ORIGINAL RESEARCH ARTICLE

Determinants of compliance with the World Health Organisation recommendations for pregnant women in an urban health centre in The Gambia

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Abstract

In 2001 the World Health Organization drew up recommendations for pregnant women in order to reduce maternal mortality: the first visit to the antenatal clinic to be in the first trimester, at least four visits in total and delivery with a trained birth attendant. This study reports the extent to which pregnant women attending a health centre in The Gambia complied with the recommendations. A cohort of 1611 consecutive pregnant women was recruited. Only 384 (23.9%) women first attended in the first trimester and 568 (41.6%) attended at least four times. Only 15.8% of the women complied with all recommendations. Following multivariate analysis the educational level of the partner was the sole factor associated with both recommendations regarding attendance. This level of compliance reflects widespread ignorance of the value of early antenatal care and frequent visits. Public health programmes require a basic level of education to be effective. *(Afr J Reprod Health 2020; 24[3]: 24-32).*

Keywords: Maternal health, antenatal, first trimester, education, male partner, The Gambia

Résumé

En 2001, l'Organisation mondiale de la santé a formulé des recommandations pour les femmes enceintes afin de réduire la mortalité maternelle: la première visite à la clinique prénatale doit avoir lieu au premier trimestre, au moins quatre visites au total et l'accouchement avec une accoucheuse qualifiée. Cette étude rapporte dans quelle mesure les femmes enceintes fréquentant un centre de santé en Gambie se sont conformées aux recommandations. Une cohorte de 1611 femmes enceintes consécutives a été recrutée. Seules 384 (23,9%) femmes y ont participé pour la première fois au cours du premier trimestre et 568 (41,6%) y ont assisté au moins quatre fois. Seulement 15,8% des femmes se sont conformées à toutes les recommandations. Suite à une analyse multivariée, le niveau d'éducation du partenaire était le seul facteur associé aux deux recommandations concernant la fréquentation. Ce niveau de conformité reflète l'ignorance généralisée de la valeur des soins prénatals précoces et des visites fréquentes. Les programmes de santé publique nécessitent un niveau d'éducation de base pour être efficaces. *(Afr J Reprod Health 2020; 24[3]: 24-32).*

Mots-clés: Santé maternelle, prénatale, premier trimestre, éducation, partenaire masculin, Gambie

Introduction

Complications during pregnancy and childbirth are the leading causes of maternal mortality in developing countries. In 2001 the World Health Organisation (WHO) published recommendations for pregnant women which included: first attendance to the antenatal clinic (ANC) to be in the first trimester (not later than 16 weeks), four visits to the ANC at specified intervals for women with uncomplicated pregnancies, and delivery with a skilled birth attendant[1]. In addition eight key antenatal clinic tests or examinations were recommended, including analysis of blood and urine samples, measurement of blood pressure and weight and other preventive procedures[2]. Attendance at the antenatal clinic in the first trimester not only enables the early detection and treatment of existing complications such as anemia, hypertension, malaria and HIV-AIDS but also provides the opportunity, at an early stage, to offer measures such as intermittent preventive

treatment (IPT) and insecticide treated bed nets to prevent malaria, and iron tablets (FeFa) to prevent anemia, as well as giving dietary and general advice for a safe pregnancy[3]. If the initial visit is in the second or third trimester there is less opportunity to pick up early signs of complications and less time to administer necessary prophylaxis[4].

Attendance at the ANC in the first trimester is one of the standard clinical measures by which the quality of maternal care is assessed[5] and early attendance is usually associated with frequent subsequent visits[3]. It is arguably the most important of all the WHO recommendations. We have previously published a qualitative study from this Health Centre[6] which has identified a number of reasons why a pregnant woman might delay attending the antenatal clinic. In this earlier study there was room for improvement throughout the pregnancy, in particular in the initial recognition and acknowledgment of pregnancy, in later pregnancy the recognition of the need for care and towards the delivery the recognition of the practical barriers to attendance. We now publish the results from a quantitative study. This study, from the first cohort study of birth outcomes from The Gambia, examines the extent to which pregnant women attending the ANC at an urban health centre comply with the WHO recommendations and reports risk factors associated with compliance.

Methods

A cohort study was conducted in a government-supported health centre in Old Jeshwang, a village located close to the largest urban centre in The Gambia, Serekunda. The health centre is a typical outreach clinic and childbirth facility. It serves the entire community of Old Jeshwang and over 500 women attend the antenatal clinic each year. The overall aim of the cohort study was to determine the rates of adverse perinatal birth outcomes. Following a pilot study to assess the incidence of low birth weight, the size of the study was determined by sample size calculations (Stata 11).

Ethical approval to conduct the cohort study was obtained from the combined Ethics Committee of the Medical Research Council and the Gambian Government prior to the commencement of the study. Informed and signed consent was requested from each woman at the first visit to the antenatal clinic after the study was explained to her in her own language. It was made clear that she was giving consent for her routine obstetric data to be used in a research project. She also knew that she was giving consent to an additional interview to record some socio-demographic variables (for example, education).

The data presented here, taken from the larger study, describes the adherence to the WHO recommendations for pregnant women. A prospective cohort of 1611 women was recruited from a total of 1664 consecutive pregnant women attending the antenatal clinic for the first time for that particular pregnancy. Recruitment continued from the beginning of December 2012 to the end of November 2015. Details of the obstetric history and the current pregnancy (such as the age of mother, number of previous pregnancies over 28 weeks, gestational age at first visit) were recorded in the antenatal register. In addition to the routine variables a senior midwife recorded socio-demographic variables by means of an interview at the first visit. At the end of the pregnancy the total number of visits to the antenatal clinic was counted. All the data were entered on to a database (Access).

Results

Of the 1664 consecutive women attending the antenatal clinic between the beginning of December 2012 and the end of November 2015 only 3 women did not give consent, but another 41 women either did not sign the consent form or had incomplete registration details. Further exclusions were six girls under the age of 16 and three women living temporarily in The Gambia. In total 53 women were excluded (3.2%) leaving 1611 women over the age of 16 years in the cohort.

Lost to follow-up

During the follow-up 239 women (14.8%) were lost to follow-up. The women for whom we knew the outcome and those lost to follow-up were compared in terms of age, number of previous pregnancies of 28 weeks gestation and the trimester at the first antenatal visit. There were no significant differences in loss to follow-up between

different age groups or the number of previous pregnancies over 28 weeks. Women who first attended in the third trimester were more likely to be lost to follow-up than those who attended earlier.

Trimester of first ANC visit

Of the initial 1611 women who entered the cohort, the trimester of the first ANC visit was known for 1609 women (Table 1). Overall, 384 (23.9%) first attended the ANC during the first trimester, 846 (52.6%) first attended the ANC during the second trimester and 379 (23.5%) first attended during the third trimester. Of the 1609 women with known trimester at first visit the mean age was 26.4 years. The majority (77.9%) were in monogamous marriages and almost half (43.6%) had no education.

Certain groups were more likely to attend the ANC during the first trimester than others. The univariate analysis (Table 1) showed that women with no previous pregnancies compared with women with previous pregnancies, women in monogamous marriages compared with single women, women with secondary or tertiary education compared with those with no education and women whose partner had completed primary, secondary or tertiary education compared to women whose partners had no education were all more likely to attend in the first trimester than other women. Following multivariate analysis marital status and levels of maternal education were no longer associated with the timing of the first ANC visit. Women aged 30 or above were more likely (OR=1.62 [95% CI: 1.096-2.399]) to attend the ANC in the first trimester compared with women aged 20-29 years, as were women whose partner had completed tertiary education (OR=1.76 [95% CI: 1.032-3.007]) compared with those with partners who had no education.

Women who had at least four previous pregnancies lasting 28 weeks gestation were less likely to attend in the first trimester (OR=0.22 [95% CI: 0.052-0.938]) than those with no previous pregnancies.

Total number of ANC visits

The total number of ANC visits reflected the timing of the initial visit. As we did not know the total number of visits for those women who were lost to follow-up we only counted the total number of visits for the 1366 women whose pregnancies were followed to the delivery. In addition, the number of ANC visits were not included for four women who had late miscarriages and two women who had died during the pregnancy.

Overall 568 (41.6%) had at least 4 recorded ANC visits (Table 2). Among 1365 women with complete information on the number of ANC visits and age, the mean age was 26.5 years. The majority, 759 women, had previously carried 1-3 pregnancies to at least 28 weeks gestation (55.6%), 1021 were in monogamous marriages (77.2%) and 1265 were Muslim (92.7%).

Certain groups were more likely than others to have at least 4 recorded ANC visits. The univariate analysis (Table 2) shows that women with at least 3 years since the previous pregnancy compared with those whose previous pregnancy was within 2 years, women in polygamous or monogamous marriages compared with single women, women with secondary or tertiary education compared with those with no education and women whose partner had been educated to any level compared to those with partners with no education were more likely to have attended at least four times.

Women who had had previous pregnancies were less likely to attend 4 times than primigravidae. Unsurprisingly, women who attended after the first trimester were also less likely to attend 4 times than women who attended the ANC during the first trimester.

Following multivariate analysis married women were still more likely to attend 4 times than single women, whether in either monogamous (OR=7.02 [95%CI: 1.44-34.11]) or polygamous marriages (OR=8.94 [95%CI: 1.76-45.48]), and women whose previous pregnancy was 3 years earlier were more likely to attend at least 4 times (OR=1.83 [95% CI: 1.131-2.969]) than those whose previous pregnancy was less than 2 years earlier. Although at the multivariate level there was no association between the level of education of the mother and the number of visits, there remained an association between the education of the partner and the number of times the mother

Table 1: Determinants of attendance at the antenatal clinic during the 1st trimester

Variable	Descriptive		Univariate analysis			Multivariate analysis		
	Total sample	No. attending 1st trimester (%)	OR	95% CI	P value	OR	95% CI	P value
Age in years	1609	384 (23.9)						
<20	170	39 (22.9)	0.98	0.663 - 1.438	0.903	0.56	0.162 - 1.9	0.349
20-29	980	229 (23.4)	1			1		
≥ 30	459	116 (25.3)	1.11	0.85 - 1.435	0.430	**1.62**	**1.096- 2.399**	**0.016***
Previous pregs >28 weeks	1609	383 (23.9)						
0	484	145 (30.0)	1			1		
1-3	876	189 (21.6)	0.64	0.5 - 0.828	0.001	0.27	0.066 - 1.078	0.064
≥ 4	249	50 (20.1)	0.59	0.40 - 0.847	0.004	**0.22**	**0.052 - 0.938**	**0.041***
Time since last pregnancy	1053	217 (20.6)						
<2 years	184	43 (23.4)	1			1		
2-<3years	398	65 (16.3)	0.64	0.4 - 0.987	0.043	0.69	0.422 - 1.114	0.127
3 years or more	471	109 (23.1)	0.99	0.6 - 1.477	0.951	0.96	0.603 - 1.539	0.876
Marital status	1561	375 (24.0)						
Single	106	15 (14.4)	1			1		
Married polygamous	239	53 (22.2)	1.73	0.925 - 3.232	0.086	2.13	0.594 - 8.205	0.271
Married monogamous	1216	307 (25.3)	2.05	1.169 - 3.592	0.012	2.15	0.594 - 7.782	0.243
Maternal education	1476	351 (23.8)						
No education	643	122 (19.0)	1			1		
Primary	154	39 (25.3)	1.45	0.958 - 2.189	0.079	1.48	0.851 - 2.586	0.165
Secondary	446	115 (25.8)	1.48	1.111 - 1.982	0.008	1.32	0.861 - 2.014	0.205
Tertiary	233	75 (32.2)	2.03	1.445 - 2.843	0.000	1.26	0.69 - 2.285	0.457
Paternal education	1411	336 (23.8)						
No education	381	61 (16.1)	1			1		
Primary	60	16 (26.7)	1.91	1.012 - 3.597	0.046	1.78	0.734 - 4.3	0.202
Secondary	505	126 (25.0)	1.74	1.241 - 2.45	0.001	1.59	0.989 - 2.565	0.056
Tertiary	465	133 (28.6)	2.1	1.496 - 2.952	0.000	**1.76**	**1.032 - 3.007**	**0.038***

attended the ANC. Women whose partners had attained secondary education (OR=1.68 [95% CI: 1.080-2.622]) or tertiary education (OR=1.81 [95% CI: 1.088-3.011]) were more likely to attend at least 4 times than those whose partners had little or no education.

As in the univariate analysis, women who attended for the first time in the second trimester (OR=0.39 [95% CI: 0.262-0.577]) or the third trimester (OR=0.07 [95% CI: 0.042-0.132]) were less likely to attend four or more times than women who attended the ANC during the first trimester. This is likely to be explained by a shortened exposure time to potential ANC visits.

Birth with a skilled birth attendant

The immediate birth outcome was known for 1366 women, and the place of birth was known for 1340 deliveries. Of those 1277 were attended by a skilled birth attendant (95.3%). Only 8 (2.4%) of the 331 women who attended in the first trimester were not delivered by a skilled birth attendant. Of the 705 women who first attended in the second trimester 31 (4.6%) were not delivered by a skilled birth attendant and of the 304 women who first attended in the third trimester 24 (7.9%) were not delivered by a skilled birth attendant.

Table 2: Determinants of four or more visits to the antenatal clinic

Variable	Descriptive		Univariate analysis			Multivariate analysis		
	Total sample	No. >=4 visits (%)	OR	95% CI	P value	OR	95% CI	P value
Age in years	1365	568 (41.6)						
<20	139	45 (32.4)	0.58	0.399 - 0.853	0.005	0.43	0.133 - 1.416	0.166
20-29	834	376 (45.1)	1			1		
≥ 30	392	147 (37.5	0.73	0.572 - 0.934	0.012	0.82	0.552 - 1.208	0.311
Previous pregs >28 weeks	1365	568 (41.6)						
0	398	192 (48.2)	1			1		
1-3	759	306 (40.3)	0.72	0.568 - 0.925	0.010	0.39	0.083 - 1.828	0.232
≥ 4	208	70 (33.7)	0.54	0.384 - 0.771	0.001	0.33	0.068 - 1.604	0.169
Trimester at first visit	1364	568 (41.6)						
1	336	218 (64.9)	1			1		
2	716	316 (44.1)	0.43	0.327- 0.559	<0.001	**0.39**	**0.262 - 0.577**	**<0.001***
3	312	34 (10.9)	0.07	0.043 - 0.101	<0.001	**0.07**	**0.042 - 0.132**	**<0.001***
Time since last pregnancy	908	345 (38.0)						
<2 years	162	50 (30.9)	1			1		
2-<3years	339	124 (36.6)	1.29	0.866 - 1.927	0.209	1.55	0.954 - 2.533	0.076
3 years or more	407	171 (42.0)	1.62	1.102 - 2.39	0.014	**1.83**	**1.131 - 2.969**	**0.014***
Marital status	1323	552 (41.7)						
Single	91	25 (27.5)	1			1		
Married polygamous	211	92 (43.6)	2.04	1.196 - 3.484	0.009	**8.94**	**1.76 - 45.48**	**0.008***
Married monogamous	102	435 (42.6)	1.96	1.217 - 3.157	0.006	**7.02**	**1.44 - 34.11**	**0.016***
Maternal education	1251	523 (41.8)						
No education	531	184 (34.7)	1			1		
Primary	131	54 (41.2)	1.32	0.894 - 1.956	0.161	1.00	0.563 - 1.766	0.993
Secondary	389	183 (47.7)	1.68	1.282 - 2.189	0.000	1.46	0.971 - 2.201	0.069
Tertiary	200	102 (51.0)	1.96	1.411 - 2.73	0.000	1.12	0.622 - 2.005	0.711
Paternal education	1208)	508 (42.1)						
No education	321	103 (32.1)	1			1		
Primary	51	24 (47.1)	1.88	1.035 - 3.42	0.038	1.43	0.606 - 3.36	0.415
Secondary	436	185 (42.4)	1.56	1.154 - 2.109	0.004	**1.68**	**1.08 - 2.622**	**0.021***
Tertiary	400	196 (49.0)	2.03	1.498 - 2.76	0.000	**1.81**	**1.088 - 3.011**	**0.022***

Overall compliance

To examine the overall compliance with the WHO recommendations we restricted the denominator to the 1339 women for whom we knew the trimester of first visit, total number of ANC visits and place of delivery. Of these 331 (24.7%) first attended during the first trimester and 562 (42.0%) attended the ANC for 4 or more visits. The number of women giving birth with a skilled birth attendant, either in a health centre or a hospital was 1276 (95.3%), no doubt a consequence of the fact that all the women were recruited as they first attended the ANC and would have been encouraged to have a skilled delivery at every subsequent visit throughout the pregnancy. Despite almost all the women delivering with a skilled birth attendant only 212 (15.8%) women complied with all three of these WHO recommendations.

Discussion

The essential components of the WHO recommendations for a safe pregnancy are recognised as: antenatal care commencing in the first trimester, a minimum of four visits to the antenatal clinic (ANC) and delivery with a skilled birth attendant. These guidelines, drawn up in 2001[1], are widely acknowledged in low income countries but are rarely achieved. In the study reported here, from an urban health centre in The Gambia at the end of the period covered by the Millennium Development Goals; only 15.8% of women attending the ANC complied with all three recommendations.

Poor compliance with the WHO recommendations has been reported throughout sub-Saharan Africa and a number of studies, either systematic reviews which might include countries beyond sub-Saharan Africa or reports from Demographic Health Surveys which are large but retrospective, have reported the extent to which the recommendations have been overlooked. An earlier survey from The Gambia, in 2008, of pregnant women attending 12 antenatal clinics across the country reported that only 8% of the women attended in the first trimester[7]. In many countries women perceive the optimum time to first attend the ANC to be in the second trimester[5,8-12]. Attendance at the ANC in the first trimester is one of the standard clinical measures by which the quality of maternal care is assessed[5].

At least four visits to the ANC are also recommended in order to check the health of both mother and unborn baby as well as administer preventive measures such as malaria prophylaxis on more than one visit. This recommendation is achieved more frequently than first attending in the first trimester. The earlier survey from The Gambia reported that 52% of the women attended at least 4 times[7] and a recent study from Ghana reported that 86% of pregnant women attended the ANC at least 4 times[12]. However more frequent visits are not necessarily accompanied by an increase in the quality of care[2]. Using this measure of antenatal care only captures the level of contact and does not reflect the services received. A recent Demographic Health Survey from countries across sub-Saharan Africa reported that although on average 51% of the women had at least 4 or more antenatal care visits, only 5% received all of the 8 key antenatal care interventions[13].

The more recent recommendation from the WHO is for at least 8 visits to the ANC but a report from Malawi[2] concludes that given the level of underutilisation when the benchmark is set at 4 visits, eight visits are unlikely to be feasible in low-resource settings.

Although throughout sub-Saharan Africa women generally recognise when they become pregnant, many have misconceptions of the purpose of antenatal care and are unaware that they should attend an antenatal clinic in the early stages. Almost all of the studies which have examined the reasons for underutilisation of antenatal services suggest that ignorance of the value of antenatal care, and the specific requirements of early first attendance and frequent visits, lies behind the poor uptake. This ignorance remains prevalent today[8,11,14-16].

Some studies, either systematic reviews or Demographic Health Surveys, have reported specific factors associated with late first attendance or factors associated with the total number of visits. There do not appear to be any cohort studies from sub-Saharan Africa which have examined factors associated with both these outcomes. The advantage of a cohort study, such as the one reported here from The Gambia, is that the factors associated with the outcomes are collected at the beginning of the study rather than after the outcomes of interest have been measured.

We report here results for a cohort of women who attended an urban antenatal clinic in The Gambia. In this cohort 42.5% of the women had had no education at all, compared with only 26.6% of the partners. In this cohort study, following multivariate analysis, women whose partner had completed tertiary education were more likely to attend the ANC in the first trimester than younger women or women whose partners were less well educated. Two other studies also examined the effect of the partner's education on the timing of the first visit to the ANC and reported that women whose partner had attained secondary or higher level of education were more likely to

attend in the first trimester[17,18]. Women over 30 were also more likely to attend in the first trimester than younger women.

Other reports suggest that women with little or no education are less likely to attend the ANC in the first trimester than mothers with some education[11,15,17]. Women who are unemployed or have a low monthly income are also less likely to attend the ANC in the first trimester[8,16,17].

Recent attempts to involve partners by attending the ANC, however, have not been successful and although the women were significantly more likely to have routine urine and blood tests, male attendance alone was not associated with either attending during the first trimester or attending at least 4 times[19].

We also examined factors associated with four or more visits to the ANC. As might be expected, women who first attended the ANC in the second or third trimester were less likely to achieve four visits in total than women who first attended in the first trimester. Again, the education of the partner is important. At the multivariate level women whose partner had achieved either secondary or tertiary education were more likely to attend at least four times than women with a less well educated partner. Women with a previous pregnancy more than three years earlier, and married women, were also more likely to attend at least 4 times.

Other studies report similar findings. In a study from Ghana having a partner with a high educational level was associated with at least four visits to the ANC. Being married and having health insurance was also associated with attending the ANC at least 4 times[12]. One other factor that was not measured in this study but which is mentioned in other papers is the wealth of the household. Use of the health services in pregnancy is associated with the household income[20], which in turn may be related to the partner's education.

A previous qualitative study from this health centre has identified three areas for improvement regarding attendance at the antenatal clinic: recognition and acknowledgment of pregnancy, recognition of the need for care, and recognition of the practical barriers to attendance[6]. Many women wait until at least the second trimester before attending the ANC. Intentional concealment was common in early pregnancy to avoid adverse social consequences and for fear of malign interventions considered to result in miscarriage. Later in the pregnancy, in the absence of adverse symptoms, many women considered it unnecessary to attend the ANC and in the latter weeks of pregnancy women were faced with conflicting domestic demands[6]. In many other sub-Saharan African countries cultural beliefs also play an integral role in the decision to attend an antenatal clinic[21]. A qualitative study from Burkino Faso reports that the decision when a pregnant woman attends an antenatal clinic is made by husbands and brothers-in-law[22]. The qualitative and quantitative studies go hand in hand.

Women in The Gambia are comfortable blending traditional and Western medicine but the poor outcomes would suggest that adherence to the WHO recommendations would be beneficial.

Conclusion

This report, from the first cohort study of birth outcomes from The Gambia, examines the extent to which pregnant women, attending the ANC at an urban health centre, comply with the WHO recommendations for pregnancy and delivery[1]. Only 15.8% of the women complied with all three recommendations of first attendance in the first trimester, at least four visits to the ANC and delivery with a trained birth attendant. We also report risk factors associated with both first attendance during the first trimester and a total of at least four visits to the ANC. The only variable associated with both of these recommendations was the educational attainment of the partner.

In the previous qualitative study from this cohort we recorded the social reasons associated with poor attendance at the ANC. In many ways these two studies complement each other – superstition and lack of knowledge were common themes. Many countries in sub-Saharan Africa remain very patriarchal, polygamy is commonplace and education for the girls lags behind education for the boys. In these countries, and The Gambia is no exception, the level of education of the father shapes the health behaviour of the mother[23].

The level of compliance with the WHO recommendations reported here was disappointing

and reflects widespread misunderstanding of the value of early antenatal care and frequent visits to the ANC. Public health programmes are likely to require a basic level of education to be effective. The recent emphasis by a number of NGOs on improving girls' education in developing countries is very important but should not be pursued at the expense of the education of the boys. Education at secondary level throughout sub-Saharan Africa should be a goal for every child.

Contribution of Authors

SL and JN conceptualised and planned the study. SL and ISC supervised and conducted the field research. JG and DR conducted the statistical analyses. All authors read and approved the final manuscript.

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Ethical Approval

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