

## THE INCIDENCE AND PATTERN OF PUERPERAL PYREXIA AMONGST POST-NATAL WOMEN IN BENIN CITY, NIGERIA

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### ABSTRACT

Based on the fact that statistically, Nigeria contributes significantly to all recorded cases of preventable maternal morbidity and mortality, this study was designed to evaluate the incidence pattern of puerperal illness among postnatal women. It was carried out at the post-natal ward of the University of Benin Teaching Hospital, Benin City, Nigeria, over a period of 6 months (March to August, 2011). A total of 135 patients with illness secondary to delivery, and who gave an informed consent, were recruited for the study. Their demographic details as well as clinical histories were documented. They were also examined for malaria parasite and urogenital infections using standard laboratory procedures. The results showed that the incidence of puerperal pyrexia was 64.44% and common among patients between the ages of 18–25 years (33 out of 41), low educational status (12 out of 12) and low socioeconomic status (5 out of 6). Although puerperal pyrexia is preventable, the incidence level remains a public health concern if the global Millennium Development Goals (MDG) of reducing maternal mortality by 75% is to be achieved by 2015.

**Keywords:** Puerperal pyrexia, Postnatal, Maternal morbidity and mortality, Millennium Development Goals

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### INTRODUCTION

According to Baker *et al.* (2006), *Puerperal pyrexia* is the presence of fever (temperature greater than or equal to 38°C) within 14 days after parturition. In other words, Barbara (2000) and Diane *et al.* (2006) defined *puerperal sepsis* as infection of the genital tract following childbirth. By and large, the World Health Organization (2009) defined *puerperal sepsis* as infection of the genital tract occurring at any time between the rupture of membranes or labor and the 42<sup>nd</sup> day post-partum, in which two or more of the following are present: pelvic pains, fever (oral temperature 38.5°C or higher), abnormal vaginal damage (presence of pus), foul odour of discharge, and delay in the rate of reduction of the size of the uterus (less than 2 cm per day during the first 8 days). Its epidemic proportion during the 18th century was literarily palpable, particularly when home delivery practice was common (Brentlinger and Capps, 1998).

In fact, puerperal sepsis has remained a common pregnancy-related condition that could eventually lead to obstetric shock as well as preventable cases of maternal morbidity/death in developing/developed

countries when undetected and/or untreated (Maharag, 2007; Shamshad *et al.*, 2010).

Unfortunately, Nigeria has one of the highest cases of maternal mortality after India (Abouzahr, 2003; WHO, 2004; Ujah *et al.*, 2005) with an annual-death estimate of 52,000, which is 10% of the annual estimates of maternal mortality (Shiffman and Okonofua, 2007). In Africa, the average risk of dying from pregnancy-related causes is about one in 20, compared to one in 2000 in the more developed countries (Abouzahr and Royston, 1993).

If the global Millennium Development Goals (MDG) target of reducing maternal mortality by 75% by the year 2015 would be achieved, progress must be made to address the maternal mortality rate in Nigeria. Hence, this study investigates the incidence and pattern of *Puerperal pyrexia* amongst postnatal women in Benin City, Edo State, Nigeria.

## MATERIALS AND METHODS

**Research Design and Duration:** This study was a descriptive survey designed to achieve the objective of the study. It was conducted between the months of March to August, 2011.

**Ethical consideration:** The principle of voluntary participation and confidentiality was employed in this study and after thorough explanation on the objective and significance of study, each of participants granted an informed consent.

**Study population:** A total of 135 patients who presented illness secondary to delivery were involved in this study. They were women attending the post natal ward of the University of Benin Teaching Hospital (UBTH), Benin City, Nigeria.

**Data and Sample Collection and Analysis:** The clinical histories as well as demographic details of the patients were obtained and documented. Blood samples from the subjects were also obtained under aseptic conditions for the diagnosis of malaria parasite using blood smear staining method as described by Warhusted and William (1996).

With the help of a clinician, high Vaginal Swab (HVS) was collected from all the subjects for genital bacterial infection analysis and the samples were

taken to the laboratory and processed immediately. They were cultured into blood agar, chocolate, and *macconkey*, for 24 – 48 hrs and the isolates obtained were identify by biochemical method as described by Cowan and Steel (1985).

For the analysis of urinary tract bacterial infections as described for HVS (Cowan and Steel, 1985), Mid-stream urine samples were also collected from the subjects using universal containers containing boric acid as preservative,

**Statistical data analysis:** Data were analyzed using SPSS package (version 17) and the simple descriptive statistics of number and percentage were done and presented using suitable tables.

## RESULTS

The incidence of *Puerperal pyrexia* was 64.44% amongst which 32.59% was caused by malaria parasite, 21.48% by urogenital bacterial infections (isolated from urine and HVS) and 10.37% by malaria parasite and urogenital bacterial infections. *Puerperal pyrexia* was common among women between the ages 18 – 25 years (80.49%), low educational status as in those with no formal education (100.0%) and low socioeconomic status as in farmers (83.33%).

**Table-1: Demographic profile and prevalence of *Puerperal pyrexia* in postnatal women attending UBTH**

Variables		Number (%)	Prevalence of <i>Puerperal pyrexia</i>	% <i>Puerperal pyrexia</i> by category (%)
Age (years)	18 – 25	41 (30.37)	33 (24.44)	80.49
	26 – 30	77 (57.04)	41 (30.37)	53.25
	31 - 35	17 (12.59)	13 (9.63)	76.47
Highest Education Status attend	0 <sup>0</sup>	12 (8.89)	12 (8.89)	100
	1 <sup>0</sup>	26 (19.26)	19 (14.07)	73.08
	2 <sup>0</sup>	56 (41.48)	42 (31.11)	75.0
	3 <sup>0</sup>	41 (30.37)	14 (10.37)	34.15
Occupation	F	6 (4.44)	5 (3.70)	83.33
	FHW	11 (8.15)	5 (3.70)	45.45
	MW & SE	58 (42.96)	46 (34.07)	79.32
	CS	44 (32.59)	23 (17.04)	52.27
	PS	16 (11.85)	8 (5.93)	50.0
<b>Total</b>		<b>135 (100)</b>	<b>87 (64.44)</b>	

Key: 0= No formal education, 1<sup>0</sup> = Primary education, 2<sup>0</sup> = Secondary education, 3<sup>0</sup> = Tertiary education, F= Farmers, FHW= Full house wife, MW & SF = Market women and self employed, CS= Civil servants (teachers and Government workers), PS= Public servants (Bankers and private firm workers).

Table 2, 3 and 4 showed the distributions of *Puerperal pyrexia* with respect to age, education and economic status respectively. Among the 44 subjects

who were positive to malaria infection alone, 50% were in the age group 18 – 25 year. While 62.07% of bacterial infections alone were in the ages 26 – 30,

64.29% of same age group was positive to malaria parasite and bacterial infections. 22.22% and 9.63% of the bacterial infections were isolated from urine and HVS samples respectively with women in the age 26 – 30 presenting the highest number of infections. Furthermore, on the relationship between education and pattern of *Puerperal pyrexia*, women

with secondary education were predominantly affected by malaria parasite (43.18), uro-genital infections (44.83%) and MP co-infection (71.43%). Also, market women and those who are self-employed presented the highest burden of puerperal illness in term of socio-economic status

**Table 2: Relationship between age and pattern of *Puerperal pyrexia***

Age		Pattern of <i>Puerperal pyrexia</i>			Pattern of bacterial infection	
		Number positive to MP (%)	Number positive to infections	MP + Infection	HVS samples positive to infections	Urine samples positive to infection
Age (years)	18 – 25	22 (50.0)	8 (27.59)	3 (21.43)	5 (38.46)	6 (20.0)
	26 – 30	14 (31.82)	18 (62.07)	9 (64.29)	7 (53.85)	20 (66.67)
	31 - 35	8 (18.18)	3 (10.34)	2 (14.29)	1 (7.69)	4 (13.33)
<b>Total % by population</b>		<b>44 (32.59)</b>	<b>29 (21.48)</b>	<b>14 (10.37)</b>	<b>13 (9.63)</b>	<b>30 (22.22)</b>

**Table 3: Relationship between Education and pattern of *Puerperal pyrexia***

Education		Incidence of <i>Puerperal pyrexia</i>			Pattern of infection	
		Number positive to MP (%)	Number positive to infections	MO + Infection	HVS samples positive to infections	Urine samples positive to infection
Highest Education Status attend	0 <sup>0</sup>	7 (15.91)	2 (6.90)	3 (21.43)	2 (15.38)	3 (10.00)
	1 <sup>0</sup>	11 (25.00)	7 (24.14)	1 (7.14)	3 (23.08)	5 (16.67)
	2 <sup>0</sup>	19 (43.18)	13 (44.83)	10 (71.43)	4 (30.77)	19 (63.33)
	3 <sup>0</sup>	7 (15.91)	7 (24.14)	0 (0.00)	4 (30.77)	3 (10.00)
<b>Total % by population</b>		<b>44 (32.59)</b>	<b>29 (21.48)</b>	<b>14 (10.37)</b>	<b>13 (9.63)</b>	<b>30 (22.22)</b>

Key: 0= No formal education, 1<sup>0</sup> = Primary education, 2<sup>0</sup> = Secondary education, 3<sup>0</sup> = Tertiary education.

**Table 4: Relationship between occupation and pattern of *Puerperal pyrexia***

Occupation		Incidence of <i>Puerperal pyrexia</i>			Pattern of infection	
		Number positive to MP	Number positive to infections	MO + Infection	HVS samples positive to infections	Urine samples positive to infection
Occupation	F	4 (9.09)	0 (0.00)	1 (7.14)	0 (0.00)	1 (3.33)
	FHW	2 (4.55)	3 (10.34)	0 (0.00)	1 (7.69)	2 (6.67)
	MW & SE	25 (56.82)	13 (44.83)	8 (57.14)	7 (53.85)	14 (46.67)
	CS	11 (25.00)	9 (31.03)	3 (21.43)	2 (15.39)	10 (33.33)
	PS	2 (4.55)	4 (13.79)	2 (14.29)	3 (23.08)	3 (10.00)
<b>Total % by population</b>		<b>44 (32.59)</b>	<b>29 (21.48)</b>	<b>14 (10.37)</b>	<b>13 (9.63)</b>	<b>30 (22.22)</b>

Key: F= Farmers, FHW= Full house wife, MW & SF = Market women and self employed, CS= Civil servants (teachers and Government workers), PS= Public servants (Bankers and private firm workers).

## DISCUSSION

Considering the observed prevalence of puerperal illness (64.44%) in this study, puerperal women can be said to be susceptible to puerperal illness. The high incidence of puerperal malaria reported in this study is typical to that described by Ramhater et al (2005), who stated that puerperal women were susceptible to a considerable risk of developing

malaria. Most importantly, malaria is said to be endemic in Nigeria and the study was conducted during the wet/raining season during which a high bleeding rate of malaria parasite is encouraged. Saba et al. (2008) had also reported a similar high prevalence of malaria parasite in pregnancy, when investigating the outcome of malaria in pregnancy.

On the other hand, puerperal bacterial infections were observed to be prevalent in the sampled population with 22.22% positive for urine sample and 9.63% positive for HVS sample. Unfortunately, accurate data on puerperal sepsis is not readily available in Nigeria as according to Shamshad et al., (2010), many cases of puerperal infections go undiagnosed and under reported in many developing countries. Our findings suggest also that, a puerperal bacterial infection is a burden on postnatal women judging by the results from the urine and HVS samples analysed. Although higher prevalent rates have been reported in Lahore (Talat et al., 2002) and Zambia (Vallely et al., 2005), the higher prevalence in this study calls for serious concern, when compared to the prevalent rates reported in the USA (Carter et al., 2005), UK (Gwyneth, 2005).

Nevertheless, the comparative difference between the prevalence of puerperal illness in developing countries (Talat et al., 2002; Vallely et al., 2005) and developed countries (Carter et al., 2005; Gwyneth, 2005; Faiza, 2007), may be attributed to certain factors, particularly local conditions such as hygiene during delivery (Abouzahr, 2003). Accordingly, Riaz (1992) 40–50% of spontaneous vaginal deliveries and 50% of instrumental deliveries can get infected when carried out by traditional birth attendants, nurses and lady health workers.

Conclusively, puerperal malaria and bacterial infections are prevalent in Nigeria and it is of public health concern. Thus, we opine that if the global Millennium Development Goals (MDG) of reducing maternal mortality by 75% by 2015 is to be achieved, proactive measures by obstetricians and gynecologists are recommended.

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### **AUTHORS' CONTRIBUTIONS**

Uhunmwangho E.J., Anyanwu R.A., Ojeh G.C., Idehen I.C., Isibor J.O., Turay A.A. and Okhia O. all contributed to the successful completion of this work and in the preparation of this paper.