

# Study on Health Social Determinants as Cause of Maternal Mortality in Gowa District South Sulawesi, 2013

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**Abstract-** The maternal mortality rate in Indonesia based on the demographic and health survey of Indonesia (IDHS) consecutively since 1994 was 390 per 100,000 KH, in 1997 was 334 per 100,000 KH, then in 2003 showed the number of live births 307/100.000 and later be 228/100.000 in 2007. In Gowa, the number of maternal deaths in 2010 was 12 or 93.4 per 100,000 and in 2011 KH, 12 or 92.7 per 100,000 KH and in 2012, there were 11 deaths. One of the important issues in maternal mortality is the presence or involvement of factors influence social determinants of health in cases of maternal death. This study used a case-control study design by comparing the case group and the control group based on the status of his presentation. This study was conducted to identify clusters of cases (maternal deaths) and control group (post-partum mothers life), which then retrospectively examined factors that can explain the determinants whether cases and controls exposed or not. The population consisted of a population case and control. For the entire population is a case of a mother who death in Gowa in the last 3 years, recorded in the maternal mortality data in Gowa District Health Office. While population control is all postpartum mothers who did not experience death over the last 3 years and meet the inclusion and exclusion criteria. The majority of both groups of respondents in the control proved first married before age < 19 years of age is an age in which high -risk pregnancies and deliveries reached 109 respondents out of 175 respondents, or 62.3 %. Furthermore, the productive age between 19-35 years is the ideal age to 57 (32.6 %) respondents and for age > 35 years there were 9 (5.1 %) respondents. The highest percentage for the education of both groups is the primary control that is 48.6 % in the case group and 34.3 % in the control group. While the lowest percentage for education in the case group was college by 2.9 % and in the control group is Diploma / Academy namely 1.4 %. Variable work group 65.7 % of cases were working mothers during pregnancy and in the control group, there were 37.1 % of mothers who worked during pregnancy, whereas 34.3 % of the mothers in the group of cases do not work and 62.9 % of mothers in the control group that did not work. For decision-making in the family was found in the case group, 65.7 % of women are not involved, and 37.1 % are not involved in the control group. In addition, there is also 34.3 % of the mothers involved in the case group and 62.9 % of women were included in the control group. Variables determining the place of delivery is found in the case group, 65.7 % of women are not involved and 37.1 % in the control group. Then there is also 34.3 % of the mothers involved in the case

group and 62.9 % in the control group. Furthermore, there were 25.7 % in the group of cases that have abstinence behavior during pregnancy and 45.7 % of respondents in the control group. Furthermore, there were 74.3 % in the group of cases that do not have restrictions on the behavior during pregnancy and 54.3 % of respondents in the control group. For abstinence of food consumed during pregnancy, there are 22.9 % in the group of cases that have dietary restrictions during pregnancy and 35.0 % of respondents in the control group. Furthermore, there were 77.1 % in the group of cases that do not have food taboos during pregnancy and 65.0 % of respondents in the control group. The study also found 20.0 % of those cases have restrictions on the behavior and the puerperium around 17.1 % of respondents in the control group. Then 80.0 % of the respondents in the case group does not have restrictions on the behavior during childbirth, and 82.9 % of respondents in the control group who did not have restrictions on the behavior during childbirth. Food taboos during parturition are 5.7 % in the case group and 13.6 % of respondents in the control group who had food taboos during parturition. Meanwhile, there were 94.3 % in the case group and 86.4 % of respondents in the control group who did not have food taboos during parturition. The results of the bivariate analysis showed significant results because the value of OR = 3.244. This means that the social determinants of health 3.244 times the risk of causing maternal death / birth than if the social determinants of health play a role, because the value of OR > 1, shows the social determinants of health factor is a risk factor to maternal mortality. Health social determinants is an important variable against maternal mortality with OR values were found at 3.244 which means the social determinants of health is a risk factor for the occurrence of maternal deaths in the district of Gowa in South Sulawesi. Cultural communication approach is needed so that community health workers can accept the changes offered by the relevant government social determinants of health.

**Index Terms-** Social determinants, health and maternal mortality

## I. INTRODUCTION

Women play a very important and strategic role as a driving force in creating quality family. One important aspect is the quality that support family health. Maternal health is one aspect of women's reproductive health related morbidity and mortality in pregnant women and maternity. Maternal death is a

phenomenon tip of the iceberg because the case is quite much visible on the surface but only a limited number only (Hasnah, 2003). Maternal deaths according to ICD - 10 (The Tenth Revision of the International Classification of Disease) is a death that occurs in women during pregnancy or within 42 days after the end of pregnancy, irrespective of time and location of pregnancy, caused by anything related to pregnancy or aggravated by the pregnancy or its management, but not deaths caused by accident or chance (WHO, 2008). Maternal mortality in developing countries is estimated at 100 to 1,000 or more per 100,000 live births, while in developed countries range from 7 to 15 per 100,000 live births, (Hasnah, 2003, Surekha, 2012). The same study was also conducted Kabali (2011) who found maternal deaths in the Congo region, reaching 740 per 100,000 KH. The maternal mortality rate in Indonesia based on the demographic and health survey of Indonesia (IDHS) consecutively since 1994, was 390 per 100,000 KH, then in 1997, to 334 per 100,000 KH, then in 2003 showed the number of live births 307/100.000 later be 228/100.000 in 2007. Fibriana research results (2007) revealed the most maternal deaths occur during delivery is 61.5 %, and 26.9 % in the puerperium. Still on the study, 73.1 % of women died in the hospital, and 13.5 % died at home, and 7.7% died and 5.7% in health centers died on the way. Riskesdas data in 2010 showed that deliveries in health facilities reached 55.4 % and the high rate of home deliveries is 43.2 %. In the group of mothers who gave birth at home, was just 51.9 % of births are attended by midwives, herbalists whereas by 40.2%.

One of the important issues in maternal mortality is the presence or involvement of factors influence social determinants of health in cases of maternal death. One important part of that is the inclusion of a shaman in the delivery process. Emotional closeness traditionally, pregnant women contributes to harness a shaman as birth attendants. This gave birth to the proximity of public trust for generations on the quality of work of a shaman. The issue then arises, when the birth process encountered a problem, where the shaman with all its limitations, was not able to perform the treatment to prevent more serious complications. Yenita (2011) revealed that the lack of knowledge of TBAs in recognizing complications that may arise in the delivery and improper handling of complications will increase the risk of maternal mortality. Another part of the social determinants of health are factors of poverty where it is associated with income and economic status of the family. Families with poor economic and educational levels have a tendency to take advantage of low quack as birth attendants (Rajab, 2009). Further understand the issue of maternal mortality, the study is expected to approach the social determinants of health factors may be a reference to map of maternal mortality has not been clearly illustrated and detailed. Especially for Gowa district, as one of the four counties with the maternal mortality rate is still relatively high in South Sulawesi. For Gowa, the number of maternal deaths in 2010, 12 or 93.4 per 100,000 and for 2011 KH, 12 or 92.7 per 100,000 KH and for 2012, there were 11 deaths. The description of the background then examines the determinant factors of maternal death with the social determinants of health approach becomes important and strategic to be researched more in an effort to get an overview of maternal mortality in Indonesia, particularly in Gowa.

## II. MATERIALS AND METHODS

This study used a case-control study design (case control study) is a research that studied the relationship between exposure factors and disease by comparing the case group and the control group based on the status of his presentation. Subjects were selected based on the status of the disease / outcome, then observed whether the subjects had a history of exposure to factors research or not. This study was conducted to identify clusters of cases (maternal deaths) and control group (postpartum mothers life), which then retrospectively (search backward) examined factors that can explain the determinants whether cases and controls exposed or not. This study conducted in the area of Gowa in South Sulawesi, which is one that has the highest maternal mortality rate in South Sulawesi according to the health ministry study results through Expanding Maternal and Neonatal Survival (EMAS). When the study was planned in April 2013 to April 2014. The population in this study consisted of a population case and control populations. For the entire population is a case of a mother who suffered death in Gowa in the last 3 years are recorded in the maternal mortality data in Gowa District Health Office. While population control is all postpartum mothers who did not experience death over the last 3 years and meet the inclusion and exclusion criteria from the calculation of the minimum sample size, the number of samples obtained were 74. Due to the number of cases are only 35, then to meet analysis requirement, this study will use a comparison between the case group and the control group was 1 : 4, in which case the sample is 35 and for control sample of 140 persons bringing the total number of samples of cases and controls in this study was 175. To determine the control sample used simple random sampling method which is derived from the number of mothers who gave birth to survive during the last 3 years of data recorded in Gowa district health offices. For the matching in this study is the geographical position adjacent house between cases and controls. For primary data, the data collected through interviews with a structured questionnaire and a guide for secondary data obtained through the records of maternal deaths, maternal KMS, registers cohort of pregnant women, birth records and documents verbal autopsy. Data analysis was performed using univariate analysis are described in the form of tables and narrative, to evaluate the magnitude of the proportion found in the case and control groups for each - each variable under study, and to see whether there is any difference between the two groups performed bivariate analysis and to determine the relative risk estimates calculated odds ratios (OR) with 2 x 2 tables and formulas;

$$(OR) = \{A / (A + B) : B / (A + B)\} / \{C / (C + D) : D / (C + D)\} \\ = A / B : C / D = AD / BC$$

## III. RESULTS

Characteristics of the respondents in this study include age at the time of marriage. Overview of research results in Table 1 show that the majority of respondents of both groups on the proven control was first married before age < 19 years of age is an age in which high -risk pregnancies and deliveries reached

109 respondents of 175 respondents, or 62.3 %. Furthermore, the productive age between 19-35 years is the ideal age to 57 (32.6 %) respondents and for age > 35 years there were 9 (5.1 %) respondents. In detail is presented in Table 1 below:

**Table 1. Distribution of respondents base on the mothers age when married in Gowa, South Sulawesi, 2013**

Age when marriage (year)	Respondent group				Total	
	Cases		Controls		n	%
	n	%	n	%		
< 19	23	65,7	86	61,4	109	62,3
19 – 35	8	22,8	49	35,0	57	32,6
> 35	4	11,4	5	3,6	9	5,1
Number	35	100,0	140	100,0	175	100,0

Source: Primary Data, 2013

Social determinants of health is an important variable that is currently studied in depth as a variable occurrence of maternal deaths. In this study, education, occupation, gender and culture put into the study of the social determinants of health. Determinants of education referred to the last of mother's education level is reached. The results of this study showed that the highest percentage for the education of both groups is the primary control that is 48.6 % in the case group and 34.3 % in the control group. While the lowest percentage for education in the case group was college by 2.9 % and in the control group is Diploma / Academy with 1.4 %. For the determinants of work referred to in this research is the activity performed by the mother during pregnancy and in the postpartum period. The work

is related to the activity of either their own mother and helping her husband work. Results of this study found that, in the case group was 65.7 % of working mothers during pregnancy and in the control group, there were 37.1 % of mothers who worked during pregnancy. Then there were 34.3 % of the mothers in the group of cases that do not work and 62.9 % of mothers in the control group that did not work. Data concerning the determinants of work, found the majority of women work as agricultural laborers either the control group or in the group of cases. Working during pregnancy, especially if the work is classified as heavy work is risky because it can have an effect on the condition of the mother's pregnancy.

**Table 2. Distribution of respondents based on health social determinants in Gowa, South Sulawesi, , 2013**

Health Social Determinant	Respondent group				Total	
	Cases		Controls		n	%
	n	%	n	%		
Mother education						
- < Junior High School (Risks)	20	57,2	53	37,9	73	41,7
- ≥ Junior High School (Not risks)	15	42,9	87	62,1	102	58,3
Mother activity:						
- Work	23	65,7	52	37,1	75	42,9
- Not work	12	34,3	88	62,9	100	57,1
Involved in the decision process						
- No	23	65,7	52	37,1	75	42,9
- Yes	12	34,3	88	62,9	100	57,1
Involved in determining delivery place:						
- Yes	23	65,7	52	37,1	75	42,9
- No	12	34,3	88	62,9	100	57,1
Behavior restriction during pregnancy:						
- Yes	9	25,7	64	45,7	73	41,7
- No	26	74,3	76	54,3	102	58,3
Food restriction during pregnancy						
- Yes	8	22,9	49	35,0	57	32,6
- No	27	77,1	91	65,0	118	67,4
Behavior restriction during postpartum:						

- Yes						
- No	7	20,0	24	17,1	31	17,7
	28	80,0	116	82,9	144	82,3
Food restriction during postpartum :						
- Yes	2	5,7	19	13,6	21	12,0
- No	33	94,3	121	86,4	154	88,0

Sources: Primary Data, 2013

Determinants of gender in this research is the view of the family of the mother's position and role in the family decision making related decisions related to pregnancy and birth place. The results show that decision-making in the family, was found in the case group, 65.7 % of women are not involved, and 37.1 % are not involved in the control group. Then there is also 34.3 % of the mothers involved in the case group and 62.9 % of women were included in the control group. The reasons respondents said that the decision was not involved in the husband's authority. This is also the dominating influence of community culture customs within the family. The results of this study also found that in order to determine the place of delivery, is found in the case group, 65.7 % of women are not involved and 37.1 % in the control group. Then there is also 34.3 % of the mothers involved in the case group and 62.9 % in the control group. Exclusion in determining where the birth mother is also influenced by the cultural authority of the decision in the hands of the husband. For cultural determinants in this study associated with taboos adopted by the family, either dietary restrictions or behavior that should not be consumed or carried by the mother during pregnancy and the postpartum period. The results of this study found that there were 25.7 % in the group of cases that have abstinence behavior during pregnancy and 45.7 % of respondents in the control group. Furthermore, there were 74.3 % in the group of cases that do not have restrictions on the behavior during pregnancy and 54.3 % of respondents in the control group. Abstinence -related behaviors during pregnancy, is an aspect of culture that is very thick in Gowa district, but with the transformation of information, the family began making were largely open to accept the changes that this behavior is related restrictions.

Picture of food taboos during pregnancy, more on the perception of society towards labor condition if the fetus and difficulty eating certain foods. The assumption is then embraced by the community and eventually became the adopted values are culturally become taboo. Results The study found that consumption of dietary restrictions during pregnancy, there were 22.9 % in the group of cases that have dietary restrictions during pregnancy and 35.0 % of respondents in the control group. Furthermore, there were 77.1 % in the group of cases that do not have food taboos during pregnancy and 65.0 % of respondents in the control group.

It is also an important part of the cultural determinants is related restrictions on during childbirth. Puerperium for some Gowa regencies society is a condition that is very risky for the mother. Keeping the mother 's behavior during this period is a serious thing for the family to be noticed by the mother. The results of this study found that there were 20.0 % in the case group had abstinence behavior during parturition and around. 17.1 % of respondents in the control group. Then 80.0 % of the respondents in the case group does not have restrictions on the behavior during childbirth, and 82.9 % of respondents in the control group who did not have restrictions on the behavior during childbirth.

This study also describes matters relating to food taboos during parturition and the results found that there were 5.7 % in the case group and 13.6 % of respondents in the control group who have dietary restrictions at the time of parturition. Meanwhile, there were 94.3 % in the case group and 86.4% of respondents in the control group who did not have food taboos during parturition.

**Table 3. Social determinants of health risk factors against maternal mortality patterns in Gowa, 2013**

Health social determinant	Respondent group				Total		CI 95% (LL – UL)
	Case		Control		n	%	
	n	%	n	%			
Not risk	23	65,7	52	37,1	75	42,9	OR = 3,244 (1,490 – 7,059)
Risk	12	34,3	88	62,9	100	57,1	
Number	35	100.0	140	100.0	175	100.0	

Source: Primary Data, 2013

Based on the results of table 3, bivariate analysis showed significant results because the value of OR = 3.244. This means that the social determinants of health 3.244 times the risk of causing maternal death / birth than if the social determinants of health play a role, because the value of OR > 1, shows the social determinants of health factor is a risk factor to maternal mortality.

#### IV. DISCUSSION

Social determinants of health in the commission of social determinant of health (CSDH) by the WHO is associated with socio-economic problems of society in the form of income, ethnicity / culture, education and gender, becoming one of the studies that supposedly has an important role to maternal

mortality / birth. Factors social determinants of health are the manifestation of the basic rights of women to state their desire to obtain a quality life. If the problem is associated with pregnancy / childbirth, then this becomes a very important factor in achieving pregnancy / maternity is safe and healthy. The results of this study showed that 65.7 % of women experienced no deaths caused by variable involvement of the social determinants of health, which means that the social determinants of health factors become obstacles in achieving a pregnancy / childbirth are safe and healthy. The study also revealed that 42.9 % of women were still found to work when pregnant, then the highest level of education of respondents only graduate of basic school with 37.1 % and 42.9 % of women were not involved in the decision-making process related to pregnancy include the mother does not participate in determining a place where a mother would do the labor. Furthermore, 41.7 % of mothers also found that culture has taboos related behaviors during pregnancy and 32.6 % who have dietary restrictions during pregnancy. Similarly, in the puerperium, found 17.7 % of women having an abstinence - related behaviors and 12.0 % of mothers abstain from food during the postpartum.

It must be recognized that one of the important factors that are the root of the problem of maternal mortality is the factor of social determinants of health, where the family does not know even unresponsive to pregnant women at risk of the condition, the family attitude that tends to assume that birth is their responsibility alone, even maternal health budget pregnant and birthing mothers in the household is still considered important. Another important aspect of the social determinants of health is an aspect of culture, of which the family is applying too much taboo that implies a loss for pregnant women and mothers maternity postpartum period, both in eating and behavior, which in turn impacts on maternal nutrition. Likewise, the family's perception of pregnancy and childbirth are only considered as a regular event , then the attitude of the family who are not sensitive; household workload and responsibilities of pregnant women in making a living is still the same as ever, as well as the persistence of gender bias where decision-making process is still in the hands of men, be it husbands, fathers, in-laws, even for the purposes of prenatal care and childbirth, mothers sometimes helpless.

The results of this study , found the OR value was 3.244 which is a significant result, which means that when the social determinants of health factors become obstacles or not act, then the 3.244 times the maternal / birthing would be at risk for death. This suggests that the social determinants of health factors to maternal mortality / birth is a problem that global society must be the top priority to be addressed.

Aspects of cultural taboos associated with both abstinence behavior and dietary restrictions, the amount of income in the context of poverty and gender equality are represented in the decision-making patterns in the family, is a matter which should be addressed in a comprehensive manner. Several studies have been conducted region of Africa , showing the dominance of socio-economic factors and socio-cultural as a cause of maternal death . In Indonesia, NTT is a region that mother mortality rate is still high and the research conducted by Musaddad (2002) gives the depiction of cultural factors as causes of maternal death plays an important role. Poverty can be a cause lack of community

participation in health activities. Maternal mortality / maternity is still common in the group of poor, less educated, live in remote areas, and they do not have the ability to fight for her own life. Women from low-income families have less risk of over 300 times to suffer maternal mortality and morbidity when compared with those with better income (MOH, 2004). The results of the study by Fang Ye (2012) show that the low income of the poorest families have access to contribute greatly to the family in the utilization of health services, especially in the delivery and financing of transportation. It is also linked to the geographical area in which 80.17 % of Gowa district is a region of highlands and lowlands is only 19.83 %.

Reduce maternal mortality not only in the health sector, but of course it is also related to the understanding of power relations in the family will be the relationship of men and women. Socio-cultural constraints should be viewed within the framework society though, and not the government's viewpoint. deaths from childbirth are rare events, changes must be made to the mindset of society thinks that the death was an extraordinary event and it should be done continuously relentless in the wider community so that they know that an event can be an extraordinary event. Changes in society frameworks must be accompanied by an understanding in the form of counseling and accurate information so as not to lead society into a phobia against emergency conditions of pregnancy / childbirth but on the contrary increases are sure to join the community deal with the issue in a way that is both reasonable and according to rules.

Change the mindset of thinking in the form of counseling and provision of correct information must be done keeping in view the socio-cultural background of the people, so that they can make changes and implement them in accordance with the customs and capabilities available to it. Systematic and planned efforts in addressing the social determinants of health issues, will be a new way for the settlement of the problem of maternal mortality. Developed in close cooperation between health workers in their entirety by the public, is expected to open the bulkhead culture which has been a bottleneck in the implementation of programs in the field of primary health care related to pregnancy and childbirth. The various programs that have been initiated and implemented by the government, has actually meets optimism for reducing maternal mortality, only the model approach taken is always only oriented to the interests of achieving the government's targets / programs. In fact, there are things that apply in the community and has become one of the models of life and social systems that have been acted by the community for generations. When people see that what is planned by the government at odds with models of their lives, then that is where we will see the failure of the program to be implemented. Alignment of the system of a society that has been done culturally hereditary government program that tries to introduce "new models" in an attempt to find solutions to issues that arise during the life of the system has been run for generations, should be able to be created. This alignment can be seen from the partnership program between TBAs and midwives. TBAs which is one example of a system of community life for generations, and then trained to do the handling of a healthy and safe delivery and immediately reported the case of complications. This program is one program that has been conducted in Gowa district. When this is done for all programs

related to pregnancy or childbirth, the optimism of the role of health social determinants will be very large, and this will certainly be one of the strategic measures in order to reduce maternal mortality/birth.

## V. CONCLUSION

Health social determinants is an important variable against maternal mortality with OR values were found at 3.244 which means the social determinants of health is a risk factor for the occurrence of maternal deaths in the district of Gowa in South Sulawesi. Cultural communication approach is needed so that community health workers can accept the changes offered by the relevant government social determinants of health.

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