January 2013

Prevalence of perceived heavy postpartum hemorrhage and its associated factors among married mothers in squatter settlements of Karachi

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PREVALENCE OF PERCEIVED HEAVY POSTPARTUM HEMORRHAGE AND ITS ASSOCIATED FACTORS AMONG MARRIED MOTHERS IN SQUATTER SETTLEMENTS OF KARACHI

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ABSTRACT

Objectives; To estimate the prevalence of postpartum hemorrhage (PPH) and identify its associated factors among the married women of 15-49 years, residing in the Karachi, Pakistan.

Methodology: This cross-sectional survey was carried out in five squatter settlements of Karachi during 2000-2001. Information was collected regarding age, gravida, education, antenatal, natal and postnatal care, with perceived puerperal morbidities from 525 mothers, who were in their 42nd to 56th post delivery day. Univariate and multivariate analyses were computed using multiple logistic regression method.

Results: The estimated prevalence for perceived PPH was 7.24%. Three hundred and ninety six (75.4 %) women received ante-natal care with 273 (52%) consulting skilled health professionals and 268 (51%) gave birth to their babies at a health facility. Eighty nine (16.9%) women who delivered at a health facility were advised for the post partum routine care and only 127 (24.2%) women followed the instructions. Two hundred and seventy eight (53%) mothers reported at least one perceived puerperal morbidity and among them 38 (7.24%) women perceived PPH. On multivariate analysis, the factors associated with PPH were older age (aOR=1.10, 95% CI:1.04-1.1), longer duration of labor (aOR=1.08, 95% CI :1.02-1.2) and restricted fluid intake (aOR=2.1, 95% CI :1.05-4.0).

Conclusion: Older age group, longer duration of labor and restricted fluid intake were found to be the common factors associated with PPH. Women need to be educated regarding family planning program, safe and timely delivery by skilled medical personnel and intake of extra fluid during post partum period.

Key Words: Prevalence, Postpartum Hemorrhage, Duration of Labor.

This article may be cited as: Ali TS, Ather F. Prevalence of perceived heavy postpartum hemorrhage and its associated factors among married mothers in squatter settlements of karachi. Khyber Med Univ J 2013; 5(1): 3-8

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Date Submitted: December 24, 2012

Date Revised: March 27, 2013

Date Accepted: March 28, 2013

INTRODUCTION

Postpartum period, commonly referred to as *chillah* in Pakistan, commences about an hour after the expulsion of the placenta and includes the next 42 days.[1] The World Health Organization estimates that globally, nearly half a million maternal deaths occur during the antepartum, partum and postpartum period with South Asia alone carrying half the burden.[2] Evidence from developing countries has shown that a mother remains at risk during her postpartum period even after a safe antepartum and partum period.[3]

Majority of maternal deaths are attributed to postpartum hemorrhage (PPH). Primary PPH, the commonest form of obstetric hemorrhage is traditionally defined as the loss of 500 ml or more of blood from the genital tract within 24 hours of the birth of a baby.[4] PPH is considered as minor (500–1000 ml) and major (>1000 ml) on the basis of volume of blood loss. Major PPH could be sub-classified in to moderate (1000–2000 ml) and severe (more than 2000 ml).[5] Secondary PPH is defined as abnormal or excessive bleeding from the birth canal between 24 hours and 12 weeks of postnatal period.[4,6]

PPH is the leading cause of maternal mortality worldwide with a prevalence rate of approximately 6%; Africa has the highest prevalence rate of about 10.5%.[7] In Pakistan the prevalence rate of PPH has been estimated by WHO as 34%.[8] PPH is responsible for nearly 150,000 maternal deaths annually; 90% of which take place within 24 hours after the delivery.[9] A local study showed that PPH accounted for 27.1% cases of maternal deaths.[10] The most frequent direct causes of PPH are retained placenta, atony of uterus and occasionally vaginal or cervical lacerations.[11] The indirect causes could be multigravida and age factor.[12] In the Society of Obstetricians and Gynaecologists of Pakistan (SOGP) country wide hospital study, 84.6% deaths were due to direct causes. Hemorrhage was the leading cause in 21.2% of cases, hypertensive diseases in 18.6%, sepsis in 13.3%, and ruptured uterus in

8.7%.[13] A similar hospital based study conducted in Karachi, Pakistan showed that among those who are multigravida, 6% (n=1070) developed postpartum hemorrhage.[14]

The proportions of maternal deaths attributable to PPH vary considerably between developed and developing countries, suggesting that deaths from PPH are preventable.[15] Interventions to prevent PPH in developing countries are therefore pivotal in reducing maternal mortality. In 2007, the World Health Organization developed a set of guidelines for the prevention of PPH.[16] These guidelines recommend various interventions for the various components of active management of the third stage of labour, for reduction of maternal mortality and morbidity. However, post partum care is still a major neglected part of maternal health in developing countries where complications during puerperal period contribute to maternal morbidities and mortalities. In order to prevent the deaths from PPH, it is necessary to understand the underlying factors/ predisposing factors that might increase the risk for PPH. As very limited such study have been conducted in our set up regarding prevalence of PPH and its associated factors so this study was planned to estimate the prevalence of PPH and to identify its factors associated among women residing in squatter settlements in Karachi.

METHODOLOGY

This community-based cross-sectional survey was carried out in five squatter settlements of Karachi during the months of July-December 2000. Community-based identification of mothers in their postpartum period is a difficult process considering most of the deliveries take place at home and eighty two percent of mothers never visit any hospital or clinic for assessment. In order for us to identify mothers who were between their 42nd and 56th day post-delivery, it was necessary to approach communities where some form of antenatal surveillance system existed.

After the approval from the Ethical Review Committee, Aga Khan University, information was collected including age, education, gravida, antenatal, natal and post natal care, with perceived puerperal morbidities, of mothers who were in their 42nd to 56th post delivery days. The women were enrolled by the NGO surveillance system during pregnancy. The list was provided to our data collectors. They visited the women and explained the purpose of the study and a written consent was priorly taken. The women who were willing to participate in the study were included in survey and followed up till the 42nd day after delivery. Women were interviewed depending upon their availability. The interviewers interviewed the mothers till the target of required sample size was achieved. The interviewers were women who had midwifery experience and could speak Urdu with at least one other regional language. The data collectors were given two days of theoretical and practical training including explanation of the study objectives, sampling strategy, communication skills, questioning technique and filling of the questionnaire. The questionnaire was developed after a series of qualitative focus group discussions and in-depth interviews of mothers in the communities having at least one child of less than one year of age born in the presence of traditional birth attendant. The Urdu version of the questionnaire was pilot tested on 50 mothers having a youngest child of age 42 to 60 days. The detailed sampling strategy and training of data collector is mentioned in the previous published article from this larger project.[17]

Inclusion criteria for the interview

Mothers between the ages of 15 to 49 years, who were between their 42nd to 56th day post-delivery and had been identified through the surveillance system of either the Aga Khan University or the Marie Stoppes Society. In order to be included, mothers also had to give verbal consent for participation in present study.

OPERATIONAL DEFINITIONS

Postpartum hemorrhage:

Mothers reporting a perceived heavy vaginal bleeding during postpartum period were considered as cases of PPH. Postpartum hemorrhage was dichotomized as those mothers who reported heavy vaginal bleeding are known as cases during post partum period and those who did not were grouped as controls.

Maternal Age:

Maternal age was cross checked by her years of marriage and children and from National Identity card if it is available. This variable was keep as continuous; to show that with each year increase of women the risk of PPH is increased how much.

Gravida:

Multigravida was defined as number of pregnancies, with any outcome. This variable was kept as continuous to show that with each pregnancy increase the risk of PPH increases.

Sample size calculation:

This study was cross sectional study design and prevalence and associated factors were needed the calculations. For prevalence by taking assumed 13% prevalence of PPH[18] with error bound of 3%, we required a sample size of 482. For associated factors with Post Partum hemorrhage, the sample size was calculated to detect an odds ratio (OR) of 2 with 80% power, specifying alpha at 5%. We required the sample size of 400. This study took 10% extra to be able to ensure that post power calculation is enough for the different types of multivariate analysis. Finally this study took the sample of 525.

Data analysis

Statistical Package of the Social Sciences (SPSS) software version 9 was used

for data analysis. Descriptive statistics and inferential statistics with univariate and multivariate analysis (multiple logistic regression method) were computed.

RESULTS

Mean age of the postpartum mothers was 26 ±6 years and the mean age of husbands was 32.0 ±11.4 years. The demographic details postpartum mothers and their husbands regarding ethnicity, maternal formal schooling, paternal formal schooling, maternal employment, paternal employment, family structure, type of house, house ownership and household assets of are shown in Table I. Out of 525 women, 127 (24.2%) women utilized the post-partum services (Table II). Two hundred and seventy eight (53%) mothers reported at least one perceived puerperal morbidity and among them 38 (7.24%) women perceived PPH. The estimated prevalence for perceived postpartum hemorrhage was observed to be 7.24%.

Factors Associated With Perceived Postpartum Hemorrhage

Univariate analysis

In Univariate mother's age, number of pregnancy and duration of labor stayed significant. With each year increase of mothers age the risk of having PPH is 1.09 [OR=1.09, 95% CI (1.03-1.2)]. Also the mothers risk of PPH increases 2% with each added pregnancy [OR=1.2, 95% CI (1.03-1.3)] and with every hour increase in duration of labor the risk of

TABLE I: DEMOGRAPHIC CHARACTERISTICS OF POSTPARTUM MOTHERS AND THEIR HUSBANDS IN SQUATTER SETTLEMENTS OF KARACHI

Characteristics		Frequency (n=525)	% age
Ethnicity	Pathan	193	36.8
	Mohajir	136	25.9
	Sindhi	104	19.8
	Punjabi	92	17.5
Maternal formal schooling	Nil	323	61.5
	1-5 years	112	21.4
	6-10 years	50	9.5
	≥ 11years	40	7.6
Paternal formal schooling	Nil	215	.41
	1-5 years	167	31.8
	6-10 years	86	16.4
	≥ 11years	57	10.8
Maternal employment	No	488	93.0
	Yes	37	7.0
Paternal employment	No	69	13.1
	Yes	456	86.9
Family structure	Extended	264	50.3
	Nuclear	261	49.7
Type of House	Pucca	215	41.0
	Katcha-pucca	286	54.5
	Katcha	24	4.5
House ownership	Yes	340	64.8
	No	185	35.2
Household Assets †	Television	334	63.6)
	Refrigerator	220	41.9
	Transportation	70	13.3
	Washing machine	300	57.1

† Multiple response possible

TABLE II: REPRODUCTIVE HISTORY OF MOTHERS IN SQUATTER SETTLEMENTS OF KARACHI

Variables		Mean (n =525)	Standard Deviation
Duration of marriage (years)		7.5	5.3
Maternal age at marriage (years)		18.5	3.5
Number of currently alive children		3	2
Number of pregnancies		4	3
Parity		4	2
Variables		**Frequency (n =525)**	**%age**
Gravida by category	Primi-gravida	93	17.7
	Multi-gravida (2-4 pregnancies)	242	46.1
	Grand multi-gravida (5 or more pregnancies)	190	36.2
Previous obstetric history	Any still birth	34	6.5
	Any abortion	126	24.0
Antenatal care for present pregnancy ‡	Received	396	75.4
	Not received	129	24.6
Antenatal care provider for present pregnancy	Dai /TBA	252	48.0
	Relative / neighbor	17	3.2
	Lady health worker	4	0.8
	Lady health visitor	13	2.5
	Nurse/ midwife	51	9.7
	Doctor	188	35.8
Place of delivery for present pregnancy	Home	258	49.1
	Clinic	76	14.5
	Maternity home	21	4.0
	Hospital	170	32.4
Type of delivery for present pregnancy	SVD without tear	412	78.5
	SVD with tear	54	10.3
	SVD with Episiotomy	27	5.1
	Forceps/ C- Section	32	6.1
Checkup during postpartum period §	No	398	75.8
	Yes	127	24.2

‡ Received ANC from medical person.

§ Received PNC from medical person.

PPH increase by 1.08 times [OR=1.08, 95% CI (1.03-1.2)]. Other variables including restriction of movements, breast-feeding counseling received by medical personnel during antenatal period, ANC received, and type of delivery were not statistically significant in the Univariate analysis.

Multivariate logistic regression model

The final multivariate logistic regression model included duration of labour, mother's age, and restricted fluid intake. While adjusting for other variables with each year mothers age increase her risk of having PPH raised by 1% [aOR=1.10, 95% CI (1.04-1.1)] and with each hour increase of duration of labour the risk of PPH is increased by 1.08 times [aOR=1.08, 95% CI (1.02-1.2)]. In addition, those mothers who restrict fluid intake to less than one glass of fluid in an hour are 2.1 times more likely to report PPH [AOR=2.1, 95% CI (1.05-4.0)].

DISCUSSION

Pakistani women living in squatter settlements of Karachi rarely seek postpartum care despite the global acceptance of its significance.[19] The proportion of mothers who sought health care during postpartum period (24%) in our study is favouring the results of the Pakistan Social and Living Standards Measurement

Survey (PSLM), showing that 24% of mothers received a postnatal check-up within six weeks of delivery during their last pregnancy in the year 2006/2007.[20] However, this proportion is much lower compared to other developing countries such as India (40%), Philippines (58%), and Indonesia (72%).[21,22] In our study the estimated prevalence for perceived postpartum hemorrhage was 7.4 percent. Studies from other South Asian countries have reported prevalence for perceived postpartum hemorrhage ranging from 8.5% (India) to 39% (Sri Lanka).[23]

Factors associated with postpartum hemorrhage identified in our study included longer duration of labour, old age of mother and restricted fluid intake. These findings are in accordance with findings recorded by others.[24-26] Possible reasons for prolonged labour leading to postpartum hemorrhage may include the multigravida status, the atony of the uterus and obstructed labour.[27-29] A similar study conducted in Harare, Zimbabwe showed similar reasons of prolonged labour.[30] Another significant factor associated was maternal age in our study. The result of our study was supported by a Nigerian record based study (1993 – 1996).[31] They showed that mothers suffering from PPH usually are of old age (over 35 years) and grand multiparity (para 5 and over). However, in our study we took the variables as continuous. Furthermore, this study identified that mothers whose deliveries had been conducted by midwives were more likely to develop PPH than those who had theirs delivered by doctors ($P<0.05$). Further, uterine atony, 183 (53.8%) was the most common cause of PPH.[31]

Another interesting and new finding identified by our study is association of PPH with restricted fluid intake. There are two schools of thought explaining fluid intake during PP period. One explanation could be that when delivery takes place the bleeding occurs directly from the lacerations in the reproductive tract.[32] The lacerations need to be healed through enough fluid intake and nutrition.[31] In addition, due to less fluid and nutrition intake the uterine muscles become weak and fail to contract.[33] Delayed healing of laceration, support the growth of the organisms leading to inflammation and further atony of the uterus.[32] The other explanation is that women who are dehydrated perceive bleeding as heavy and reported postpartum hemorrhage frequently and so far none of the study has identified this variable as the risk factor. Therefore, this variable needs to be interpreted carefully. This is an area which requires further research.

Limitation

The definition of postpartum period or PPH (as post partum period was the 42 days) was limited to clinically symptomatic as perceived by women herself, and only those diseases were measured which mothers perceived as a morbid condition. Due to cultural issues we selected those field sites where an antenatal surveillance system existed. The results of the study could be generalized to similar urban squatter settlements. Moreover, due to perceived definition of PPH mothers might have under reported or over reported the cases. This might have led to non differential classification bias.

Acknowledgement

We acknowledge the funding agency population council USA for their funding and Dr. Fariyal F. Fikree for her supervision in master's Thesis. This paper is based on first author's Master thesis.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

TSA: Conception and design, acquisition and analysis of data, drafting the manuscript, supervision, final approval of the version to be published

FA: Critical Revision and final approval of the version to be published

CONFLICT OF INTEREST

Author declares no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE

This study was supported by population council USA

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