



Postnatal Care: The Impact of Early Visits among Parturients in Enugu, Southeast Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Authors ACAB and LCI designed the study, wrote the protocol and wrote the first draft of the manuscript. Author HUE managed the literature searches, analyses of the study and performed the spectroscopy analysis. Author UUA managed the statistical analysis. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJMMR/2016/29590

Editor(s):

(1) Yin-hua Yu, Department of Gynecology, Obstetrics and Gynecology Hospital of Fudan University, Shanghai Key Laboratory of Female Reproductive Endocrine Related Diseases, China.

Reviewers:

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(3) Kishor P. Brahmapurkar, LBRKM Government Medical College, India.

Complete Peer review History: <http://www.sciencedomain.org/review-history/16998>

Original Research Article

Received 19th September 2016
Accepted 15th November 2016
Published 23rd November 2016

ABSTRACT

Background: Postnatal care is an important preventative health programme capable of reducing maternal and infant morbidity and mortality but had been underutilized in developing countries. Proper utilization has been associated with improved patient satisfaction.

Objective: The aim of this study is to investigate the usefulness of additional visit at 7-9 days postpartum to the pre-existing protocol of postnatal visit at 6 weeks only and to determine the pickup rates of postpartum complications between the two protocols.

Methodology: This was a comparative interventional study among parturients who attended postnatal care in two hospitals in Enugu, South East Nigeria. Data was analysed using SPSS statistical software version 20.0 for windows (Chicago IL, USA). Test of significance was done using the Pearson's Chi-square test and the level of significance was taken at P value ≤ 0.05 .

Results: Compliance with the additional visit (7-9 days and 6 weeks) was 37.3% and 52.5% for the

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traditional model (6 weeks only). More women presented with complaints at 7-9 days than at 6 weeks (85.6%) versus (12%), ($P \leq 0.001$); postpartum hypertension (12.2%) versus (2.2%), ($P \leq 0.001$) and postpartum depression (5.3%) versus (1.8%), ($P \leq 0.001$).

Conclusion: Compliance with early visits at 7-9 days postpartum enhanced the chances of picking up postpartum morbidities. This should be emphasized during antenatal counseling sessions.

Keywords: Postnatal care; early; 7-9 days; six-weeks; postpartum; complications.

1. INTRODUCTION

Maternal and infant mortality are a major concern world over. Approximately 287,000 maternal deaths occur annually of which more than half (56%) occur in sub-Saharan Africa [1,2]. Nigeria's maternal mortality rate of 630 per 100,000 live births is very high even by African standard [3,4]. Nigeria which has approximately two per cent of the world's population contributes almost 10% of the world's maternal deaths [5,6,7]. Most maternal deaths-approximately two thirds occur in the post natal periods [4,8].

Similarly, an estimated 4 million babies die worldwide in the first 4 weeks of life (the neonatal period) annually [9]. Of these, 99% occur in low and middle income countries, where a large population of births take place at home and where post natal care is either not available or is of poor quality [10]. In Nigeria, more than half (56%) of women did not receive any post natal care, 38% received a post natal check-up within two days of delivery while 3 per cent of women had a check-up 3 to 41 days after delivery [11].

The postnatal period is the time from just after delivery through the first six weeks of life [9]. Postnatal care services enables health professionals identify post-delivery problems, and their associated risk factors as well as provide prompt treatment [12,13]. Additionally, postnatal care provides a veritable opportunity for parturients to reinforce their knowledge on best practices in motherhood initiated during the antenatal period. These include information and support on exclusive breastfeeding, adequate nutrition during breastfeeding, instructions on breast care, advice on the care of the newborn and use of family planning [14].

Goulet et al. [15] observed that newly delivered babies who had an early contact with a health professional following discharge were less likely to be readmitted to the hospital, while their mothers were less likely to have signs of moderate to severe depression at one month postpartum.

Despite the beneficial impact of postnatal care, several factors prevent full utilization of postnatal care services. In Nepal, the socio-cultural practices around childbirth and maternal seclusion after delivery and cultural beliefs in a community play a vital role in non-utilization of postnatal care services [8]. In Nigeria, low literacy levels, poor socio-economic circumstances of women and preponderance of deliveries outside health facilities deter women from reaping the full benefits of postnatal care services [11,14]. An assessment of the quality of postnatal services offered by midwives in Malawi reported that lack of staff supervision by more experienced midwives, heavy work load in most government hospitals, substandard infrastructure and equipment hindered the provision of quality of health care [16].

In 2014, World Health Organization (WHO) recommended that a mother and her newborn should receive postnatal care within 24 hours of their birth and then at least three additional postnatal contacts on day 3 (48-72 hours), between days 7-9 and six weeks after birth [17].

Though adopted in Nigeria, adherence to this regimen had been variable with the practice direction skewed in favour of postnatal visit at six weeks only [11].

To the best of our knowledge no study has assessed the impact of an additional visit to the traditional protocol for postnatal care in this environment.

This study was carried out to investigate the usefulness of an additional visit at 7-9 days postpartum among parturients in Enugu, Southeast Nigeria and to compare it with the pre-existing protocol. In the pre-existing protocol, women who delivered vaginally are observed for 24 to 48 hours before discharge and are subsequently seen at 6 weeks only. Women who had other types of deliveries necessitating more frequent postnatal visits are seen according to the dictates of their clinical conditions. The secondary objectives were to determine the pick-

up rate of postpartum complications and uptake of reproductive health services between the two protocols.

2. PATIENTS AND METHODS

2.1 Study Centres

The study was carried out in the Obstetric unit of two health facilities over a period of eight months, 1st March to 31st October 2015. The first was the University of Nigeria Teaching Hospital (UNTH), Enugu, South east Nigeria.

The second was Balm of Gilead Specialist Hospital located right in the heart of Enugu town. It attends to about 2000 deliveries annually. The two hospitals have similar post natal protocols of discharge 24 to 48 hours after an uncomplicated vaginal delivery and a postnatal visit at 6 weeks.

The study was approved by the Human Research and Ethics Committee of the University of Nigeria Teaching Hospital. Each woman eligible for the study was counseled and written consent obtained. She was assured of the confidentiality of any information given and if she did not consent, it would not affect the care given to her.

This was a comparative interventional study between women randomized at delivery into the traditional out-patient post natal care which involved one postnatal clinic visit at 6 weeks postpartum (the control group), and the study group which included an earlier visit 7-9 days postpartum to the traditional routine visit at 6 weeks postpartum.

The patients for the study were drawn from women who delivered at the labour ward of the two hospitals.

2.2 Inclusion Criteria

The inclusion criteria for the study were all consenting women at both study centres, women who did not have conditions necessitating frequent postnatal visits and patients who had access to mobile phones.

2.3 Exclusion Criteria

The exclusion criteria were non-consenting patients with conditions necessitating more regular postnatal visits like those with pre eclampsia or gestational hypertension and

patients who did not own and had no close relative with a mobile phone.

Sample size was determined using the formula for calculating minimum sample size for an interventional study comparing use of postnatal services by the study and control groups [18]. With $Z_{\alpha}=1.96$ at 95% confidence level, power of 80% and 41.2% as the utilization of postnatal services in Nigeria [19], the calculated sample size was 170.

Assuming an attrition rate of 20% to take care of reported low attendance to postnatal clinics [8], the minimum sample size was rounded off to 210. There should therefore be a minimum of 210 participants in each arm of the study, bringing the total minimum number of participants to 420. A total number of 438 participants were recruited. Two hundred and twenty one (221) in the study group (group 1), and 217 in the traditional group (group 2).

2.4 Data Collection

Each patient recruited was given a research identification number to enable specific follow-up. Randomization was in blocks (block randomization technique) [20] in order to equalize the subjects in each group. Twenty blocks of ten were used, and the 42 blocks obtained, were randomly generated. Blocks were assigned as group 1 and 2. If group 1 was randomly selected to be the first in sequence, the next consecutive 10 patients who met the inclusion criteria were assigned to group 1 and so on until the sample size was completed.

The patients were then told what their individual schedules would be and were counselled on the benefits of exclusive breastfeeding (EBF), contraception and on the need for a pap smear any time after 6 weeks from delivery.

A data collection form was used at recruitment to collect information on age, marital status religion, educational level, parity, ethnic group employment status and occupation. The telephone number of the patient or that of a close relation was also recorded.

A proforma designed by the authors was used to record the following at each postnatal visit; symptoms and signs of anaemia, raised blood pressure, pyrexia, mastitis, insomnia, lochia drainage, degree of uterine involution, and any other symptom the mother complained about.

The Edinburgh postnatal depression scale (EPDS) [21], validated for use in both pregnancy and in the postnatal period to assess for possible depression and anxiety was administered at each visit. In this study, any participant with a score above 13 was evaluated for depression while counselling and observation were adopted for those with lower scores.

Interpreters were available when needed. Follow up of all participants irrespective of whether they reported for postnatal care or not were carried out between 6-8 months from recruitment. They were contacted via telephone to ascertain if they had done a pap smear, had begun to use any form of contraceptives and how long they exclusively breastfed their babies for those who were doing so.

2.5 Data Analysis

Data was analysed using SPSS statistical software version 20.0 for windows (Chicago IL, USA). Descriptive statistics such as mean and standard deviation were computed for continuous variables and proportions for nominal characteristics of the women in the two groups. The Pearson's Chi square test was used to test the statistical significance and a *P*-value of ≤ 0.05 at 95% confidence interval was taken as significant. The findings were presented in narrative tables, pie chart and graph as per specific objective.

3. RESULTS

Four hundred and thirty eight women were recruited for the study. Two hundred and twenty one in the study group (those assigned to two postnatal visits at 7-9 days and six weeks), and two hundred and seventeen women in the control group (those assigned to the usual six weeks post natal visit only). Between 6-8 months after recruitment, attempt was made to call all participants, but only 339(77.4%) of the women were reached on the phone. Ninety nine (22.6%) of them could not be reached after several attempts.

The mean age of the women in the study group was 28.3 ± 4.2 years (range 16-43 years) and 26.7 ± 3.7 years (range 17-42 years) for the control. The socio-demographic characteristics of the participants are as shown in Table 1.

The two groups were comparable in terms of their socio demographic characteristics except for their employment status with a *P* value of 0.02.

3.1 Compliance with Postnatal Visits

Of the 221 participants assigned to the study group (7-9 days and 6 weeks postnatal visits), 82 (37.3%) of them complied with the protocol. Fifty of them (22.7%) presented at 7-9 days, but were not seen for their six week appointment. Thirty seven of them (16.4%) did not come for the

Table 1. Socio-demographic characteristics of participants

Characteristics	Sub-category	Group 1	Group 2	P-value
		No=221	No=217	
Age	<20	6(2.7)	3(1.4)	0.84
	20-24	49(22.2)	41(18.9)	
	25-29	98(44.3)	96(44.2)	
	30-34	46(20.8)	53(24.4)	
	35-39	21(9.5)	23(10.6)	
	40 & above	1(0.5)	1(0.5)	
Employment status	Employed	32(14.5)	55(25.3)	0.02
	Self Employed	98(44.4)	82(37.8)	
	Unemployed	64(29)	63(29.0)	
	Student	27(12.2)	17(7.8)	
Highest level of education	Illiterate	3(1.4)	3(1.4)	0.08
	Primary	22(10.0)	9(4.1)	
	Secondary	108(48.9)	102(47.0)	
	Tertiary	88(39.8)	103(47.5)	
Parity	Primiparous	89(40.3)	67(30.9)	0.12
	Multiparous	11(50.2)	127(58.5)	
	Grandmultiparous	21(9.5)	23(10.6)	

7-9 days visit, but were seen at six weeks. Fifty two (23.6%) of them were never seen again after delivery. This is shown in Fig. 1.

Out of the 217 women assigned to control group (week 6 visit only), 114 of them were seen (52.5%). The remaining 103 (47.5%) women did not return for postnatal care.

3.2 Pick-Up Rate of Postpartum Problems/Complications

One hundred and thirteen (85.6%) of those who presented at 7-9 days had at least one complaint following delivery. Nineteen of them (14.4%) had no complaint. By far the most common were related to the breast (66.7%).

At six weeks on the other hand, 198 (85%) of the women had no complaint, while 35 (15%) of them had at least one complaint. Breast related

problems were noted in only 8 women (3.4%), and sleeping problems in 12(5.2%). This is shown in Table 2.

The difference between those with at least one complaint at 7-9 days (85.6%) and those with at least one complaint at six weeks (15%) was statistically significant, $\chi^2= 2.145, P \leq 0.001$.

The prevalence of postpartum depression worthy of testing/treatment was 5(5.3%) in the study group and 2(1.8%) in the control, $\chi^2=1.312, P \leq 0.001$.

Only 8 (11%) of those who had complied with study group protocol were using a form of contraception. Nine (6.3%) of those seen only at six weeks were also using one form. The difference did not reach statistical significance, $\chi^2= 2.570, P = 0.055$.

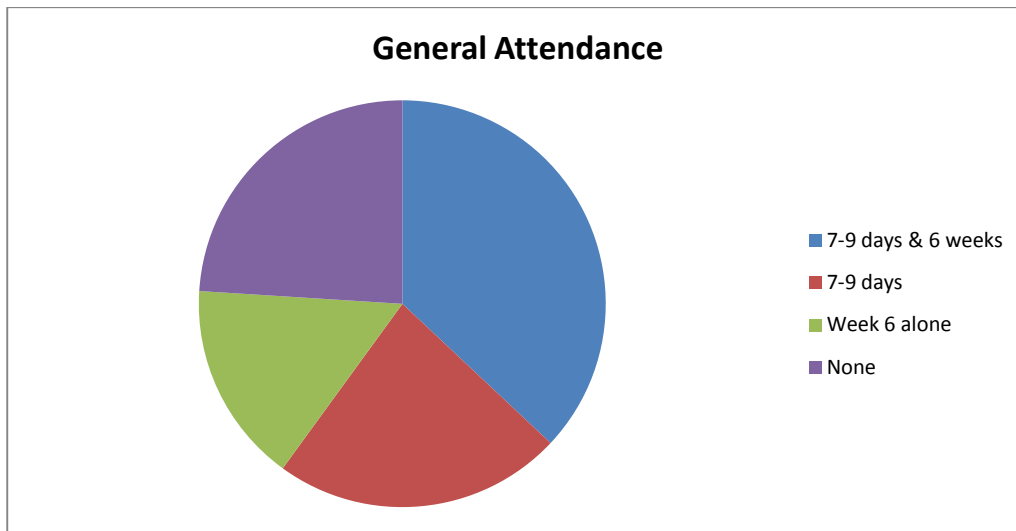


Fig. 1. Compliance with postnatal protocol for group 1

Table 2. Specific postpartum problems at 7-9 days and six weeks

Problems	Period		P-value
	7-9 days N=132	Six weeks N=233	
Breast realated	91(66.7%)	8(3.4%)	$P \leq 0.001$
Insomnia	33(25%)	12(5.2%)	$P \leq 0.001$
Fever	21(15.9%)	10(4.3%)	$P \leq 0.001$
Episiotomy related	10(7.6%)	2(0.86%)	$P \leq 0.001$
Weakness	36(27.3%)	11(4.7%)	$P \leq 0.001$
Dizziness	37(28%)	8(3.4%)	$P \leq 0.001$
Hypertension	16 (12.2 %)	5(2.2%)	$P \leq 0.001$
Depression	5(5.3%)`	2(1.8%)	$P \leq 0.001$
EBF	58(61%)	91(64.1%)	$P \leq 0.001$
Contraception	8(11%)	9(6.3%)	$P = 0.055$
Cancer screening	4(1.2%)	1(0.3%)	$P \leq 0.001$

Only five (1.5%) of the 339 women reached on phone had done a pap smear between recruitment and the time of calling. Four (1.2%) of them were in the study group while 1 (0.3%) was in the control group. The difference in the uptake between the two groups was statistically significant, $X^2=2.602$, $P \leq 0.001$.

When the two groups were compared with regards to the duration of exclusive breast feeding (EBF), 36 (51.4%) of the study group breastfed their babies exclusively for durations between 4 and 6 months, while 71 (50%) of their counterparts in the control group did the same. The difference was however not statistically significant ($X^2 = 1.621$, $P = 0.072$).

As a sub-analysis, when those who presented for postnatal care at 7-9 days (irrespective of whether they were seen at six weeks or not) 58 (61%) were compared with those who presented at 6 weeks 91 (64.1%), the difference in terms of duration/continuation of exclusive breastfeeding was statistically significant, $X^2 = 1.701$, $P \leq 0.001$.

3.3 Post-Partum Hypertension

Of the women in group 1, 16 (12.2%) of them had blood pressure recordings in the hypertensive range ($\geq 140/90$ mm Hg). Of these, 6 of them were not seen at 6 weeks, while 10 of them were seen (Table 2). One of them still had mild hypertension (130/90 mm Hg). She was on

antihypertensive. Only 5 (2.2%) women who came only at six weeks were noted to have hypertension.

The graph in Fig. 2 shows the diastolic blood pressure patterns for the parturients at 7-9 days. Higher diastolic blood pressure values are noted in group 1. Eleven (8.4%) of those seen in group 1 had diastolic values between 90 and 99 mm Hg while 2 (0.9%) of those seen only at 6 weeks had blood pressure readings in that range. Five (3.8%) and 3 (1.3%) women in group 1 and 2 respectively had diastolic blood pressure readings between 100 and 109 mm Hg. Severe hypertensive values (diastolic blood pressure ≥ 110 mm Hg) were not recorded in the two groups. This brought the total prevalence of postpartum hypertension in group 1 to 12.2% and that in group 2 to 2.2% ($X^2=1.701$, $P \leq 0.001$).

4. DISCUSSION

The study documents the implementation of an additional visit, 7-9 days postpartum in a population where routine postnatal visits were only at 6 weeks. Compliance with postnatal visit in group 1 was only slightly lower than previously stated rates of attendance to postnatal clinics (37.3% versus 41.2%) [19]. It is noteworthy that more women than that presented for the first week visits, but those who were not seen at six weeks were excluded from the final figure.

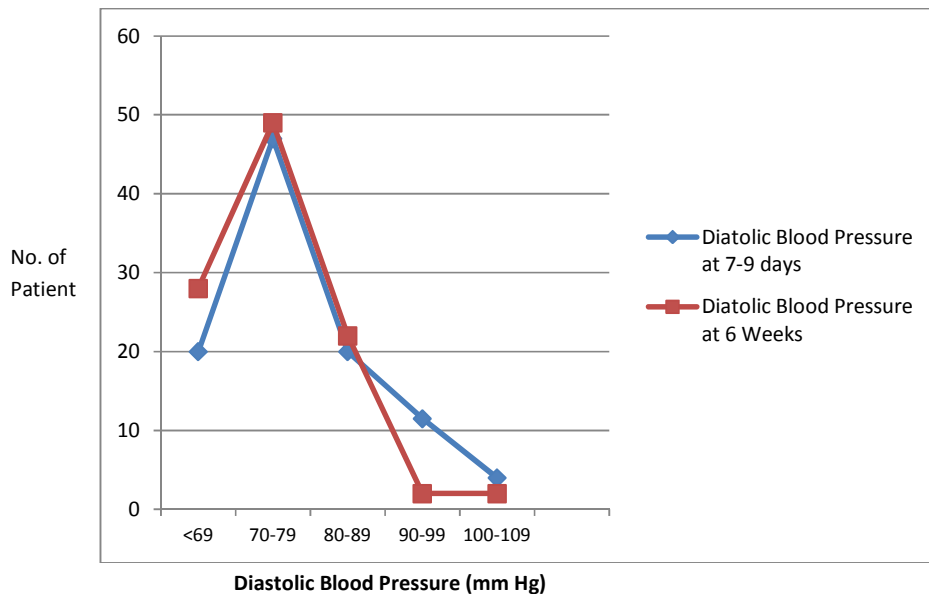


Fig. 2. Trends of blood pressure recording at 7-9 days and six weeks

The number of women with at least one complaint at their postnatal visit was very wide apart in the two groups. The reason for this is not immediately clear, but it does appear that many of the women who are discharged after delivery develop one problem or the other at home, but do not have sufficient personal drive to present to hospital before their appointments. It could also be that they seek care from more readily accessible alternatives such as other nearby health institutions, friends, relatives and chemists. The 15% of women at 6 weeks who had at least one complaint is however similar to the study in Nepal where only 10% of their patients had at least one complaint [8]. The reason behind these low figures though not recognized by the authors may be the timing at which the assessment was done – 6 weeks, a higher number could have been picked up if the assessment was at an earlier period in the postpartum period. It therefore appears that the 7-9 days visit is better at picking up parturients that may have complaints or be at risk of more complications in order to treat and or investigate them better.

When the two groups were compared for continuation of exclusive breastfeeding (EBF), there was no statistical significant difference. But when those who presented at 7-9 days were compared with those who did not, there was a significant difference. This indicates that the timing of the postnatal visit was very relevant to the continuation of EBF. This is in line with other reports [15,17]. This appears reasonable particularly as breast related problems were the most significant complaints at the earlier visit (66.7%). The help rendered to those women ranging from counseling, practical lessons on proper breastfeeding positions and treatment of mastitis could have accounted for the difference. By six weeks some of those who were not seen at 7-9 days may have given up and discontinued EBF on account of early problems. This is the basis upon which the WHO recommended in 2014 that a postnatal visit at 7-9 days postpartum would impact positively on continuation of EBF [17].

Post-partum hypertension appeared more in those seen at 7-9 days postpartum (12.2%), collaborating with studies which noted that women who were not previously hypertensive while pregnant who develop postpartum hypertension do so between 3-6 days after delivery for almost half of such patients [22,23]. This finding could help in the attempt at

developing protocols for postpartum hypertension which are lacking [24]. The women however need to be identified possibly by fixing postnatal appointments at the time when many of those who will develop postpartum hypertension are expected to do so.

The result for other reproductive health services-family planning and cervical cancer screening were not as impressive as that of EBF. Irrespective of that, there was significant difference in the proportions of those who had a Pap smear done between the groups. The few who had done a Pap smear (80%), had two postnatal visits, an indication that repeated counseling as recommended by WHO (in their most recent write up on postnatal care) would improve uptake of other health services [25]. The difference between these groups on EBF could also stem from the absence of repetition. EBF is emphasized regularly in the facilities from where these patients were recruited during the antenatal periods. Inclusion of these topics in routine health talks given at antenatal visits may have been beneficial.

Only 11% and 6.3% of the women in the study and control group respectively were using one form of contraception. The values in both groups are below the national average of 15% [11]. The lower prevalence (6.3%) among women seen only at 6 weeks supports the need to initiate family planning at an earlier visit and emphasize at subsequent visits. In Nigeria, as in most countries in the sub-Saharan region, family planning is scheduled to be delivered at the six-week postpartum check up, which women rarely attend [26,27].

Postpartum depression (PPD) is often not looked out for in our environment [28]. This study however highlights the presence of PPD in our environment. The prevalence of 5.3% at the 7-9 days visit though lower than Caucasian figures is still worthy of note [29]. It is also much lower than the value in a previous study in an urban South African cohort (16.4%) [30] and the report from Nigeria with a prevalence of (23%) [31]. The cut-off in the later study was 12 compared with 13 used in this study. This could account for the difference. The WHO recommends the evaluation of women 10-14 days postpartum to ensure that maternal blues are resolved or at least resolving [25]. This is necessary in view of the negative impact of PPD on the mother and the baby.

5. LIMITATION

This study was carried out in institutions based in the urban area and the findings may not be extrapolated to the entire population. It may be necessary to conduct a community survey to access the full impact of the additional visit 7-9 days postpartum on our health indices while controlling for all confounding variables. Study is further limited by the fact that it is based on recall of events and responses via telephone that may not be devoid of extraneous influences.

6. CONCLUSION

We conclude that early postnatal visit enhanced the pickup rates of postpartum morbidity and should be emphasized during antenatal counselling sessions. It however appears that in situations where only one visit is feasible, an earlier visit (in this case 7-9 days) is more beneficial. A six week postnatal visit is however not irrelevant as its combination with an earlier visit serves to reinforce health education which had been initiated in the course of antenatal care.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. World Health Organisation (WHO). Maternal Mortality in 2005: Estimates developed by WHO, UNFPA, and the World Bank; 2007. Available:www.who.int/maternal_child_adolescent/document/9789241596213/en/ [Cited 2016 October 20].
2. WHO. Trends in maternal mortality: 1990 to 2013. Estimates by WHO, UNICEF, UNFPA, The World bank and the United Nations Population Division; 2014. Available:apps.who.int/iris/bitstream/10665/112682/2/9789241507226.eng.pdf [Cited 2016 October 19]
3. Hogan MC, Foreman KJ, Noghari M, Ahn SY, Wang M, Makela SM, et al. Maternal mortality for 181 countries, 1980-2008; A systematic analysis of progress towards Millennium Development Goal 5, Lancet. 2010;375:1609-23.
4. Ezugwu FC, Agu PU, Nwoke MO, Ezugwu FO. Reducing maternal deaths in a low resource setting in Nigeria. Niger J Clin Pract. 2014;17:62-6.
5. Ajiye S. Achievements of millennium development goals in Nigeria; A critical examination. IAGS. 2014;25:24-29.
6. Oye-Adeniran B, Odeyemi K, Gbadegesin A, Akin-Adenekan O, Akinsola O, Ekanem E, Osilaja O. Causes of maternal mortality in Lagos State, Nigeria. Ann Trop Med Pub Health. 2014;7:177-81.
7. United Nations: Millennium Development Goals Report; 2014. Available:http://www.un.org/millenniumgoals/2014_MDG_report/MDG_English_web.pdf [Cited 2016 October 18]
8. Dhakal S, Chapman GN, Simkhada PP, van Teilingen ER, Stephens J, Raja AE. Utilization of postnatal care among rural women in Nepal. BMC Pregnancy Childbirth. 2007;7:19-33.
9. WHO. The World Health Report; 2005: Make every mother and child count. Geneva; 2005. Available:apps.who.int/iris/bitstream/10665/43131/1/92415632900.pdf [Cited 2016 October 17]
10. Lawn JE, Cousens S, Zupan J. Lancet neonatal survival steering team. 4 million neonatal deaths: Where? Why? The Lancet. 2005;365:891-900.
11. NDHS. Preliminary Report. Abuja, Nigeria: National Population Commission, Abuja, Nigeria; 2014. Available:<http://hdsprogram.com/ppubs/pdf/PR41/PR41.pdf> [Cited 2016 October 15]
12. Rayner JA, Forster D, Mclachlan H, Yelland J, Davey MA. A state-wide review of hospital postnatal care in Victoria, Australia: The views and experiences of midwives. Midwifery. 2008;24:310-320.
13. Rossier C, Hellen J. Traditional birth spacing practices and uptake of family planning during the postpartum period in Ouagadougou: Qualitative results. Int Persp Sex Reprod Health. 2014;40(2):87-94.
14. Ugboaja JO, Nwosu OB, Igwegbe AO, Obi-Nwosu AI. Barriers to postnatal care and exclusive breastfeeding among urban women in southeastern Nigeria. Niger Med J. 2013;54(1):45-50.
15. Goulet L, D'Amour D, Pineault R. Type and timing of services following postnatal discharge: Do they make a difference? Women Health. 2007;45:19-39.
16. Chimtembo LK, Maluwa A, Chimwaza A, Chirwa E, Pindani M. Assessment of the quality of postnatal care services offered to

- mothers in Dedza district, Malawi. *Open J Nursing*. 2013;3:343-350.
17. WHO recommendation on postnatal care of the mother and new born: World Health Organization. Available:www.who.int/maternal_child_adolescent/publications/WHO-MCA-PNC-2014_briefer_A4.pdf [Cited 2016 October 24]
 18. Araoye MO. Research methodology with statistics for health and social sciences. Ilorin: Nathadex Publishers. 2003;115-29.
 19. Babalola S, Falusi A. Determinants of use of maternal health services in Nigeria-looking beyond individual and household factors. *BMC Pregnancy Childbirth*. 2009;9:43-61.
 20. Efrid J. Blocked randomization with randomly selected sizes. *Int J Environ Res Pub Health*. 2011;8(1):15-20.
 21. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh postnatal depression scale. *B J Psych*. 1987;150:782-786.
 22. Magee L, Sadeghi S. Prevention of postpartum hypertension. *Cochrane Database Systematic Review*. 2005;25(1):CD004351
 23. Dodymow T, August P. Postpartum course of gestational hypertension and preeclampsia. *Hypertens Pregnancy J*. 2010;29:294-300.
 24. Ghuman N, Rheiner J, Tendler BE, White WB. Hypertension in the postpartum woman: Clinical update for the hypertension specialist. *J Clin Hypertens (Greenwich)*. 2009;11:726-33.
 25. WHO. Recommendation on postnatal care of the mother and the newborn. Geneva: World Health Organization; 2013. Available:<http://www.guideline.gov/summaries/summary/47900?> [Cited 2016 October 20]
 26. Rossier C, Hellen J. Traditional birth spacing practices and uptake of family planning during the postpartum period in Ouagadougou: Qualitative results. *Int Persps Reprod Health*. 2014;40(2):87-94.
 27. Naanyu V, Baliddawa J, Peca E, Karfakis J, Nyagoha N, Koech B. An examination of postpartum family planning in western Kenya: "I want to use contraception but I have not been told how to do so". *Afr J Reprod Health*. 2013;17(3):44-53.
 28. Langlois EV, Miszkurka M, Zunzunegu MV, Ghaffer A, Ziegler D, Karp I. Inequalities in postnatal care in low and middle income countries: A systematic review and meta-analysis. *Bull World Health Organ*. 2015;93:259-27.
 29. Kozhimannil KB, Trinacty CM, Busch AB, Huskmp HA, Adams AS. Racial and ethnic disparities in postpartum depression care among low-income women. *Psychiatr Serv*. 2011;62(6):619-25.
 30. Ramchandani PG, Richter LM, Stein A, Norris SA. Predictors of postnatal depression in an urban South African cohort. *J Affect Disord*. 2009;113(3):279-84.
 31. Owoeye AO, Aina OF, Morakinyo O. Risk factors of postpartum depression and EDPS scores in a group of Nigeria women. *Trop Doct*. 2006;36:100-3.

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