Research Article

Maternal Death Risk Factors In Wahidin Sudirohusodo Hospital And Its Affiliates.

Faktor Risiko Kematian Maternal di Rumah Sakit Umum Pusat Wahidin Sudirohusodo dan Jejaringnya

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Abstract

Objective : To identify maternal death risk factors in Wahidin Sudirohusodo Hospitals and its affiliates between 1 January - 31 December 2017.

Methods : This study is an observational case-control study that includes all cases of maternal death and considerable numbers of pregnancy without complications that occurred in Wahidin Sudirohusodo Hospital and its affiliates between 1 January 2016 and 31 December 2017. Data were then be analysed using *chi-square* and *logistic regression test* to know the correlations between risk factors and maternal death.

Results : There are 28 cases of maternal death in Wahidin Sudirohusodo Hospital and its affiliates which mostly occurred at age 20-35 years old (60.7%) and antenatal care in primary health care (71.4%). Hypertension (39.3%) and haemorrhage (35.7%) were the most frequent complications of maternal death. Age under 20 years old and older than 35 years old (odds ratio 3.882; 95% CI, 1.056-14.276; $P<0.05$), education level less than 9 years (odds ratio 3.178; 95% CI, 0.987-10.228; $P<0.05$), age and education level did not seem to affect incidence of maternal death when analysed simultaneously (odds ratio 1.842; 95% CI, $P > 0.05$).

Conclusions : Hypertension and haemorrhage were the most frequent causes of maternal death. Age under 20 years old and older than 35 years old as well as education level less than nine years increased the risk of maternal deaths independently. Parity, frequency of antenatal care, and location of antenatal care did not show any significant role in maternal death occurrence.

Keywords : age, haemorrhage, hypertension, maternal death, risk factors.

Abstrak

Tujuan : *Untuk mengetahui faktor-faktor risiko kematian maternal di Rumah Sakit Umum Pusat Wahidin Sudirohusodo dan jejaringnya periode 1 Januari – 31 Desember 2016.*

Metode : *Penelitian ini adalah penelitian studi observasional case control dengan mengambil seluruh data kematian maternal yang terjadi di Rumah Sakit Umum Pusat Wahidin Sudirohusodo dan jejaringnya selama periode 1 Januari – 31 Desember 2016. Data dianalisis dengan Uji chi square dan regresi logistik untuk melihat faktor risiko yang diteliti dengan terjadinya kematian maternal.*

Hasil : *Ada 28 kasus kematian maternal di Rumah Sakit Umum Wahidin Sudirohusodo dan jejarignya yang sebagian besar terjadi pada kelompok usia 20-35 tahun (60,7%) dan lokasi asuhan antenatal di puskesmas (71,4%). Komplikasi kehamilan terbanyak ialah hipertensi (39,3%) dan perdarahan (35,7%). Kelompok usia kurang dari 20 tahun dan lebih dari 35 tahun (odds ratio 3.882; 95% CI, 1.056-14.276; $P<0.05$) dan pendidikan kurang dari 9 tahun (odds ratio 3.178; 95% CI, 0.987-10.228; $P<0.05$) memiliki pengaruh signifikan terhadap terjadinya kematian maternal. Usia dan tingkat pendidikan secara simultan tidak mempengaruhi terjadinya angka kematian maternal (odds ratio 1.842; 95% CI; $P> 0.05$).*

Kesimpulan : *Hipertensi dan perdarahan merupakan penyebab utama terjadinya kematian maternal. Kelompok usia kurang dari 20 dan lebih dari 35 tahun serta tingkat pendidikan ≤ 9 tahun secara independen berisiko meningkatkan jumlah kematian maternal. Paritas, frekuensi asuhan antenatal, dan lokasi asuhan antenatal tidak memiliki peran signifikan dalam terjadinya kematian maternal.*

Kata kunci : *faktor risiko, hipertensi, kematian maternal, perdarahan, usia.*

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INTRODUCTION

Maternal mortality rate in Indonesia is still very high, approximately 359/100 000 live births in 2012, according to the Indonesia Health Ministry register. This finding is still outreached the fifth Millenium Development Goals (MDGs) target for 2015 which was about 102/ 100 000 live births.[1,2]

Maternal deaths frequently caused by pregnancy complications such as haemorrhage, infection, and hypertension. Data registry form Maternal Health Directory in 2010-2013 revealed that maternal deaths in Indonesia were commonly associated with bleeding, hypertension, and other causes that indirectly related to pregnancy. [1,3,4]

Maternal mortality rate in South Sulawesi in 2014 was 93.20 / 100 000 live births. This finding showed greater maternal mortality rate than 2013 which was about 78.38 /100 000 live births. It seems that maternal mortality rate in South Sulawesi had achieved Millenium Development Goals (MDGs) target, but we should not feel satisfied when maternal mortality rate had achieved MDGs target because maternal death could confer a detrimental psychological and socioeconomic burden in the community. [2,3,5]

Maternal deaths in South Sulawesi were predominantly caused by haemorrhage, hypertension, and indirect cause unrelated to pregnancy. Maternal deaths were frequently occurred in labour and in the puerperium. We have to rely on this indicator to offer better risk factor identification, referral system, and labour management. [1]

Health care system in Indonesia, particularly in South Sulawesi, still needs to be fixed. Difficult access to the health care centre, low socioeconomic status, low educational level, poor antenatal care quality, and many more factors that may increase maternal mortality rate. These findings should be well identified and well-managed in order to decrease maternal mortality rates in Indonesia.[4,6,7]

OBJECTIVES

This study aimed to identify the role of age, education level, parity, antenatal care frequency, and antenatal care location as risk factors for maternal deaths occur in Wahidin Sudirohusodo hospital and its affiliates from 01 January – 31 December 2017.

METHODS

This study was an observational case-control study. Data were collected from Wahidin Sudirhusodo Hospital and its affiliates from 1 January – 31 December 2017 and met inclusion criteria. Inclusion criteria in this study were maternal deaths occurred in pregnancy, labour, puerperium from 1 January – 31 December 2017 in Wahidin Sudirohusudo Hospital and its affiliates. Normal labour on 1 January - 31 December 2017 in Wahidin Sudirohusodo Hospital and its affiliates. Exclusion criteria in this study were pregnant women died or underwent without the complication that occurred out of the period of study. Pregnant women underwent labour or died not in Wahidin Sudirhosudo Hospital dan its affiliates.

Pregnant women who underwent labour without complication around the study period then became control in these settings. Data collected then be analyzed with the Chi-Square test. Data analysis would be significant if $P< 0.05$. Significant risk factors then be analyzed with logistic regression analysis to assess intervariables correlation with maternal deaths occurrence.

RESULTS

There were 28 cases of maternal death in Wahidn Sudirohusodo Hospital and its affiliates in the period 01 January – 31 December 2017. Several risk factors that could be identified in this study were age, educational level, parity, location of antenatal care, and frequency of antenatal care. [8,9]

Twenty-eight cases of maternal death that occurred in Wahidins Sudirohusodo Hospital and its affiliates between 1 January – 31 December 2017, as shown in Table 1. Maternal deaths most frequently occurred at age 20-35 years old (60.7%), multigravida (53.6%), educational level > 9 years (53.6%), and antenatal care location at primary health care (71.4%). In control, its seemed that pregnancy without complications most commonly occurred at age 20-35 years (85.7%), multigravida (64.3%), educational level

> 9 years (78.6%), and antenatal frequency < 4 times (53.6%).

Data in table 1 shows that frequency or number of antenatal care did not have significant role in predicting maternal death occurrence. Otherwise age at 20-35 years, multigravida, and educational level more than 9 years had a significant proportion in case of healthy pregnancy without complication, i.e., 85.7%, 64.3%, and 78.6% respectively.

Table 1. Maternal Deaths and Control Data Distribution Based on Risk Factors

Variables	Samples		Controls	
	n= 28	(%)	n= 28	(%)
Age				
20-35	17	60.7	24	85.7
< 20 or > 35	11	39.3	4	14.3
Parity				
Primigravida	13	46.4	10	35.7
Multigravida	15	53.6	18	64.3
Educational level				
< 9 years	13	46.4	6	21.4
> 9 years	15	53.6	22	78.6
ANC frequency				
< 4 times	14	50	15	53.6
> 4 times	14	50	13	46.4
ANC location				
Primary health centre	20	71.4	14	50
Hospital or Obstetrician	8	28.6	14	50

Hypertension and haemorrhage were still the main aetiology of maternal death that occurred in Wahidin Sudirhosudo Hospital and its affiliates. These findings is shown in table 2 where maternal death proportion caused by hypertension and haemorrhage were 39.3 % and 36.7 % respectively.

Table 2. Pregnancy-associated Complications Leading to Maternal Death

Complications	n	%
Hypertension	11	39.3
Infection	5	17.9
Haemorrhage	10	35.7
Other	2	7.1

Based on risk factors analysis on two groups, maternal deaths and normal pregnancy, it seemed that age at 20-35 years (*odds ratio* 0.258; 95% CI,0.070-0.258; P> 0.05) and educational level less than or equal to 9 years (odds ratio 3.178; 95% CI, 0.987-10.228; *P*> 0.05) had a quite significant role in maternal deaths occurences. Parity, antenatal care frequency, and location of antenatal care did not have significant role in maternal death occurrences with P > 0.05.

Table 3. Risk Factor Analysis in Maternal Death Occurrences at Wahidin Sudirhosudo Hospital and its Affiliates between 1 January – 31 December 2017

Variables	Sample n = 28	Control n = 28	*P-value*	OR	CI 95%
Age					
< 20 or > 35	11	4	0.035	3.882	1.056-14.276
20-35	17	24			
Parity					
Primigravida	13	10	0.415	1.560	0.534-4.557
Multigravida	15	18			
Educational level					
< 9 years	13	6	0.048	3.178	0.987-10.228
>9 years	15	22			
ANC frequency					
< 4 times	14	15	0.789	0.867	0.304-2.474
> 4 times	14	13			
ANC location					
Primary health care	20	14	0.101	2.500	0.828-7.548
Hospital or Obstetrician	8	14			

*Risk factor analysis with *chi-square*

Age less than 20 years and more than 35 years (odds ratio 0.312; 95% CI, 0.081-1.194; P>0.05) and educational level less than 9 years (odds ratio 0.384; 95% CI, 0.114-10.228; P>0.05) did not show any significant correlation in maternal death occurrence. Age and educational level (odds ratio 1.842; 95% CI; P >0.05) simultaneously did not reveal any significant correlation with maternal death.

Tabel 4. Regression Logistic Analyisis

Variables	*P-value*	OR	CI 95%
Age			
< 20 or > 35	>0.05	0.312	0.081-1.194
20-35			
Educational level			
< 9 years	>0.05	0.384	0.114-10.228
> 9 years	>0.05	1.842	

DISCUSSION

There were 28 cases of maternal death occurred in Wahidin Sudirohusodo Hospital and its affiliates between 1 January – 31 December 2017. Most of the maternal deaths were caused by hypertension and haemorrhage. These findings is in concordance with data from South Sulawesi Maternal Health Directory. [2,10]

Maternal deaths in Wahidin Sudirohusodo Hospital and its affiliates between 1 January – 31 December 2017 most commonly occurred at age 20-35 years. This finding was different with typical assumption state that pregnancy at age 20-35 years is not a high risk pregnancy. Furthermore, normal pregnancy without complications itself seemed to occur most frequently at age 20-35 years with significant proportion, i.e., 85.7%. Risk factor analysis of age in sample and control independently revealed that age at 20-35 years was a significant risk factor (*odds ratio* 3.882; 95% *Confidence Interval* [CI], 0.070-0.947; P<0.05). This finding suggests that age still plays a role in maternal death occurrence and support the theory stated that pregnancy in women less than 20 years or more than 35 years were high-risk pregnancy.[3,4,11]

Both maternal deaths and pregnancy without complications commonly occur in multigravida, but data revealed that pregnancy without complications was slightly higher in (control) than maternal deaths group, i.e. 64.3%. Risk factors analysis based on parity revealed that there was nos significant correlation between primigravida and maternal death occurrences (*odds ratio* 1.560; 95 % CI, 0.534 – 4.557; *P*>0.05). These findings suggested that parity may play a role in maternal deaths occurrences in Wahidin Sudirhosudo Hospital and its affiliates.

Educational level may have a role in determining maternal death occurrences in Wahidin Sudirohusodo Hospital and its affiliates between 1 January – 31 December 2017. An educational level less than or equal to 9 years (*odds ratio* 3.178; 95% CI, 0.987 – 10.228; *P*<0.05) showed significant correlation with maternal deaths. This finding suggested that there was a correlation between educational level and maternal mindset of good pregnancy care. [7,8]

Antenatal care frequency less than four times during pregnancy may not have a role in determining maternal death occurrence (*odds ratio* 0.867; 95% CI , 0.304 – 2.474; *P*>0.05). This result revealed that antenatal care quantity is not significant risk factors in determining pregnancy outcome. Quality of antenatal care may pose a more significant role in determining pregnancy outcome.

Women underwent antenatal care at primary health care did not pose significant risk to develop maternal death based on risk factors analysis (*odds ratio* 2.500; 95% CI, 0.828 – 7.548; *P*>0.05). Based on the proportion found showed that 71.4% of maternal deaths occur in women who underwent antenatal care at primary health care. This finding lead us to enhance our human resources in primary health care to be able to manage pregnancy risk factors accordingly. [8]

Both age (*odds ratio* 0.312; 95% CI, 0.081-1.194; *P*>0.05) and educational level (*odds ratio* 0.384; 95% CI, 0.114-10.228; *P*>0.05) simultaneously did not revealed any significant correlation with maternal death occurrences. Based on this finding risk factor identification is much more important to decrease the maternal mortality rate in Indonesia, especially in South Sulawesi. [2,4]

CONCLUSIONS

There were 28 cases of maternal death in Wahidin Sudirohusodo Hospital and its affiliates between 1 January – 31 December 2017.Maternal mortality most commonly occurs at age 20-35 years (60.7%), multigravida (53.6%), an educational level less than 9 years (53.6%), and antenatal care location at primary health care (71.4%). Most cases of maternal deaths were caused by hypertension (39.3%) and hemorrhage (35.7%).Educational level less than 9 years and age less than 20 years or more than 35 years independently had a significant role to maternal death occurence in Wahidin Sudirohusodo Hospital and its affiliates.

Parity, antenatal care frequency, and antenatal care location did not have significantly affect maternal mortality rate.

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