



International Journal of Medical and All Body Health Research

Evaluating the Quality of Health Services Provided to Pregnant Women at Sudanese Family Planning Association, El-Fateh El-Nour Clinic in El-Obeid City, North Kordofan State, Sudan

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Article Info

ISSN (online): 2582-8940

Volume: 05

Issue: 01

January-March 2024

Received: 05-02-2024;

Accepted: 10-03-2024

Page No: 25-30

Abstract

Background and objective: The quality of antenatal care services is one of the biggest challenges facing the health system in Sudan due to many reasons such as lack of government funding, and lack of financial support, in addition to the lack of continuous evaluation of prenatal care services. The study aimed to assess the antenatal care services among pregnant women. **Materials and methods:** An institution-based cross-sectional study was conducted at the Sudanese Family Planning Association, El-Fateh El-Nour Clinic in El-Obeid City, Sudan from August to September 2021. Three hundred eighty-six (386) pregnant women were interviewed. A simple random probability sampling technique was used to select participants. The findings are described according to a designed self-administrative questionnaire and data collection tools prepared carefully. Data was analyzed and processed using the Statistical Package of Social Sciences (SPSS) version (23.0) and Microsoft Excel (2010) software. **Results:** About 31 (8%) of pregnant women fall under 18 years old. About 71(18.4%) of pregnant women were illiterate. More than a third 290 (75.7%) of pregnant women received folic acid pills from the clinic. The clinic had requested HIV testing from 138 (36%) of pregnant women. About 215 (56.1) of them had received tetanus vaccine during pregnancy. The majority 340 (88.8%) of pregnant women reported that all examinations were available at the clinic. 350 (91.4%) of pregnant women received prenatal follow-up. Half 195 (50.5%) of pregnant women mentioned they were not receiving instructions for a healthy pregnancy. **Conclusion:** The study shows the absence of home follow-up for pregnant women by clinic staff, a lack of HIV testing services, and a shortage of communication between the woman and her healthcare team.

Keywords: Quality, Health Services, Pregnant Women, El-Obeid

Introduction

Mothers and children make up over 2/3 of the whole population. Women of reproductive age (15 – 49) constitute pregnant women (21%), children under one years (4.5%), children under five (47%), under three years (18%) and infants (4%). Maternal mortality is an adverse outcome of many pregnancies. Miscarriage, induced abortion, and other factors cause over 40% of pregnancies in developing countries to result in complications, illnesses, or permanent disability for the mother or child ^[1]. Complications of pregnancy and childbirth are the leading causes of disability and death among women in their reproductive age (15-49 years) in developing countries ^[2].

Quality is as defined “According to standards; appropriate performance of interventions that are known to be safe, that are affordable to the society in question, and the ability to produce an impact on mortality, morbidity, disability, and

Malnutrition [3]. High-quality antenatal care (ANC) can reduce maternal and neonatal morbidity and stillbirths through prevention, as well as early identification and management of pregnancy complications or pre-existing conditions [4]. Quality antenatal care includes efficiency, efficacy, effectiveness, equity, accessibility, comprehensiveness, acceptability, timeliness appropriateness, continuity, privacy, and confidentiality [3].

Globally, complications during pregnancy, childbirth, and the postnatal period have been the leading causes of death and disability among reproductive-age women [5]. Every day, almost 800 women die due to pregnancy or childbirth complications. 90% of maternal deaths take place in Africa and Asia; the risk of a woman dying from maternal causes in sub-Saharan Africa is 1 in 39, accounting for 56% of the global maternal deaths [6]. In Sudan One in every 32 Sudanese women is at risk of maternal death. Maternal deaths are common in Sudan and disproportionately occur among the poorest, the rural, and the nomad populations. Over 60% of maternal deaths in the country are caused by easily preventable and treatable birth complications [7]. The maternal mortality rate in Sudan is 295 deaths per 100, 00 live births, and almost one a quarter of births are not attended by skilled health personnel [8]. Early prenatal care, starting in the 1st trimester, is crucial to the health of mothers and babies. But more important than just initiating early prenatal care is receiving adequate prenatal care, and having the appropriate number of prenatal care visits at the appropriate intervals throughout the pregnancy [9].

Improving health before pregnancy is often a missed opportunity. Health for women before and around conception builds on the health status of girls and women across different life stages. Pre-pregnancy care includes improving health behaviours, folic acid supplements, managing long-term health conditions, immunization, and genetic counselling where relevant [10]. Maintaining good health before getting pregnant and getting good care for any health issues can reduce the risk of early miscarriage and birth defects through genetic counseling and daily supplementation of folic acid, management of health conditions, and avoiding substance use [9]. They may target issues that are common for adolescents by providing counseling for pregnancy prevention, testing for pregnancy and sexually transmitted diseases, substance abuse counseling, and nutrition and weight loss counseling [11].

The World Health Organization (WHO) recommends four antenatal care visits, which at a minimum should include the following services: (1) blood pressure measurement, (2) urine testing for bacteruria and proteinuria, (3) blood testing to detect syphilis and severe anemia and, (4) tetanus immunization. In addition, pregnant women should receive information counseling on self-care at home, nutrition, breastfeeding, family planning, birth planning, advice on danger signs during pregnancy/delivery, and emergency preparation [12]. For computing the content of FANC service the women received: History taking, Physical examination, laboratory evaluations, and provision of therapeutics (supply). Information provided and advice on danger signs was asked each item had 1 point if performed while having 0 which was not performed. History taking had 7 items which Personal history, Social History, Family history, Medical history, surgical history, Obstetric history, and history of current pregnancy. Physical examination had 11 items whether the women had or not those are weight, height, Bp measurement, Eye conjunctiva and sclera evaluation, neck

examination, Breast examination, abdominal examination, fetal heart rate recording, vaginal examination, leg examination for edema and varicose vein evaluation [3].

The nutritional deficiency of B vitamins, including folates and vitamin B12, has been related to some alterations during pregnancy, such as low birth weight, premature births, and fetal malformations, among others [13]. Folic acid is now known that the majority of Neural tube defects [NTD] can be prevented through the consumption of FA via oral supplements and through fortification of the food supply. There are several forms of NTDs including anencephaly, encephalocele, hydranencephaly, iniencephaly, and spina bifida, as well as rarer forms. Promoting early use of FA supplements is identified as a policy priority within the Maternity Strategy [14]. Several countries have set up public policies to fortify foods with folic acid (FA). Chile started the fortification of wheat flour with FA in the year 2000, decreasing in 43% the prevalence of NTD [13]. Foods such as peas, beans, green leafy vegetables, lentils, and orange juice contain folate, as do fortified breakfast cereals. However, women are also advised to take daily folic acid supplements of 400 micrograms before conception and throughout the first 12 weeks of pregnancy, even if they are already eating a folate-rich diet [15].

Vaccinations during pregnancy are a significant part of adult immunization practices. Due to the physiological changes during pregnancy, maternal infections and associated complications are more severe compared to the normal population. Vaccination during pregnancy is a safe and efficient health strategy not only for mothers but also for the fetuses [16]. As part of standard wound management to prevent tetanus, a tetanus toxoid-containing vaccine might be recommended for wound management in a pregnant woman if ≥ 5 years have elapsed since the previous Td booster. If a Td booster is recommended for a pregnant woman, health-care providers should administer Tdap. [17]. According to the World Health Organization (WHO), tetanus toxoid (TT) infection remains one of the major contributors to maternal and child mortality in regions such as Sub-Saharan Africa (SSA). This preventable disease is transmitted through contaminated wounds and is often found in individuals who have not received the necessary vaccinations or booster shots to maintain immunity [18].

Materials and Methods

An institution-based cross-sectional study was conducted in El-Obeid City, North Kordofan state among pregnant women admitted to the Sudanese Family Planning Association, El-Fateh El-Nour clinic from August to September 2021. The study aimed to assess the quality of antenatal care services provided to pregnant women. It covered 384 pregnant women attending the clinic during the study period. El-Obeid City is the capital of North Kordofan State. Its area has been estimated at 81 km² and the distance from Khartoum is about 560 km. North Kordofan State is one of the biggest states in Sudan; it is one of the 18 states of Sudan. It has an area of 185,302 km² and an estimated population of 2,920,890. A total of 384 pregnant women were selected for a study of malaria prevalence. The sample size was determined by using the following formula:

$$n = \frac{z^2 Pq}{d^2}$$

Where:

n: Sample size,

z: The value of the standard normal variable corresponding to a confidence rate (95%), equal to 1.96

p: Probability value = (0.50),

q: Complement value = (1- 0.50),

d: Marginal of error = (0.05)

Sample techniques

The total sample used in this study comprised three hundred and eighty-four (386) pregnant women from the sampled Sudanese family planning association Center. To select the required sample, simple random sampling techniques were used.

Data collection

To collect data for this study, three hundred and eighty-four (386) copies of the questionnaire were distributed to pregnant women attending antenatal clinic at the Sudanese family planning association. The researchers were used self-administrative questionnaire.

Data processing and analysis

Data was collected and analyzed using the Statistical Package of Social Sciences (SPSS) version (23.0) and Microsoft Excel software (2010).

Result

A total of (386) pregnant women were selected, were participated (100%) response rate, among the total participants (70.7%) of pregnant women from urban area and (29.3%) from rural area (see Fig 2). Fig 1 illustrated that about (8%) of pregnant women fall in the less than 18 years, (50.5%) of them fall between the 18 - 25 years age group, (39.4%) in the 26 – 35 years age group and (2.1%) were more than 35 years old. Form Fig 3; the education level; (47. 7%) of pregnant women had education qualified basic school, (21.2%) secondary, (12.2%) university graduate, (0.5%) post graduate and (18.4%) illiterate. The study illustrated that 101 (26.2%), 112 (29.02%) and 172 (44.6%) of women attended antenatal care in the first, second and third trimester respectively, as shown in table 1.

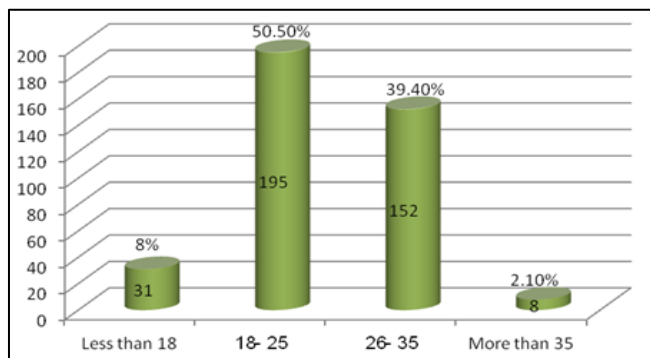


Fig 1: Distribution of pregnant women according to their age group; n=386

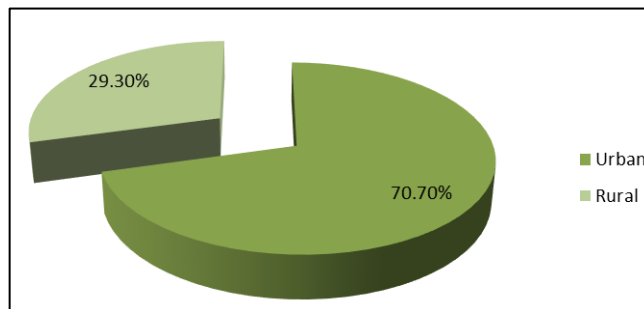


Fig 2: Distribution of pregnant women according to their resident; n=386

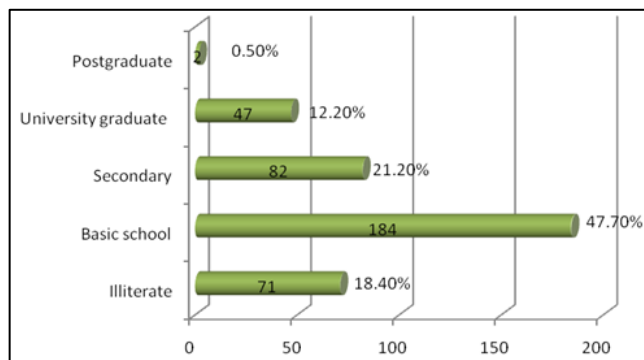


Fig 3: Distribution of pregnant women according to their educational level; n=386

Table 1: Distribution of pregnant women according to gestational age of pregnancy; n=386

Age of pregnancy	Frequency	Percent
1 st Trimester	101	26.2%
2 nd Trimester	112	29.02%
3 rd Trimester	172	44.6%
Total	386	100%

The above table illustrated that 101 (26.2%), 112 (29.02%) and 172 (44.6%) of pregnant women attended antenatal care in the first, second and third trimester, respectively.

Table 1: Number of visits to clinic by pregnant women; n=386

Visits	Frequency	Percent
For the first time	28	7.3%
Second and above (frequent)	358	92.7%
Total	386	100%

The above table illustrated that 28 (7.3%) of pregnant women were visit clinic for the first time, and 358 (92.7%) were visit more than one.

Table 2: Assessment of Antenatal Services Provided to Pregnant Women; (n= 386).

Variables	Frequency	Percent	Mean	Std. Deviation	Variance
Does the center give folic acid pills?					
Yes	290	75.7%	1.3212	0.60338	0.364
No	68	17.8%			
First time visit	28	7.2%			
Are tetanus vaccination services provided to pregnant women?					
Yes	215	56.1%	1.5155	0.62918	0.396
No	143	37.3%			
First time visit	28	7.2%			
Is information provided to the pregnant woman about the correct use of medicines?					
Yes	333	86.9%	1.2876	0.80756	0.652
No	23	6.0%			
I don't know	2	0.5%			
First time visit	28	7.2%			
Are all examinations for pregnant women available at the center?					
Yes	340	88.8%	1.2668	0.79856	0.638
No	17	4.4%			
I don't know	1	0.3%			
First time visit	28	7.2%			
Does the center request HIV testing for pregnant women in the clinic?					
Yes	138	36.0%	1.7150	0.59139	0.350
No	220	57.4%			
First time visit	28	7.2%			
Is it possible for pregnant women to follow up with obstetrics and gynecology specialists?					
Yes	350	91.4%	1.1658	0.53303	0.284
No	8	2.1%			
First time visit	28	7.2%			
Does the clinic carry out home follow-up for pregnant women?					
Yes	9	2.3%	2.0492	0.30606	0.094
No	349	91.1%			
First time visit	28	7.2%			
Do you have received instructions health about pregnancy at this clinic?					
Yes	163	42.2%	1.6434	0.64941	0.422
No	195	50.5%			
First time visit	28	7.2%			

The above table showed that 290 (75.7%) of pregnant women said that had received folic acid pills from clinic. 215 (56.1) of them had received tetanus vaccine during pregnancy when attending clinic. Clinic provided the pregnant woman health information and guides about the correct use of medicines. 340 (88.8%) of pregnant woman reported that all examinations for pregnant women available at the clinic. 138 (36%) of them reported that the clinic had requested HIV testing for pregnant women. 91.4 (91.4%) said that may pregnant women to follow up with obstetrics and gynecology specialists. 91.1 (91.1%) declared that the clinic didn't carry out home follow-up for pregnant women. 195 (50.5%) of pregnant women mentioned the clinic doesn't provide the instructions for health about pregnancy to pregnant women.

Discussion

The present study illustrated that 101 (26.2%), 112 (29.02%) and 172 (44.6%) of pregnant women attended clinic in the first, second and third trimester respectively. A study carried out in Kassala, eastern Sudan, findings that 483 (59.6%), 303 (37.4%) and 25 (3.1%) of women attended antenatal care in the first, second and third trimester, respectively [19].

This study showed that 290 (75.7%) of pregnant women said that had received folic acid pills from clinic. This finding is higher than a similar study conducted in Wogera District, Northwest Ethiopia; showed that 96.1% pregnant women received iron folate supplementation [5]. On other hand, this is lower than a similar study carried out in Kenya, illustrated

that 89% pregnant women received iron supplementation [4]. All women who may possibly become pregnant within the next three months, whether intentionally or not are advised to take oral Folic Acid (FA) 400 micrograms daily to prevent Neural Tube Defects (NTDs) [14]. National Institute for Health Research in England reported that folic acid supplements taken before and during early pregnancy reduce the risk of neural tube defects in the baby. Evidence showed that women receiving multivitamins plus iron and folic acid had reduced risk for stillbirth [10]. The use of iron or iron and folic acid supplements was associated with a reduced risk of anaemia and iron deficiency during pregnancy [20]. Our study showed that 215 (56.1) of them had received tetanus vaccine during pregnancy when attending clinic. This is lower than a similar study carried out in Kenya, about 87% received a tetanus injection [4]. A similar study conducted in Wogera District, Northwest Ethiopia, showed that tetanus toxoid is fully (100%) available during the data collection [5]. A similar study conducted in Sudan, findings that almost all facilities (92%) offered Tetanus Toxoid (TT) immunization [21]. The World Health Organization (WHO) recommends four antenatal care visits, including the tetanus vaccination [12]. Centers for Disease Control and Prevention (CDC) recommends tetanus toxoid should be given during each pregnancy [22]. Obstetric care providers should administer tetanus toxoid, reduced diphtheria toxoid and a cellular pertussis (Tdap) vaccine to all pregnant patients during each pregnancy, as early in the 27 – 36 weeks of gestation window

as possible [23].

The current study findings that 340 (88.8%) of pregnant woman reported that all examinations such as; blood pressure, weight, urine analysis, blood group, blood glucose, haemoglobin, etc... were available at the clinic. A health survey conducted in Indonesia (2002/2003 and 2007) revealed that their weight, blood pressure and urine analysis were checked on 97.3%, 95.1% and 86.3% respectively [24]. Tekelehaymanot reported that laboratory evaluation had 7 items: Hemoglobin/Hematocrit, VDRL, Blood group, RH factor, Urine test, HIV test, Stool examination [3]. The pregnant woman usually has a medical examination carried out by obstetrician once her pregnancy is confirmed. This medical examination includes general appearance of the pregnant woman, general examination of the mouth and mucous membranes, height, weight, blood pressure, blood tests that include full blood count, blood group, blood glucose, haemoglobin, hepatitis B and HIV screening. The urine analysis also generally carried out as a routine investigation. Breast examination, the heart and the lungs, and examination of legs for varicose veins and edema are also performed as part of the medical checkup [25]. A similar study conducted in a rural county in Kenya, a showed that about 90% had their blood pressure measured, and 78% had a urine test, but only 58 and 14% reported blood pressure monitoring and urine test, respectively, at every visit [4].

Our study illustrated that the clinic had requested HIV testing from 138 (36%) of pregnant women. This finding is lower than a similar study conducted in Wogera District, Northwest Ethiopia, showed that (92.9%) of pregnant women had HIV test services [5]. The first ANC visit also includes a more in-depth medical history and physical examination, including head to toe examination, recording weight and height, blood group typing, HIV testing and counseling, and assessing needs for specialized care [4].

This study findings that 350 (91.4%) of pregnant said that may pregnant women to follow up with obstetrics and gynecology specialists. Prenatal follow-up, through preventive actions, seeks to ensure the healthy development of pregnancy and enable the birth of a healthy baby, preserving its health and its mother [26]. This result is higher than a study showed that only 21.6% of women received prenatal follow-up considered appropriate [27]. Other a similar study observed that 48.4% of pregnant women were assisted in the prenatal period by a physician alone, 80.4% had seven or more consultations, and 78.1% had an early onset of prenatal care up to 12 weeks of pregnancy [26].

The present study illustrated that 349 (91.1%) pregnant women didn't received home follow-up from the clinic staff. This study disagreement with a study conducted among pregnant women in Omani Polyclinics showed that about 69.8% of pregnant women received an early home visit by a health visitor [35]. Women should be adequately supported and treated in the community by GPs, midwives and health visitors, with access to psychological therapy services [28]. There is strong evidence for the effectiveness of peer support at home for mothers of term, low birth weight infants on any breastfeeding up to 24 weeks [29]. Pregnant women should receive information counseling on self-care at home [21]. An early study showed potential for using cognitive behavioural therapy for antenatal depression, with women given 12 home-based sessions having fewer symptoms after birth than those receiving routine care [10]. A half 195 (50.5%) of pregnant women mentioned that the clinic doesn't provide the

instructions health about pregnancy. This finding is inconsistency with NICE which stated, At the first antenatal (booking) appointment (and later if appropriate), discuss and give information on: Safe use of medicines, health supplements and herbal remedies during pregnancy, what blood tests and ultrasound scans are offered and how the baby develops during pregnancy, and contact the woman's GP to share information about the pregnancy and potential concerns or complications during pregnancy [30].

Conclusion

On the basis of the findings, the following recommendations were made: the clinic administrates should make proper provision of antenatal care services for reduction of maternal and infant morbidity and mortality. The clinic should encourage all pregnant women to receive all available services.

Ethical Considerations

The study protocol was peer-reviewed approved by Joint EMRO/TDR Small Grants Scheme for Implementation Research in Tropical Diseases, before commencing the work. A letter of Identification from the Faculty of Public and Environmental Health, University of Kordofan, El-Obeid City was used in pre survey visits made to the State Ministry of Health to obtain permission from the ministry's authorities. The purpose of the study was carefully illuminated to the pregnant women after which their consent was pursued before sample collection. The final report was submitted to World Health Organization, State Ministry of Health research board and Sudanese Family Planning Association. Also the results will be available through Publication in journals.

Conflicts of interest

The authors declare no conflict of interest.

Acknowledgments

Firstly, the authors are thankful to the World Health Organization and staff member of the Eastern Mediterranean Office (EMRO) and the Special Programme for Research and Training in Tropical Diseases (TDR). The authors are thankful to the administrations of (University of Kordofan, and State Ministry of Health - North Kordofan for giving permission to conduct this project and staff member of Sudanese family planning association (SFPA) for their collaborate throughout. lastly The authors wish to thanks all the participants for their co-operation.

Funding

This project was fully funded by World Health Organization - Joint EMRO/TDR Small Grants Scheme for Implementation Research in tropical Diseases 2020-2021. Under Grant Number: **SGS 20-75**

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