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Original Article

Prevalence and Factors Associated with Postpartum Vaginal infection in the Khyber Agency Federally Administered Tribal Areas, Pakistan

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Abstract

Objective: To estimate the prevalence and to identify the factors associated with vaginal infection among the married women between the ages of 15-49 years residing in the Khyber Agency (FATA), Pakistan.

Methods: A cross-sectional study was conducted in the month of July 2005 on 1084 mothers by using random sampling strategy in Khyber Agency Pakistan by trained nurses. The descriptive and multivariate statistics were computed.

Results: The multivariate analysis showed that the associated factors with vaginal infection were the use of unhygienic material to soak up the lochia [aOR=3.45, 95% CI (1.36, 8.75)], bathing after 40 days [aOR=2.10, 95% CI (1.55, 3.14)], and women who did not receive antenatal care [OR=3.87, 95% CI (1.93, 7.75)]. Also women who did not have medical facilities available [OR=2.45, 95% CI (1.23, 5.06)] reported of vaginal infection.

Conclusions: This study concluded that there is considerable need for health education among women and the entire community for the maintenance of hygiene, safe delivery through medical personnel and improvement in the mobility of mothers and female education (JPMA 57:363:2007).

Introduction

Vaginal infection is the occurrence of foul smelling vaginal discharge, along with concomitant fever. This vaginal discharge is different from lochia, the normal vaginal discharge during postpartum. According to a study in Bangladesh, mothers perceive vaginal infection during the postpartum period to be a result of physical weakness. According to a multi-center study, conducted in four countries, the prevalence of utero- vaginal, or uterine infection, in India was 0.5%, Egypt 9.8%, Bangladesh 10.2 % and Indonesia 4.5%.[1] Predisposing factors for puerperal genital infections are prolonged labour, prelabour rupture of the membranes, frequent vaginal examination, internal (vaginal) electronic foetal monitoring and caesarean section.[2]

Following this culture of predominance of traditional values, beliefs and practices related to pregnancies and childbirth, Pakistan has a specific traditional culture of childbirth in its rural areas. Thus, high levels of maternal mortality and morbidity in Pakistan are a direct result of the interplay between a variety of factors, such as low status of women in society; poor nutrition; a significant proportion of high-risk pregnancies (such as those to grand-multiparous women); lack of family planning, poor access to health services, deliveries conducted by non professionals, lack of antenatal and postnatal care, poverty, and illiteracy.

Women's health is a neglected area in developing countries. Despite at least 50% maternal deaths occurring during the postpartum period,[3] very limited research has been carried out to assess morbidities. In developing countries, the role of traditional health practitioners and their practices have a strong influence during the ante partum, and postpartum period. In Pakistan, nearly 5.3 million births occur annually.[2] According to a Ministry of Health report, nearly 80% of the mothers deliver at home, with 82% of them being assisted by a traditional birth attendant.[4] In Karachi, a base-line survey of squatter settlements approximated that nearly 50% of the mothers delivered at home with 80% of the deliveries being conducted by traditional birth attendants. During the ante partum period, it is estimated that nearly 54% of the mothers seek medical advice, which reduces to only 19% during the postpartum period.[5]

More over, although research has been conducted in the different provinces of Pakistan, to study the factors associated with maternal mortality, no research has been done to determine the factors associated with maternal morbidity. Hence this study would help mothers, the locality, and the society in general. The findings of the study will help to identify some specific morbidity like vaginal infection. A great understanding of this morbidity can help in preventing it.

The Khyber Agency observes a strict cultural value of purdah among the women. Most of the women are illiterate and the purdah sets limits to their mobility in the

Agency. The women are never involved in decision-making of any kind. The parents of the boys and girls arrange the marriages when they are between 15 and 25 years of age.[6] No research has been conducted in the FATA by any health professional. This makes it a dire need to learn what the exact needs and available facilities are to implement preventive and curative programmes to improve the health status of women.

The principal objective of this study was to estimate the prevalence and identify the factors associated with postpartum vaginal infection among the married women between the ages of 15-45 years in Khyber Agency FATA Pakistan.

Methodology

Khyber Agency is one of the federally Administered Tribal Area, under FATA. The Khyber Agency is made up of Tehsils Bara, Jumrud and Landi Kotal. Each Tehsil has a population of 2 86184, 96188, and 144741 respectively. The total population of the Khyber Agency is 534,383, and the annual growth rate is 3.9%. The literacy ratio for males and females is 39.9% and 2.5% respectively.[7] Pashto is the native language of the Khyber Agency, with Urdu as the national and official language.

A quantitative study with a cross sectional design was planned on a population of married women between 15 to 49 years, who were either pregnant or in postpartum period. Verbal consent was obtained from all women. Unmarried or infertile women were excluded from the study.

Simple random sampling method was used to collect the data. A list of all the women who fulfilled the inclusion criteria was made with the help of FATA directorate. Through epi Info version 4 a random number of 1084 women were selected. The data collector went to all the selected houses and from each household one woman was interviewed. If any woman refused to participate another one was identified from the list in the Bara, Jumrud and Landi Kotal Tehsil.

The questionnaire for data collection was developed and pre-tested in Karachi. Small modifications were done after pre-testing at Khyber Agency.[5] The questions were related to demographic characteristics and potential factors for maternal morbidity. Subsequently, the questionnaire was translated in Urdu and then again in English to see whether the consistency of each question had been preserved. Urdu version of the questionnaire was administered to collect the required data.

Data collection started after formal consent of the Director Health of FATA from 1st July, 2005 and continued to 31st July 2005.

Further, permission was taken from the head of the family mostly the males before start of the interview. The data was collected by Pashto trained nurses of Peshawar, who received 2 days training on the procedure and supervised by principle investigator.

Information was obtained on demographic variables, socio-economic status, previous obstetrical history including ante-partum, partum and post partum haemorrhage.

Vaginal infection was defined, as the perceived foul smelling vaginal discharge, fever, lower abdominal pain during postpartum period. This was the dependent variable.

Information was collected on the study participants's age, her husband's occupation, the area of residency and ethnicity, family status (joint or nuclear) and educational, employment, socio-economic, status. To assess the reproductive behaviour, information was acquired on the duration of marriages, age of mother at marriage, total number of pregnancies, number of living children (currently), number of abortions, and any complications, during the previous three stages of pregnancy. The details of the recent pregnancy included duration of labour, antenatal care received, type of antenatal care provider, place of delivery and person who conducted the delivery, and breast feeding counseling received by health care personal during antenatal care.

Information was also collected about the mother's mobility within the house and decision-making regarding domestic problems. Questions were asked about intra vaginal herbal home made remedies and restriction on the fluid intake; number of days before the initiation of normal diet; number of days before the post delivery bath, practices of rinsing of the perineum with antiseptic, material used to soak up lochia, and antibiotic application on perineum. Information was collected on other social factors including the mother's mobility to visit a clinic and her independence to spend household earning.

The questionnaire was pre tested for appropriateness in a 10% of sample size in the Khyber Agency, prior to initiating the study. Amendments were made where required.

Data quality was maintained through, intensive training of field staff, daily editing of the questionnaire; double entry of data to ensure accuracy, and surprise visits of the investigator at the data collection sites. Furthermore, crosschecking of two questions for similar information was also done.

Double data entry was done using EPI-info version 6.04, and analyzed by Statistical Package for Social Sciences (SPSS) version 10. To describe the demographic

profile of the married women enrolled in the study, descriptive statistics, including frequency, percent distribution, mean and their standard deviation, were obtained. Multiple logistic regression analysis was performed to identify factors independently associated with vaginal infection. Variables that were selected in the univariate analysis were entered in the model simultaneously.

Results

Out of 1084 women, 1000 were successfully interviewed with a response rate of 91.6 %. The reasons for refusal to participate in the study were traditional norms or not being allowed by the husbands. The analysis therefore included 1000 participants. The non-participating women were of a similar socioeconomic status.

The results revealed the association of vaginal infection as univariate (independent association), and multivariate (adjusted association) factors.

Table 1 shows the demographic characteristics of the study subjects. The mean age was 30.8 ± 6.6 years with a mean duration of marriage being 14.7 ± 4.6 years. According to the ethnic distribution, most were Pathans (99.9%) and Muslims (99.9%). A large number were uneducated, unemployed and living in extended families.

At the time of the interview, the women had 7 ± 3 pregnancies, and 436 (43.6%) had at least one abortion. Only about 4% had received antenatal care with the majority from Traditional Birth Attendant (TBA). The remaining had gone to health care centers, clinics and hospitals. The most common place of delivery for the previous pregnancy was the participant's home, followed by TBA's home, hospital, maternity homes, health centres, TBA clinics , doctors/nurses/LHV clinics, and mother's home. The deliveries were mainly conducted by TBAs and in-laws/mother and few were delivered by neighbours, nurses/doctors, and LHV / Midwives.

Table 2 shows that women who are at a lower socio-economic status [OR=1.14 95% CI (1.10, 1.27)], have not received antenatal care [OR=4.56, 95% CI (2.35, 8.85)], restricted bathing [OR=2.33, 95% CI (1.66, 3.28)], did not have medical facilities available [OR=2.45, 95% CI (1.21, 4.99)], did not use hygienic materials to soak lochia [OR=3.45, 95% CI (1.36, 8.75)] were more likely to develop vaginal infection. Further, significant result of our study showed at 5% level that the odds of women having a timely delivery of the placenta among women having vaginal infection was 2.54 times as compared to those women who did not [OR=2.54, 95% CI (1.26, 5.12)] have vaginal infection.

The variables in the final multivariate logistic

Table 1. Socio-demographic and reproductive characteristics of married women in Khyber agency -July 2005.

Characteristics	n=1,000 (%)
	Mean (+SD)
Age of the women	30.8 (6.6),
Duration of marriage (years)	14.7 (4.6)
Ethnicity	
Pathan	999 (99.9)
Punjabi	1 (0.1)
Religion	
Muslim	996 (99.6)
Hindu / Christian	4 (0.4)
Education	
Illiterate (including madrasa education)	998 (99.8)
Can just read a newspaper	1 (0.1)
Technical diploma	1 (0.1)
Occupation	
House wife	669 (66.9)
Farmer	284 (28.4)
Technical and related work	47 (4.7)
Kinds of Family	
Combined /extended	963 (96.3)
Nuclear	37 (3.7)
Parity	7.0 ± 3.0
Histroy of abortion	
Yes	436 (43.6)
No	564 (56.4)
Antenatal Care Checkups	
Traditional Birth Attendant	600 (60.)
Health Center	150 (15.0)
Clinic	130 (13.0)
Hospital	120 (12.0)
Place of Delivery	
Self Home	827 (82.7)
TBA Home	71 (7.1)
Hospital	26 (2.6)
Maternity Home	24 (2.4)
TBA Clinic	17 (1.7)
Health Center	18 (1.8)
Doctor/Nurse/LHV	13 (1.3)
Mother Home	04 (0.4)
Delivery Conduct By	
TBA	587 (58.7)
In-Laws / mother	266 (26.6)
Neighbor hood	88 (8.8)
Nurses/Doctors	48 (4.8)
LHV/Midwife	11 (1.1)

regression analysis included bathing during the postpartum period, lack of antenatal care, medical facilities available and not using hygienic materials to soak up lochia. As shown in table 6, while having other variables in the model, the women who reported vaginal infection were more likely

Table 2. Uni-variates model of factors associated with vaginal infection among married women n the Khyber Agency (FATA) July 2005 (n= 1000).

	VI + n (%)	VI- n (%)	OR	95.0% C.I.for OR Lower
House hold items at home	4.09 +1.46	4.42+1.68	1.14	(1.10 - 1.27)
Antenatal Care				
Received	17(10.5)	21 (2.5)	1	
Not received	145(89.5)	817(97.5)	4.56	(2.35- 8.85)
Bath during postpartum period				
Yes	68(42.0)	526 (62.8)	1	
No	94(58.0)	312(37.2)	2.33	(1.66- 3.28)
Medical facilities available on Panel				
Yes	9 (5.6)	109 (13.0)	1	
No	153(94.4)	729 (87.0)	2.45	(1.21- 4.99)
Hygienic material used to soke up lochia				
Yes	5 (3.1)	69 (8.2)	1	
No	157 (96.9)	769 (91.8)	3.45	(1.36- 8.75)
Timely delivery of placenta				
Yes	133 (82.1)	738 (88.1)	1	
No	29 (17.9)	100 (11.9)	2.54	(1.26- 5.12)
Prolonged duration of Labor	0.94+0.23	0.87 +0.34	1.04	(1.01-1.07)

Table 3. Multivariate logistic regression model of factors associated with vaginal infection among married women n the Khyber Agency (FATA) July 2005 (n= 1000).

	aOR	95.0% C.I.for aOR Lower
Hygienic material used to soak lochia		
Yes	1	
No	3.45	(1.36- 8.75)
Bath during postpartum period		
Yes	1	
No	2.10	(1.55- 3.14)
Antenatal Care		
Received	1	
Not received	3.87	(1.93- 7.75)
Medical facilities available on Panel		
Yes	1	
No	2.45	(1.23- 5.06)

not to use hygienic materials to soak up the lochia [aOR=3.45, 95% CI (1.36, 8.75)], were unlikely to have bathed during the 40 day postpartum period. [aOR=2.10, 95% CI (1.55, 3.14)], would not have had medical facilities available [OR=2.45, 95% CI (1.23, 5.06)], and would not have received antenatal care (3.87 times the chance of developing vaginal infections) [OR=3.87, 95% CI (1.93, 7.75)].

Discussion

The proportion of vaginal infection during the postpartum period, reported by our study subjects was 16.2%, which is significantly high. The results of a similar study done in some of Karachi's squatter settlements showed 5.1%.[5] According to a multi-centre study conducted in India, Egypt, Bangladesh and Indonesia, the prevalence of uterine- vaginal, or uterine infections were 0.5%, 9.8%, 10.2%, and 4.5 % respectively.[8] Another study in Sri Lanka reported a 3.9% prevalence of vaginal infection.[9]

The percentage of vaginal infection is high in our study because the women do not seek care for it. The reasons attributed are non-availability of services or their inaccessibility or inferior quality which is often a deterrent. Another important constraint may be a woman's lack of autonomy in her own health care management. Most women tend to endure obstetric and gynaecological morbidity as a fact of life and are shy to reveal these conditions, or acknowledge their problems.

For the Khyber agency, the results of the multiple regression analysis showed the association of vaginal infection among married women with not using hygienic material used to soak up lochia, lack of antenatal and postnatal care, not bathing during the postpartum period, and a deficiency of medical facilities.

The lack of health care facilities or their utilization is significantly associated with vaginal infection. In our study only 3.8% of the women sought health care, which is much lower than other developing countries, such as, India (40%), Philippines (58%), and Indonesia (72%). This difference could be because of the higher national female literacy rate and the GDP.[2] Moreover, the cultural aspect, as requiring your family's permission to visit a clinic, and the husband's and wife's education levels strongly influence the attitudes and beliefs regarding health seeking behavior.[10]

The advantage of antenatal care (decreasing the prenatal morbidity and mortality rate), has been consistently demonstrated in a number of studies in the developed and developing countries.[11,12] One beneficial effect of antenatal care is that it leads to early diagnosis and treatment of pregnancy complications, such as anaemia; maternal infections of the vagina and the urinary tract; and ante partum haemorrhage or cervical incompetence. Routine ante natal visits may raise awareness about the need for care

at delivery and give women and their families a chance to become familiar with health facilities, which will enable them to seek help more efficiently during a crisis.[13] Retrospective studies in Ethiopia found a lack of antenatal care which was an important risk factor related to vaginal and urinary tract infections, ante partum hemorrhage, and maternal death.[14] Studies in India,[15] Nigeria,[16] Senegal[17], and Zimbabwe[18] have also yielded similar results.

In our culture, due to poverty, people use old pieces of clothes in place of sanitary pads during the early postpartum period (first 7-10 days), when a mother's cervix is dilated. This is an unhygienic practice, which leads to the introduction of infections into the vagina. In addition, without treatment, micro-organisms from the lower genital tract may ascend to the upper genital tract, causing infections of the oviduct and the uterus.[19,20]

Not taking a bath during the purperium period is a traditional practice in our culture as bathing during that time is believed to weaken the mother's bones. Taking a hot bath regularly has been identified as a popular practice among Thai women after delivery.[21] However its association with the risk of vaginal infection has not been studied. This unhygienic practice may increase the risk of vaginal infection as identified in our study; however we were unable to find any other published papers addressing this issue.

Limitations of the study: The perceived morbidity condition was revealed through the interview however due to the unavailability of health records the results were not matched or validated with them. Furthermore, the physical examination of the vagina was not performed due to the cultural norms at the community level. Therefore there are chances that women might have either over or under reported the presence of vaginal infection. This might have introduced an information bias.

As the study was cross-sectional, information of morbidities and associated factors were collected at the same time.

Conclusion

The results of this study revealed a set of factors that contribute to the vaginal infection of women residing in the Khyber Agency FATA, Pakistan and provide directions for the safe motherhood policy and programmatic strategies.

Recommendations

This study recommends that there is a need for proper health education of women in the Khyber agency.

Low cost and high quality health services in the antenatal, natal and postnatal periods is necessary. This should be made available at basic and tertiary health care units at Khyber Agency FATA, Pakistan.

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