MedCrave
Step into the World of Research

Journal of Pediatrics & Neonatal Care

Research Article

Open Access

CrossMark

Socio demographic and clinical correlates of antenatal care among delivering women of goma, democratic republic of congo

Abstract

Introduction: Antenatal care (ANC) is strongly associated to better maternal and neonatal outcome. We wanted to determine the prevalence of ANC at Goma, Democratic Republic of Congo (DRC).

Method: A cross-sectional survey was conducted at the five main hospitals of Goma (DRC) during the period 01/02/2010 to 30/07/2010. Variables included ANC, classic socio demographic and selected health-related factors. Descriptive statistics, bivariate analysis and logistic regression were performed. A p-value of <0.05 was considered significant.

Results: 1,156 women were included. The mean age was 26.5years (95%CI: 26.2-26.9). Women who attended at least one ANC Clinic were 95.8% (95%CI: 94.7-97.0). Primary school level (OR= 1.912; 95%CI: 1.031- 3.535; p=0.039; reference=University) and attending Bethesda private hospital (OR=0.206; 95%CI: 0.049-0.857; p= 0.030; reference=HPNK public hospital) were significantly associated to ANC Clinic attendance.

Conclusion: ANC at Goma (DRC) is objectively high. Lower educated women paradoxically seem to have a better health behavior than university graduated.

Keywords: antenatal care uptake, correlates, goma, democratic republic of congo

Volume 2 Issue 1 - 2015

Kambale Mastaki Jerome
Independant researcher, Italy

Correspondence: Kambale Mastaki Jerome, Independant researcher, Via Ippolito Nievo, 21 60015 Falconara M, Italy, Tel +39 3496331454, Fax +39 719798085, Email jkmastaki@hotmail.com

Received: November 16, 2014 | **Published:** January 05, 2015

Abbreviations: ANC, antenatal care; DRC, democratic republic of congo; WHO, world health organization

Introduction

Antenatal care (ANC) Clinics attendance by pregnant women has been proven to be strongly associated to better maternal and neonatal outcomes.[1] ANC which is given to pregnant women is widely used for prevention, early diagnosis and treatment of general perinatal and pregnancy-related issues. It helps to guarantee the well-being of Mother, fetus and neonate. ANC contributes to maternal and neonatal morbidity and mortality reduction.[2,3] Women on their part are expected to book as early as possible and attend adequate number of ANC prior to delivery. The World Health Organization (WHO) recommended that pregnant women should attend at least 4times starting from the first trimester of pregnancy.[4] Despite this recommendation from WHO, a non-negligible number of women in Sub Sahara Africa do not attend ANC services.[5]

ANC Clinics attendance is associated to several factors. In Sub Sahara Africa, those already well documented include:

i. Maternal education [6–8]

ii. Household or individual income [9,10]

iii. Geographic setting [9]

iv. Cost of service [11]

v. Enrollment in insurance schemes [12]

vi. Parity [13]

vii. Community active involvement [14]

viii. Distance to health facilities [13]

Aim

This study aims at investigating the prevalence of ANC uptake among women delivering at the main hospitals of Goma, Democratic Republic of Congo (DRC) and associated correlates, socio demographic and clinical.

Method and material

Design

A period cross-sectional and hospital-based survey was adopted and conducted.

Setting

The five main hospitals of Goma (DRC), a nearly 600,000 inhabitant's city at the period the study was conducted is located in the East part of DRC. The region has, for a long time, been theater of several humanitarian complex disasters.

Populatio

The study population was made of women of different age, who delivered their babies at the five main hospitals of Goma (DRC) during the period 01/02/2010 to 30/07/2014.

Sampling and Sample Size

A prospective systematic and random sampling stratified by healthcare institution was performed among the study population. Delivering women were included in the study on a chronological basis with intervals of 1 delivery.

The calculation of samples size was based on the following assumptions or hypotheses:

i. ANC Clinics attendance has an average rate in Sub-Saharan Africa of approximately 95.0%: 97.0% in a study by Emelumadu et al.,[5] 84.6% in a study by Iyaniwura and Yussuf [7], 97.5% in a study by Mwaniki et al.,[13] and 96.0% to 98.0% in a study by Rossier et al.,[15]

ii. The rate in Goma is expected to be slightly inferior, let us say around 90.0%, due to the fact that the surrounding area has been, theater of vary kind of wars and consequently humanitarian disasters, for many years.

The required minimum sample size, by healthcare institution, was estimated to be n=264 (p=90%, two-sided alpha=0.05). At the study completion, 1,156 women were included and distributed as following: HPNK public hospital n=242 ("response rate": 91.7%) and private hospitals CBCAV n=274 ("response rate": 103.8%), CMATERN n=243 ("response rate": 92.0%), HAFRICA n=218 ("response rate": 82.6%) and Bethesda n=179 ("response rate": 67.8%).

Data Management and Statistical Analysis

Variables consisted of classic socio demographics (age, sex, residence, marital status, education attainment, occupation status) and selected health-related factors (parity, antenatal care uptake, delivery's healthcare institution, abortions, past stillbirths, past cesarean section, women's height and weight). It was not possible to collect reliable information about the following important factors: individual and household revenue, nutritional status, HIV serology status and malaria test result.

Data of interest were manually extracted from questionnaires and obstetrics' records. They then were transferred in a Microsoft Office Excel 2007 spreadsheet and finally in the statistical package Stata 10/SE. Data-quality assessment was performed by a systematic check of the following abnormalities: missing values, outliers, improbable and impossible values and inconsistencies. They were corrected when possible. Several variables including age, education attainment and delivery healthcare institution were transformed in binary's ones. New and dummy variables were also created as needed.

Analysis began by descriptive statistics. Then followed Pearson chi-squared test for binay variables and Whitney-Mann test for quantitative continuous ones. We finally performed multiple logistic regressions. Models building was based on the *"Backwise stepwise selection"* technique while the post logistic Hosmer-Lemeshow test and ROC curve were used for models goodness-of-fit assessment. A p-value of <0.05 was considered significant.[16] All the analyses were carried out by means of the statistical package STATA 12/SE.[17]

Results

1,156 women were included (914 from the four private hospitals and 214 from the public general hospital). The distribution of the sample 'age was not normal (Shapiro-Wilk p<0.000). The mean age was 26.5years (95%CI: 26.2%-26.9%) while the median was 26.0. There was no significant difference of age's medians between women from the five hospitals (Bartlett's test for equal variances: chi2 (4) = 4.5402 Prob>chi2=0.338; Kruskall-Wallis test: chi-squared with ties=4.658 with 4 d.f. p=0.324). Most of them were resident at Goma (95.3%; 95%CI: 94.1%-96.5%), married (92.8%; 95%CI: 91.3%-94.3%), high school graduated (59.1%; 95%CI: 56.3%-62.0%) and unemployed (56.8%; 95%CI: 54.0%-59.7%).

Women who attended at least one ANC were 95.31% (95%CI: 94.7%-97.0%). Being a primary school graduate was associated with higher probabilities of ANC attendance (OR= 1.912; 95%CI: 1.031- 3.535; p= 0.039; Logistic regression reference=University degree) while delivering at Bethesda private hospital was significantly associated with lower probabilities of ANC attendance (OR=0.206, 95%CI: 0.049-0.857, p=0.030; Logistic regression reference=HPNK public hospital). The results of the goodness-of-fit tests were as following: Hosmer-Lemeshow chi2 (2) =0.79 Prob > chi2 =0.6744; Area under ROC curve=0.6469. Detailed information is presented in Tables 1-3.

Table 1 Distribution of the sample by socio demographic factors main hospitals of Goma, Democratic Republic of Congo 2010

Variables	Categories	Values	[95%CI]	
Age [years]	Maximum	45		
	Minimum	13		
	Mean	26.5	26.2	26.9
	Median	26		
	Standard deviation	6.1		
Residence n [%]	Goma	1,102 [95.3]	94.1	96.5
	Out of Goma	54 [4.7]	3.4	5.9
	Total	1,156 [100.0]		
Marital status n [%]	Married	1,073 [92.8]	91.3	94.3
	Singles	80 [6.9]	5.4	8.4
	Divorced/separated	3 [0.3]	-0.03	0.5
	Widowers	0 [0.0]		
	Total	1,156 [100.0]		
Education level n[%]	College graduated	107 9[9.3]	7.6	11
	High school graduated	681 [59.1]	56.3	62
	Primary school graduated	253 [22.0]	19.6	24.3
	No qualification	111 [9.6]	7.9	11.3
	Total	1,152* [100.0]		
Occupation status n [%]	Public sector	33 [2.9]	1.9	3.8
	Private sector	121 [10.5]	8.7	12.2
	Personal job	233 [20.2]	17.9	22.5
	Student	111 [9.6]	7.9	11.3
	Unemployed	656 [56.8]	54	59.7

Table 2 Distribution of the sample by selected health-related factors hospitals of Goma, Democratic Republic of Congo 2010

Variable	Categories	Proportion n [%]	[95%CI]	
Parity	N=0	301 [26.0]	23.5	28.6
	N=1	244 [21.1]	18.7	23.5
	N=2-3	456 [39.4]	36.6	42.3
	N>3	155 [13.4]	11.4	15.4
Miscarriage n [%]	Yes	65 [5.6]	4.3	6.90%
	No	1,091 [94.4]	93	95.70%
Previous premature births n [%]	Yes	22 [1.9]	1.1	2.7
	No	1,134 [98.1]	97.3	98.9
Previous cesarean section n [%]	Yes	162 [14.0]	12	16
	No	994 [86.0]	84	88
Antenatal care uptake n [%]	Yes	1,108 [98.8]	94.7	97
	No	48 [4.1]	3	5.3

Table 3 Logistic regression antenatal care uptake hospitals of Goma, Democratic Republic of Congo 2010

Antenatal care uptake	Odds Ratio	P>|z|	[95% Conf. Interval]	
Primary school graduated (reference: University graduated)	1.912	0.039	1.035	3.535
Student (reference: Public sector)	0.208	0.124	0.028	1.537
BETHESDA hospital (reference: HPNK public hospital)	0.206	0.03	0.049	0.857
_cons	0.045	0	0.031	0.065

Number of observations=1,151, LR chi2 (3) =15.82, Prob > chi2=0.0012

Hosmer-Lemeshow test: Number of groups =4, Hosmer-Lemeshow chi2 (2)=0.79, Prob > chi2=0.6744, Area under ROC curve=0.6469.

Discussion

ANC attendance at the main hospitals of Goma (DRC) seems surprisingly high taking account of the fact that the city belongs to the Congolese area which the most recently suffered from civil wars and other kind of humanitarian complex disasters including a devastating volcano eruption. It would therefore have been expected that attendance of health services and particularly of antenatal care would have been low. In fact, as virtually all health services in DRC are for payers and many households of that part of DRC have probably lost a significant part of their revenue, the logical expected behavior should be a net reduction of services utilization and focus on curative rather than preventive care. As stated in an above paragraph, economic factors are strongly associated to ANC attendance.[9–12]

One possible explanation may be found in the dynamics of the real target population. In fact lots of people regularly leave the inlands areas, theater of endless conflicts, to the "safe" island represented by Goma city. This ongoing massive displacement of populations to Goma has surely provoked an overcrowding of the city with consequent increase in demands and reduction of the average distance to available healthcare services. Distance is an important obstacle of ANC attendance.[13] An apparent "normal" utilization or "overutilization" of available ANC services can therefore be evidenced while it is in fact due to a significant increase in the *de facto* target population size (the denominator).

A limit to this explanation is the fact that only 4.7% of the interested delivering women declared having moved from rural zones. However the validity of this information is questionable. In fact once they have found a stable settlement in the host city of Goma, virtually all the families coming from the inlands areas usually consider themselves as host city residents. Therefore risk of information bias can't be excluded.

Our study showed two singular facts: university educated women and those who delivered at a private setting (Bethesda hospital) were less likely to attend the ANC than their counterparts theoretically more socially disadvantaged (primary school graduated and delivering at a public hospital). This finding is in absolute odds with international literature including African's.[6–12] We are unable to propose an acceptable explanation except the possibility of information's bias. This is particularly true regarding education attainment which was not verified rather it was a self-declared information. As a locally well quoted private health institution, Bethesda hospital is expected to be largely attended by the wealthy and well educated women of the city and surrounding areas. In fact, it has been showed that the cited population subgroup usually has better health-related behaviors than the disadvantaged counterpart.[18–20]

Conclusion

ANC attendance at the main hospitals of Goma (DRC) is rather high if one takes account of the context. It paradoxically seems that women theoretically most socially disadvantaged (primary school graduated and delivering at a public hospital) have better healthcare behavior. However caution is the rule as risk of information's bias can't be excluded and the study was based on institutions rather than on communities.

Acknowledgments

None.

Conflicts of interest

Author declares there are no conflicts of interest.

Funding

None.

References

1. Galvan J, Woelk GB, Mahomed K, et al. Prenatal care utilization and foetal outcomes at Harare Maternity Hospital, Zimbabwe. *Cent Afr J Med*. 2001;47(4):87−92.
2. Zegeye AM, Bitew BD, Koye DN. Prevalence and determinants of early antenatal care visit among pregnant women attending antenatal care in Debre Berhan Health Institutions, Central Ethiopia. *Afr J Reprod Health*. 2013;17(4):130−136.

3. Babalola S, Fatusi A. Determinants of use of maternal health services in Nigeria - Looking beyond individual and household factors. *BMC Pregnancy Childbirth*. 2009; 9: 43.

4. World Health Organization. Dept. of Reproductive Health and Research, Villar J, Bergsjo P, UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction. WHO Antenatal Care Randomized Trial: Manual for the Implementation of the New Model. Geneva, Switzerland. 2002. p. 37.

5. Emelumadu O, Ukegbu A, Ezeama N, et al. Socio-demographic determinants of maternal health-care service utilization among rural women in Anambra State, South East Nigeria. *Ann Med Health Sci Res*. 2014; 4(3):374−382.

6. Oladokun A, Oladokun RE, Morhason-Bello I, et al. Proximate predictors of early antenatal registration among Nigerian pregnant women. *Ann Afr Med*. 2010; 9(4):222−225.

7. Iyaniwura CA, Yussuf Q. Utilization of antenatal care and delivery services in Sagamu, South Western Nigeria. *Afr J Reprod Health*. 2009;13(3):111−122.

8. Kabir M, Iliyasu Z, Abubakar IS, et al. Determinants of utilization of antenatal care services in Kumbotso Village, northern Nigeria. *Trop Doct* . 2005;35(2):110−111.

9. Asamoah BO, Agardh A, Pettersson KO, et al. Magnitude and trends of inequalities in antenatal care and delivery under skilled care among different socio-demographic groups in Ghana from 1988 - 2008. *BMC Pregnancy Childbirth.* 2014;14: 295.

10. Cano-Serral G, Rodriguez-Sanz M, Borrell C, et al. Socioeconomic inequalities in the provision and uptake of prenatal care. *Gac Sanit*. 2006;20(1):25−30.

11. Asundep NN, Carson AP, Turpin CA, et al. Determinants of access to antenatal care and birth outcomes in Kumasi, Ghana. *J Epidemiol Glob Health.* 2013;3(4): 279−288.

12. Dixon J, Tenkorang EY, Luginaah IN, et al. National health insurance scheme enrolment and antenatal care among women in Ghana: is there any relationship? Trop Med Int Health. 2014; 19(1):98−106.

13. Mwaniki PK, Kabiru EW, Mbugua GG. Utilization of antenatal and maternity services by mothers seeking child welfare services in Mbeere District, Eastern Province, Kenya. *East Afr Med J* . 2002;79(4):184−187.

14. Ediau M, Wanyenze RK, Machingaidze S, et al. Trends in antenatal care attendance and health facility delivery following community and health facility systems strengthening interventions in Northern Uganda. *BMC Pregnancy Childbirth*. 2013;13:189.

15. Rossier C, Muindi K, Soura A, et al. Maternal health care utilization in Nairobi and Ouagadougou: evidence from HDSS. *Glob Health Action*. 2014;7:24351.

16. Kleinbaum DG and Klein M. Logistic regression, A Self Learning Text. (3rd edn), Springer, New York, USA. 2010.

17. www.stata.com

18. Goddard M and Smith P. Equity of access to health care services: Theory and evidence from UK. *Soc Sci Med*. 2001;53(9):1149−1162.

19. Cunningham PJ. What accounts for differences in the use of hospital Emergency Departments in the US Communities? *Health Affairs.* 2006;25(5):w324−w336.

20. Kamphius CBM, van Lenthe FJ, Giskes K, et al. Socioeconomic differences in lack of recreational walking among older adults: the role of neighborhood and individual factors. *Int J Behav Nutr Phys Act*. 2009; 6: 1.