characteristics of the enrolled pregnant women also revealed that majority had up to secondary school level of education with up to fifty thousand naira per month personal income (Table 1).

Out of 188 enrolled pregnant women, 19 persons were reactive to one of the four screened infections giving a general prevalence of 10.1%. The distribution of infection types as shown in Figure 1 indicates higher rates for HIV and HBV, followed by Syphilis and HCV. Seven (7) persons out of the 19 infected pregnant women were registered for antenatal care at conventional health facilities giving a percentage of 36.8, approximately 37%. The remaining 12 persons (63%) were not registered as shown in Figure 2.

Table 2 indicates that among the infected persons, only those already registered and accessing antenatal care at conventional health facilities (36.8% \approx 37%) were aware of their status and receiving treatment as at the time of the study

Table 1. Characteristics observed among all study participants

VARIABLES	NUMBER (188)	PERCENTAGE (100)
Age range		
< 21 years	16	8.5
21 – 30 years	99	52.7
31 – 40 years	65	34.5
>40 years	8	4.3
Marital status		
Married	180	95.7
Single	8	4.3
Parity		
Nulliparous	59	31.4
Multiparous	129	68.6
Highest Level of Education		
Primary	65	34.5
Secondary	83	44.2
Tertiary	40	21.3
Occupation		
Traders/Artisans	99	52.7
Civil Servants /Entrepreneurs	46	24.5
Housewife	43	22.8
Husbands Occupation		
Traders /Artisans	104	55.3
Civil Servants /Entrepreneurs	76	40.4
Not Married	8	4.3
Monthly Income (Naira)		
Not Working	43	22.8
10,000-50,000	111	59.1
50,000-100,000	25	13.3
100,000 and above	9	4.8
ANC coverage		
Registered	100	53.2
Unregistered	88	46.8

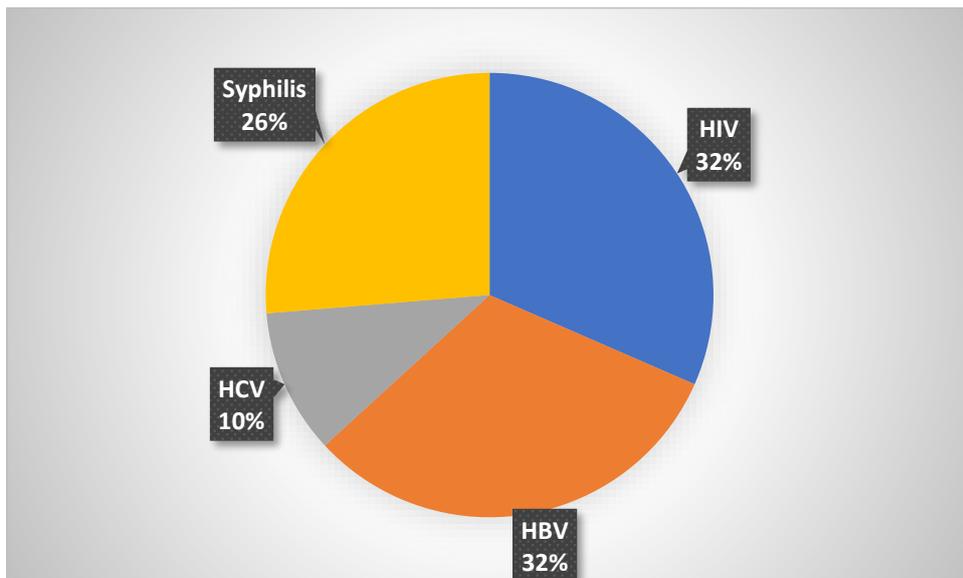


FIG. 1. Distribution of infections detected among the study participants

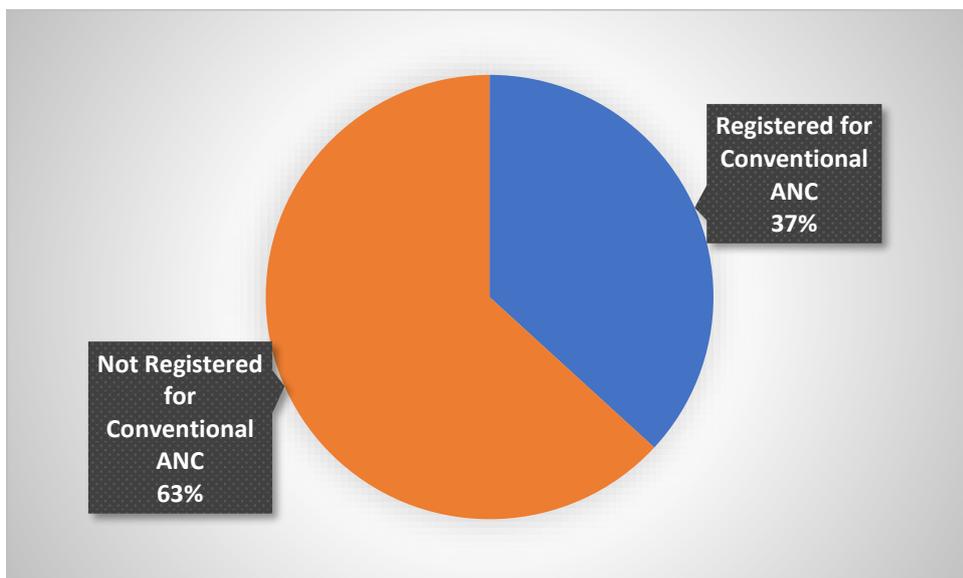


FIG. 2. Distribution of infected persons based on conventional antenatal care registration

Table 2. Characteristics observed among infected persons based on ANC registration

VARIABLES	Registered for Conventional ANC n =7	Not Registered for Conventional ANC n = 12	Total n= 19 (100%)
Age range			
< 21 years	0	3	3 (15.7)
21 – 30 years	1	5	6 (31.6)
31 – 40 years	5	4	9 (47.4)
>40 years	1	0	1 (5.3)
Marital Status			
Married	7	11	18 (94.7)
Single	0	1	1 (5.3)
Parity			
Nulliparous	1	5	6 (31.6)
Multiparous	6	7	13 (68.4)
Highest Level of Education			
Primary	0	8	8 (42.1)
Secondary	5	4	9 (47.4)
Tertiary	2	0	2 (10.5)
Occupation			
Traders/Artisans	3	4	7 (36.8)
Civil Servants /Entrepreneurs	4	2	6 (31.6)
Housewife	0	6	6 (31.6)
Husbands Occupation			
Traders /Artisans	5	7	12 (63.1)
Civil Servants /Entrepreneurs	2	4	6 (31.6)
Not Married	0	1	1 (5.3)
Monthly Income (Naira)			
Not Working	0	6	6 (31.6)
10,000-50,000	3	5	8 (42.1)
50,000-100,000	3	1	4 (21.0)
100,000 and above	1	0	1 (5.3)
Knowledge of status			
Had knowledge	7	0	7 (36.8)
Treatment			
Accessing treatment	7	0	7 (36.8)

The study participants were mostly married (95.7%), multiparous (68.6%) and aged 21-30 years (52.7%). Majority had up to secondary school level of education with up to fifty thousand naira per month personal income. These demographic characteristics

DISCUSSION

reveal that the enrolled subjects were largely middle-class women of reproductive age and status. Antenatal coverage recorded by the current study was 53.2%, while the proportion of unregistered cases was 46.8%. The importance of maternal health goes beyond the immediate individual as it extends directly to infant health and family health in general. Unfortunately, this part of the world suffers from inadequate healthcare and maternal health is not exempted from it. Being largely influenced by socio-economic factors, antenatal care-seeking attitudes of pregnant women in our society vary widely (17,18). Even among those that register for antenatal care, timely registration is still an issue. In fact, previous reports from hospital-based studies had observed late commencement of antenatal care in association with pregnancy-related pathologies among pregnant women in our population. (9,11,19). Out of 188 enrolled pregnant women, 19 persons were reactive to one of the four screened infections giving a general prevalence of 10%. The distribution of infection types indicates higher rates for HIV and HBV, followed by Syphilis and HCV. This finding has revealed that the risk of mother-to-child transmission is higher for HIV and HBV compared to the other transmissible infections in the study area.

Among the infected persons, the present study also observed that only those already registered and accessing antenatal care at conventional health facilities (approximately 37%) were aware of their status and receiving treatment as at the time of the study as shown in Figure 2 and Table 2. The implication is that about 63% of one form of transmissible infection among pregnant women goes on undetected. This high percentage of undetected cases is attributable to inadequate antenatal care coverage. Incidentally, similar factors including low levels of education and income mediate both antenatal-seeking

attitudes of women and high prevalence of transmissible infections (20-22). Earlier investigations on the influencing factor for uptake of voluntary HIV testing among infected persons in a related cultural setting had observed screening during antenatal visit ranked highest among women living with the infection (23,24). The higher percentage of transmissible infection among pregnant women yet to register for antenatal care that was observed in this study calls for concern. Addressing antenatal coverage would undoubtedly aid a more effective control of these infections.

CONCLUSION

The prevalence of transmissible infections among the studied population was observed to be 10%. More than half of these transmissible infections among pregnant women occur undetected among those not registered for conventional antenatal care

REFERENCES

1. Breymann C. Iron Deficiency Anemia in Pregnancy. *Seminars in Hematology* 2015;52(4):339-347.
2. Gernand AD, Schulze KJ, Stewart CP, West Jr K.P, Christian P. Micronutrient deficiencies in pregnancy worldwide: health effects and prevention. *Nature Reviews Endocrinology* 2016; 12(5): 274–289.
3. Lowensohn RI, Stradler DD, Naze C. Current Concepts of Maternal Nutrition. *Obstetrical & Gynecological Survey* 2016;71(7):413-426.
4. Essendi H, Johnson FA, Madise N, Mathews Z, Falkingham J, Bahaj AS et al. Infrastructural challenges to better health in maternity

- facilities in rural Kenya: community and healthworker perceptions. *Reproductive Health* 2015; 12: 103.
5. Dean SV, Lassi ZS, Imam AM, Bhutta ZA. Preconception care: nutritional risks and interventions. *Reproductive Health*. 2014;11(3)S3
 6. Murto T, Yngve A, Svanberg AS, Altmae S, Salumets A, Wanggren K et al. Compliance to the recommended use of folic acid supplements for women in Sweden is higher among those under treatment for infertility than among fertile controls and is also related to socioeconomic status and lifestyle. *Food & Nutrition Research* 2017; 61(1):1334483.
 7. Kowalewski M, Jahn A, Kimatta S. Can mothers afford maternal health care costs? User costs of maternity services in rural Tanzania. *African Journal of Reproductive Health*. 2002;6(1):65–73.
 8. UNICEF 2021. Antenatal care – UNICEF DATA. <http://data.unicef.org>
 9. Egbe SB, Akwiwu EC, Akpan PA, Akpotuzor JO. Haemorrhagic and Biochemical Parameters of Pre-Eclamptic Patients in University of Calabar Teaching Hospital, Calabar, Nigeria. *Journal of Dental and Medical Sciences*, 2018;17: (5) 18-24.
 10. Akwiwu EC, Akpotuzor JO, Okafor AO. Malaria Parasitaemia and Some Iron Parameters of Pregnant Women in Rural Nigeria. *Asian Journal of Pregnancy and Childbirth* 2019; 2(1): 1-5.
 11. Ndem BN, Akwiwu EC, Akpan PA, Akpotuzor JO, Bassey IE, Isong IK, Onukak EE. Timely accessing of antenatal care and prevalence of vitamin B12 and folate deficiencies among pregnant women in a Nigerian population. *New Zealand Journal of Medical Laboratory Science* 2021;75: 12-15.
 12. World Health Organization (2010). PMTCT strategic vision 2010-2015: preventing mother-to-child transmission of HIV to reach the UNGASS and Millennium Development Goals. [:https://www.who.int/hiv/pub/mtct/strategicvision.pdf](https://www.who.int/hiv/pub/mtct/strategicvision.pdf)
 13. United Nations Programme on AIDS (2014). Joint United Nations Programme on AIDS (UNAIDS). 90-90-90: An ambitious treatment target to help end the AIDS epidemic. Geneva, UNAIDS. Available at: http://www.unaids.org/sites/default/files/media_asset/90-90-90_en_0.pdf. Accessed 1 November 2016
 14. United Nations Programme on AIDS (2019). New survey results indicate that Nigeria has an HIV prevalence of 1.4%., <https://www.unaids.org>
 15. United Nations Programme on AIDS (2020). UNAIDS Factsheet 2020. [:https://www.unaids.org/en/regions/countries/countries/nigeria](https://www.unaids.org/en/regions/countries/countries/nigeria)
 16. National Action Committee on AIDS. National Protocols for HIV Testing Services - NACA Nigeria. [https://naca.gov.ng > uploads > 2019/10](https://naca.gov.ng/uploads/2019/10)

17. Pouchieu C, Levy R, Faure C, Andreeva VA, Galan P, Hercberg S, Touvier M. Socioeconomic, Lifestyle and Dietary Factors Associated with Dietary Supplement Use during Pregnancy. *PLoS ONE* 2013; 8(8): e70733.
18. Okafor AO, Akwiwu EC, Akpotuzor JO. Prevalence of Anaemia after Initiation of Antiretroviral Therapy among HIV-infected Patients attending University of Calabar Teaching Hospital Calabar, Nigeria. *International Journal of Tropical Diseases and Health* 2019;35: 1-7.
19. Ekanem BP, Akwiwu EC, Akpotuzor JO. Derangement in Some Antioxidants among HIV-infected Persons in Calabar, Nigeria. *Journal of Pharmacy and Biological Sciences*, 2018;13(3): 60-63.
20. Balogun M., Odeyemi K. Knowledge and practice of prevention of mother-to-child transmission of HIV among traditional birth attendants in Lagos State, Nigeria. *The Pan African Medical Journal* 2010; 5:7.
21. Eke CB, Uche EO, Chinawa JM, Obi IE, Obu HA, Ibekwe RC. Epidemiology of congenital anomalies of the central nervous system in children in Enugu, Nigeria: A retrospective study. *Annals of African Medicine* 2016; 15(3):126-132.
22. Ugochi VE, Akwiwu EC, Akpotuzor JO. Factors associated with HIV Transmission and Infection among Persons Aged 0-17 years in Calabar Metropolis of Nigeria. *Journal of Medical and Dental Science Research* 2018;5 (5): 27-30.
23. Akpotuzor JO, Akpan PA, Akwiwu EC. Perception level of voluntary counseling/testing and knowledge/awareness of HIV/AIDS among adult population in Ugep Town of Cross River State of Nigeria. *Journal of AIDS and Clinical Research* 2013;4: 234.
24. Akwiwu EC, Akpotuzor JO. Determinants of voluntary uptake of HIV counseling and testing among infected persons in Calabar, Nigeria. *Contemporary Journal of Interdisciplinary Studies* 2018;7(4): 48-54.