



Science

RISK FACTORS FOR MATERNAL MORTALITY IN KHARTOUM STATE PUBLIC HOSPITALS, 2015

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Abstract

Maternal mortality is considered one of the major global health concerns especially in developing countries. The aim of this study is to explore the risk factors for maternal mortality in Khartoum State public hospitals, .A descriptive prospective hospital-based study was used. 120 maternal deaths were studied during 12 months, verbal autopsy questionnaire was adopted. Results: Odd ratio was used to assess the risk factors of maternal mortality and it was found that attended antenatal care (OR = 2.898), vaccinated against tetanus (OR = 3.859), delayed for seeking health care (OR = 8.406), delay reaching hospitals (OR = 1.85), Delayed in receiving care(OR = 1.6) were associated with mother residence too far from clinics. The study concluded that low socio-economic status as well as rural and low education level of women was the major contributing factors for high maternal mortality and community mobilization, Political commitment to decreasing maternal mortality.

Keywords: Khartoum; Maternal Mortality; Public Hospitals.

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1. Introduction

The WHO defines maternal death as the "Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes, (1)

Improving maternal health is one of the eight Millennium Development Goals adopted by the international community at the United Nations Millennium Summit in 2000(2)

Women die from a wide range of complications in pregnancy, childbirth or the postpartum period. Most of these complications develop because of their pregnant status. The four major killers are: severe bleeding (mostly postpartum bleeding), infections (also mostly soon after delivery), hypertensive disorders in pregnancy (eclampsia) and obstructed labor. Among the indirect causes (20%) of maternal death are diseases that complicate pregnancy or are aggravated by pregnancy, such as malaria, anemia and HIV, (3). Women also die because of poor health at conception and a lack of adequate care needed for the healthy outcome of the pregnancy for themselves and their babies, (4). Maternal mortality in Sudan is still high which increases the challenges to keep pace with the MDG target with 2015, (5). Because there is no accurate vital registration system in Sudan, maternal mortality estimates in Sudan were based on indirect and direct sisterhood estimates as in the demographic surveys conducted in the past four decades. Estimated risk factors of maternal mortality over time are critical in that they help in planning of reproductive health programs to reduce mortality. The prospective descriptive studies about risks factors for maternal mortality in Khartoum state hospitals are rare.

2. Materials and Methods

This is a prospective descriptive hospital-based study of all maternal death at public hospitals in Khartoum state. Total coverage of all maternal death occurred in maternity department from June 2014 to June 2015 in Khartoum public hospitals which were 120 deaths. Information of deceased was collected immediately from relatives, by used Adapted verbal autopsy questionnaire 2012 (Standard World Health Organization) after trained data collectors. The questionnaire including socio-demographic, causes, antenatal visit, health service used for the final illness, cost of illness.

The data was analyzed by using SPSS version 20, the odds ratio and binary logistic regression was used to assess the risk factors. The qualitative data were analyzed manually. All data about risk factors were categorical first, coding to 0, 1 and analyzed using contingency table and chi-square tests to find risk factor associated with deceased women. An odds ratio (OR) is used to determine whether a particular exposure is a risk factor for maternal mortality. Odds ratio are most commonly used in case-control studies, however they can also be used in cross-sectional and cohort study designs as well with some modifications and/or assumptions),(6). The Odds ratios (ORs) 95% confidence intervals and p-values are reported for three group of risk factors (residence place, socio-economic status, educational level association with health services, illness risk factors)

3. Results

Table 1: Association between deceased residence and health service and illness risk factors in Khartoum state public hospitals during study period

Risk factors	Answers	%Urban	% rural	Odd ratio	Confidence interval	P value
Antenatal care visit	Yes	75.30%	24.70%	2.898	(1.29-6.48)	008

	NO	%51%	48.7			
Vaccinated against tetanus	Yes	80.20%	19.80%	3.859	(1.67-8.87)	001
	No	51.30%	48.70%			
Delay in reaching near hospitals	Yes	16%	84%	1.85	(.034- .209)	.000
	No	69.20%	30.80%			
Delayed for seeking health care	No delay	71.60%	23.10%	8.406	(3.46 -20.4)	.000
	Delay	28.40%	76.90%			
Delayed in receiving care	Yes	27.20%	69.20%	1.6	(.272 -.383)	.000
	NO	72.80%	30.80%			
Malaria	Yes	11.10%	88.90%	1	(.315 - 3.79)	.888
	No	10.30%	89.70%			
High blood pressure	Yes	18.50%	81.50%	1	(.24 - 6.4)	.246
	No	10.30%	89.9			
Anemia	Yes	4.90%	95.10%	0.455	(.107-1.923)	.274
	No	10.30%	89.90%			

Table 2: Association between deceased educational status and health services, illness risk factors in Khartoum state public hospitals during study period

Risk factors	Answers	Secondary %	No and primary %	Odds ratio	Confidence interval CI	P value
Antenatal care visit	Yes	67.70%	40%	4.929	(2.047-11.86)	0
	NO	23.30%	60%			
Vaccinated against tetanus	Yes	81.10%	40%	6.441	(2.616-15.86)	0
	No	18.90%	60%			
Delay in reaching near hospitals	Yes	30%	40%	0.643	.272 - 1.517	0.311
	No	70%	60%			
Delayed for Seeking health care	No delay	61.10%	40%	2.357	(1.013- 5.484)	.044
	Delay	38.90%	60%			
Delayed in receiving care	Yes	36.70%	53.30%	0.507	(.220- 1.168)	0.108
	No	73.30%	46.70%			
Malaria	Yes	8.90%	16.70%	0.488	(.146- .162)	0.235
	No	91.10%	83.30%			
High blood pressure	Yes	16.7	13.30%	1	(.396- 4.272)	0.665
	No	83.3	86.70%			

Anemia	Yes	6.70%	6.70%	1	(.191-5.241)	1
	No	93.30%	93.30%			

Table 3: Association between deceased socio- economical status versus health service and illness risk factors for deceased in Khartoum state public hospitals during study period

Risk factors	Answers	Lower %	Higher %	Odd ratio	Confidence interval CI	P value
Antenatal care visit	Yes	66.40%	100%	0.641	(.294-.1.593)	0.261
	NO	33.60%	0			
Vaccinated against tetanus	Yes	76.30%	74.50%	0.715	(.322-.1.591)	0.411
	No	32.70%	25.50%			
Delay in reaching near hospitals	Yes	41.50%	21.80%	3.546	(1.135-.5.712)	0.022
	No	58.50%	78.20%			
Delayed seeking health care	No delay	61.50%	23.60%	5.167	(2.328-11.480)	0
	Delay	38.50%	76.40%			
Delayed in receiving care	Yes	11.30%	10.40%	1	(.345-3.474)	0.879
	No	88.70%	86.60%			
Malaria	Yes	7.7	14.50%	0.49	(.271-.947)	0.229
	No	92.3	85.50%			
High blood pressure	Yes	13.8	18.20%	0.723	(.271-.1.931)	0.517
	No	86.2	81.80%			
Anemia	Yes	6.2	7.30%	0.836	(.199-.3.519)	0.807
	No	93.8	92.70%			

4. Discussions

The chi square and odd ratio revealed all health services such as antenatal care visit (OR = 2.898 , P value = .008), vaccinated against tetanus (OR = 3.859 , P value = .001) , delayed for seeking health care (OR = 8.406 , P value = .000), Delay in reaching hospitals (OR = 1.85 ,P value = .000), Delayed in receiving care (OR= 1.6, P value = .000)) were significantly associated with deceased residence and posed higher risk to maternal deaths. Other illness risk factor associated with deceased in resident place such as malaria (OR = 1 ,P value = .888), anemia, (OR = .455 ,P value = .274), high blood pressure (OR = 1.9 ,P value = .246) were not significant and lower risk to maternal death.

Comparing this with the study conducted in Sudan 2010, about factors contributing to maternal mortality, found delays factors and accessibility factors, antenatal care visit were risk factors for maternal death. Another study in Kenya about risk factors showed antenatal care visit factor is significantly increased risk to maternal death, (7). It was observed that women in rural areas wireless likely to use and obtain maternal health services and these showed increased risk to die, than those in urban area.

It was found that there is relationship between educational status of deceased versus health services and illness risk factors. The significant and increased odds are found in three factors, Antenatal care visit (OR = 4.929 P value = .000), vaccinated against tetanus (OR = 6.441 P value = .000), delayed for seeking health care (OR = 2.357 P value = .044). Other factors such as, those who Delayed in receiving care (OR = .643 P value = .311), malaria(OR = .488 P value = .235) high blood pressures(OR = 1.3 P value = .665), anemia (OR = 1.00 value = 1.000) are not significant. Women with no education and women with primary education were found more likely to die from these risk factors than women with secondary education and above Delay in seeking health care was related to educational status because women not educated or poorly educated did not recognize illness and danger signs to seek health care when needed. In addition, antenatal care and vaccination against tetanus are at higher risk to maternal deaths in association with the maternal education, This was in line with other findings which revealed an association between Antenatal care visit use and the woman's education level and the association between maternal mortality and illiteracy was found to be significant in two studies in Sudan ,{8,9).

Also our study found delayed for seeking health care (OR = 5.16 , P value = .000) Delay in reaching near hospitals (OR = 3.4 , P value = .022), are significant association and high risks to maternal death . The study conducted in Sudan 2013, showed that transportation cost in Khartoum State was one of the factors, having negative impacts on seeking facility based delivery, (8)

5. Conclusions and Recommendations

All health services risk factors were found significant effect on deceased residence and increased risk to maternal mortality .Delay in seeking health care, antenatal care visit, vaccinated against tetanus were found significant risk to maternal death in association with educational level.

Delayed for seeking health care and delay in reaching near hospitals were significant association to maternal death in relationship with the socio economic status of the deceased.

Malaria, high blood pressures, anemia were not significant and have lower risks to maternal deaths.

The main recommendations of our study are political commitment to decreasing maternal mortality is vital to the success of programs. Strengthen community mobilization to support utilization of maternal health services. Women empowerment program and income generation project are to be established to solve non-health service problems, like poverty , female education, and socio-economic status. , .

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