Maternal Mortality Risk in Keerom, Papua: A Cohort Study in 2015

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Abstract- Keerom regency has a high maternal mortality rate and still increased steadily. Consequently, Regency Health Services in Keerom proposed a program so called Cohort problem based Ante Natal Care. This program was conducted by thoroughly followed all pregnant women from the beginning until they delivered babies to find any problems regarding their pregnancies. Some interventions were done to solve the problems to prevent mortality. This study aimed to describe the potential obstetrical dangerous and obstetrical dangerous pregnant women in 3 Health Centers.

Grand multi parity (93.7%) and old age primi-gravida (14.1%) were considered as the main potential obstetrical dangerous. In the other hand, poor nutritional (53.1%), anemia (78.1%), and malaria (21.3%) were considered as obstetrical dangerous patients.

Index Terms- Maternal Mortality Risk, Keerom

I. INTRODUCTION

Maternal Mortality Rate targeted by Millennium Development Goals in 2015 was 110 per 100,000 life birth. This target was still difficult to achieve in Indonesia [1], moreover in Keerom since Maternal Mortality Rate (MMR) in Keerom in 2011 was 258 per 100,000 and 735 per 100,000 in 2012 respectively. Among the South Asia Countries, the Maternal Mortality Risk in Indonesia considered the highest. It was 3 times higher compared to other countries [2].

Sinha [3], in his study declared that there were a significant relation between Ante Natal Care (ANC) with perinatal death. The same study conducted by Stephanson showed the same result, that was a significant relation between ANC with neonatal death [4]. Therefore those studies were adapted by Keerom Regency Health Services to conduct such program to reduce MMR.

Cohort problem based Ante Natal Care was proposed by Regency Health Services in Keerom in order to reduce the Maternal Mortality Rate. This program was conducted by thoroughly followed all pregnant women from the beginning until they delivered babies to find any problems regarding their pregnancies. Some interventions were done to solve the problems to prevent mortality [5].

Together with the cohort problem based Ante Natal Care program, it was conducted a study to find out all the problems regarding all pregnant women in Keerom. In other words to find what is the maternal mortality risk frequently happened in Keerom.

II. MATERIAL AND METHODS

1.1 Study Area

The study was carried out at Keerom Regency, Papua, Indonesia. Keerom with 46,282 inhabitants is located in the southern part of Jayapura which is the capital of Papua. Keerom is divided into six districts (Web, Senggi, Waris, Arso, Arso Timur and Skanto), but only 3 Health Centers in Arso distric were included in this study, namely Arso Kota, Arso Barat and Arso III.

1.2 Subjects

In this study, there were 64 pregnant women followed since the second trimester until they delivered babies. A physical examination and questionnaire inquiring the pregnancy problems was administered to the all pregnancy women.

Those considered as maternal mortality risks are age, education level, socio economic status, present and post obstetrical history, number of babies delivered, height, blood pressure and nutritional status.

It was found 58 pregnant women have problems regarding their pregnancy.

1.3 Statistical Analysis

Data were double entered, checked and cleaned. The data set analyzed with Statistical Product for Service Solutions (SPSS) version 19. Descriptive statistics was used to describe the finding.

1.4 Ethical Consideration

This study was approved by the ethical committee of Faculty Medicine, Hasanuddin University, Makassar, Indonesia. The fundamental principles of ethics in research on human participants were upheld throughout the study. The research procedures were disclosed to the participants and informed consent was sought from them or their legal representatives. Nobody was coerced into the study and if individuals wished to withdraw, they were allowed to do so without prejudice.

III. RESULT AND DISCUSSION

There were 64 pregnant women in the study. The cohort started at the second trimester of those pregnant women and followed to the end of labor. Among the 64 participants (Table 1) 10.9% were represented by women without formal education, only few pregnant women in high education level, mostly

(68.8%) were in primary and secondary schools. Participants whose income above IDR 2,100,000 was 20.3% and the rest considered living under the poverty line. Most participants were house wives (67.1%) and some of them work as peasant (23.4%).

Table 1. Baseline characteristic of the study population

No	Education level	Frequency	%
1	No formal education	7	10,9
2	Basic school	9	14.1
3	Primary school	20	31,3
4	Secondary school	24	37,5
5	Scholarly	4	6,3
	Total	64	100
No	Income	Frequency	%
1	<IDR 2,100,000	51	79,7
2	>IDR 2,100,000	13	20,3
	Total	64	100
No	Occupation	Frequency	%
1	Teacher	2	3,1
2	House wives	43	67,1
3	Government official	2	3,1
4	Peasant	15	23,4
5	Employer	2	3,1
	Total	64	100

The Maternal Mortality Risks could be divided into 2 groups, namely Potential Obstetrical Dangerous and Obstetrical Dangerous. Those who considered as Potential Obstetrical Dangerous were old age primi-gravida; younger age primi-gravida; grand multi parity; interval between two consecutives pregnancy less than 2 years; height less than 145 cm; poor obstetrical history; labor measures history and history of cesarean section. The following table describes the distribution of potential obstetrical dangerous participants. The most potential obstetrical dangerous was grand multi parity. Among participants 93.7% was grand multi parity and the next potential dangerous was old age primi-gravida (14.1%).

The Obstetrical Dangerous consisted of poor nutritional status which was measured by upper arm circumference; anemia; hypertension and accompany diseases such as tuberculosis, malaria and bronchial asthma.

Indeed nutritional status was the primary problem in Keerom. Anemia was the most prevalent among the participant (78.1%) followed by the poor upper arm circumference (53.1%). In addition, malaria and hypotension were the other Obstetrical Dangerous found in Keerom. Table 3, described the distribution of those Obstetrical Dangerous among the participants.

Table 2. The distribution of The Potential Obstetrical Dangerous participants

No	Potential Obstetrical Dangerous	Frequency	%
1	Primi-gravida		
	Young primi-gravida	3	4.7
	Old primi-gravida	9	14.1
	Normal	52	71.2
	Total	64	100
2	Interval between pregnancy		
	≤ 2 years	7	10.9
	> 2 years	57	89.1
	Total	64	100
3	Grand multi parity		
	<4 children	60	93.7
	≥ 4 children	4	6.3
	Total	64	100
4	Height		
	≤ 145 cm	4	6.3
	> 145 cm	60	93.7
	Total	64	100
5	Poor obstetrical history		
	Yes	1	1.6

	No	63	98.4
	Total	64	100
6	Labor measures history		
	Yes	1	1.6
	No	63	98.4
	Total	64	100
7	Cesarean Section		
	Yes	2	3.1
	No	62	96.9
	Total	64	100

Table 3. The distribution of The Obstetrical Dangerous participants

No	Obstetrical Dangerous	Frequency	%
1	Upper arm circumferences		
	< 23.5 cm	34	53.1
	Normal	30	46.9
	Total	64	100
2	Anemia		
	Yes	50	78.1
	No	14	21.9
	Total	64	100
3	Accompany diseases		
	Bronchial asthma	1	1.6
	Malaria	13	21.3
	Tuberculosis	2	3.1
	None	45	75.0
	Total	64	100
4	Blood pressure		
	Hypertension	1	1.6
	Normotension	49	76.5
	Hypotension	14	21.9
	Total	64	100

Plenty risks concerning the Potential Obstetrical Dangerous. Pre-eclamptic toxemia of pregnancy and difficult labor together with postpartum hemorrhage are the risks which are not unusual [6]. Study conducted by Rosario et al stated that pregnant women older than 35 years have the risk of stillbirth [7]. In addition Gravett stated that pregnant women between 35-39 years old have 1.9 time risk compare to the women less than 30 years of age. The risk was increasing 2.4 times if the women achieved 40 years old [8]. The other risk in the Potential Obstetrical Dangerous is interval between pregnancies less than 2 years. The occurrence of stillbirth is given by this risk factor [9, 10].

The low birth weight usually happened in grand multi parity. According to Silva, women with 2-4 parities have the probability to have low birth weight babies 1.82 times more than the single parity. Similarly, the probability increased when they have more than 5 parities (OR=1.22) [11].

As a matter of fact, height and poor obstetrical history have also to be counted in difficult labor and cesarean section [12].

In the Dangerous Obstetrical group the most prevalent were nutritional problems (anemia and protein deficiency) followed with infection especially malaria and tuberculosis. Infections caused high maternal mortality rate as stated by Kinney. Ten percent maternal mortality caused by infection [13]. In fact, low birth weight, anemia in new born and prematurity primarily caused by malaria. If 30% malaria infection could be prevented in pregnant women, 3-8% infant mortality could be avoided [14, 15].

According to the cohort problem based Ante Natal Care that was proposed by Regency Health Services in Keerom, some intervention were conducted to the pregnant women with ANC problems. The Potential Obstetrical Dangerous group was intervened by health education on general prevention measures and special prevention measures. The ANC conducted every month to the end of labor.

The Obstetrical Dangerous group got special measures depend on the problems. Accordingly nutritional problems were treated with vitamin and high protein supplement and iron preparation as well. Malaria, tuberculosis and bronchial asthma were treated with some medicines that were available in Health Center. The Obstetrical Dangerous group also consulted to the obstetrician and gynecologist.

IV. CONCLUSSION

The most potential obstetrical dangerous was grand multi parity. Among participants 93.7% was grand multi parity and the next potential dangerous was old age primi-gravida (14.1%).

Nutritional status was the primary problem in Keerom. Anemia was the most prevalent among the participant (78.1%) followed by the poor upper arm circumference (53.1%). In addition, malaria and hypotension were the other Obstetrical Dangerous found in Keerom.

AUTHOR'S CONTRIBUTIONS

All the authors participated significantly in the analysis, drafting of the manuscript and writing the final version of the paper. YY conceptualized the study, SA, AH and AZ contributed towards the drafting and writing.

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REFERENCES

[1] Firdaus: Mari Bicara Fakta: Catatan Masyarakat Sipil atas Satu Dekade Pelaksanaan MDGs di Indonesia. Kemitraan 2012.

[2] Carter SK: Gender performances during labor and birth in the midwives model of care. Humanities Social Sciences and Law Gender Issues 2009, 26(3-4):205-223.

[3] Sinha S: Outcome of antenatal care in an urban slum of Delhi. Indian Journal of Community Medicine 2006, 31(3):189-191.

[4] Stephanson O, Dickman PW, Johansson ALV, Kieler H, Cnattingius S: Time of birth and risk of intrapartum and early neonatal death. Epidemiology 2003, 14(2):218 -222.

[5] DinKes K: Profil Kesehatan, Dinas Kesehatan Kabupaten Keerom, Provinsi Papua. 2011.

[6] Rochjati P: Rujukan Terencana Dalam Sistem Rujukan Paripurna Terpadu Kabupaten/Kota. Surabaya: Airlangga University Press; 2004.

[7] D.Rosario GR, T. Lewis T, Irons B, Campbell-forrester S, Weiss HL, Jolly PE: Assessment of risk factors for stillbirth amongpregnant women. Jamaica of Obstetrics and Gynaecology 2004, 24 (7):750-755.

[8] M. G. Gravett MG, Rubens CE, Nunes TM: Global report on preterm birth and stillbirth (2 of 7): Discovery science. BMC Pregnancy Childbirth 2010, 10 (1).

[9] Athanasakis E, Karavasiliadou S, Styliadis I: The factors contributing to the risk of sudden infant death syndrome. Hippokratia 2011, 15 (2):127-131.

[10] Barros FC, Bhutta ZA, Batra M, Hansen TN, Victora CG, Rubens CE: Global report on preterm birth and stillbirth (3 of 7): Evidence for effectiveness of interventions. BMC Pregnancy Childbirth 2010, 10 (1).

[11] Reduction of Health Care Associated Infection Risk in Neonates by Successful Hand Hygiene Promotion [http://www.pediatrics.org/egi/content/full/120/2e382]

[12] Depkes RI: Panduan Pelaksanaan Strategis Making Pregnancy Safer and Child Survival. Departemen Kesehatan Republik Indonesia 2008.

[13] Sub-Saharan Africa's Mothers, Newborns, and Children: Where and Why Do They Die? [www.plosmedicine.org]

[14] A randomized placebo-controlled trial on intermittent preventive treatment in pregnant women in the context of insecticide treated nets delivered throught the antenatal clinic [www.PLoS ONE]

[15] Costello A, Osrin D, Manandhar D: Reducing maternal and neonatal mortality in the poorest Communities. BMJ 2004, 329:1166-1168.

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