

Factors Affecting the Prevalence of Healthcare Associated Infections

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Abstract

Background: Healthcare associated infection (HAI) is an infection experienced by a patient during hospitalization or after discharge from a hospital due to germs obtained at the time the patient is admitted to the hospital.

The Objective: This study aims to determine the prevalence of Healthcare associated infections (HAIs) that occur in public hospitals in Bandar Lampung city, Indonesia.

Method: This research applied cross sectional design with 893 respondents chosen proportionally from 5 (five) general hospitals in Bandar Lampung city. Chi Square test was used to confirm the different causes of Healthcare associated infection (HAI) in various types of hospital.

Result: The result showed that the proportion of HAIs patients in type B general hospital of Bandar Lampung city was 13.77% and type C hospital was 10.03%. Several risk factors associated with HAIs incidence in type B hospital were age, the length of stay, infusion and oxygen installation. Among the risk factors associated with the incidence of HAIs in class, C hospital included the length of day care, surgery, infusion, and catheter installation.

Conclusion: The results of this study are expected to be used as input for the relevant institutions in preparing the infection prevention and control program in health facilities.

Keywords: Healthcare Associated Infections (HAIs), Day Care, Infusion, Catheter.

1. INTRODUCTION

One type of infection is Healthcare Associated Infections from now on abbreviated HAIs which can be interpreted as a disease obtained by a person during the hospital (Darmadi, 2008).

The incidence of HAIs has been used as a benchmark for hospital service quality. In Indonesia, Minister of Health Decree no. 129 of 2008 specifies a minimum standard of hospital services, including reporting of patients receiving HAIs to see how far hospitals exercise control over these infections.

A preliminary study of infections conducted at RSUD Kota Semarang showed that the incidence of nosocomial infection as a whole was 227 patients from 825 patients in inpatient care (Daniati, 2009). The study, conducted in 11 hospitals in DKI Jakarta in 2004, reported that

9.8% of inpatients received new infections during treatment (Departemen Kesehatan RI, 2009).

Bandar Lampung city as the capital of Lampung province has 19 hospitals divided into 3 (three) classes, namely Class B, Class C and Class D. Throughout the author's knowledge, research on the incidence of HAIs at the General Hospital in Bandar Lampung City has not been much done. This condition was making the data about the prevalence of HAIs at General Hospital in Bandar Lampung City difficult. As such, this study aims to determine the prevalence of Healthcare Associated Infection (HAI) in inpatients at the General Hospital in Bandar Lampung City in 2016. This study is expected to contribute to health care institutions in determining policies related to patient safety.

2. MATERIALS AND METHODS

This research used cross sectional design. The population in this study were all patients who underwent inpatient service at type B and C general hospital in Bandar Lampung city during the research. Samples were patients who underwent hospitalization for more than 3 (three) days at the public hospital in Bandar Lampung city. The number of samples obtained amounted to 893 respondents which were calculated proportionally based on data on the number of hospitalization days in the previous year. Inclusion criteria in this study were patients who underwent hospitalization for more than 3 (three), and the patient's record of medical history was complete.

Chi Square test was used to confirm the different causes of Healthcare associated infection (HAI) in the two types of hospital.

3. RESULT

Table.1. Frequency distribution, percentage of HAIs sufferer, based on type of hospital

	TYPE B Hospital		TYPE C Hospital	
	n = 305	Percentage	n = 588	Percentage
Phlebitis				
Yes	39	12.79	59	10.03
No	266	87.21	529	89.97
Urinary tract infection				
Yes	3	0.98		
No	302	99.02	588	100.00
Infection Wound Surgery				
Yes	2	0.66	0	0.00
No	303	99.34	588	100.00
HAIs Status				
No HAIs	263	86.23	529	89.97
HAIs	42	13.77	59	10.03
Ages				
0 - 17 Tahun	81	26.56	117	19.90
18 - 65 Tahun	193	63.28	400	68.03
66 - 79 Tahun	22	7.21	58	9.86
> 79 Tahun	9	2.95	13	2.21
Gender				
Men	182	59.67	300	51.02
Women	123	40.33	288	48.98
Length of Care				
4 - 5 Days	228	74.75	557	94.73
6 - 10 Days	51	16.72	27	4.59
> 10 Days	26	8.52	4	0.68

Treatment Ward				
VIP and 1 st Class	7	2.3	103	17.52
2 nd Class	30	9.84	18	3.06
3 rd Class	268	87.87	467	79.42
Surgery				
Yes	115	37.7	124	21.09
No	190	62.3	464	78.91
Transfusion				
No	266	87.5	585	99.49
Yes	38	12.5	3	0.51
Installation of Infusion				
Once	113	37.05	312	53.06
Twice	123	40.33	248	42.18
Three Times	69	22.62	28	4.76
Installation of Catheter				
Without Catheter	242	79.34	513	87.24
With Catheter	63	20.66	75	12.76
Installation Oxygen				
With Oxygen	270	88.52	567	96.43
Without Oxygen	35	11.48	21	3.57

Out of 893 patients treated for more than three days in a public hospital in Bandar Lampung, the proportion who received HAIs was 11.31%. Meanwhile, based on hospital type, the proportion of HAIs male was 12.45% more than women patients who received HAIs as much as 9.98%. In the other hand, more female patients did not suffer from HAIs compared to the male patient. The proportion of patients receiving HAIs in the 18-65 year age group was less than in the 66-79 age group. Based on the variable length of the day of stay, the proportion of patients receiving HAIs was more likely in patients with 6 to 10 days of hospitalization (28.21%) followed by more than ten days of hospitalization of 23.33%.

Respondents who were treated in 3rd class and isolation room received more HAIs (12.65%) compared to respondents who were treated in 1st class and VIP (3,654%) and 2nd class as much as 8.33%. Respondents who got infusion three times got HAIs 12.65% more than respondents who got infusion two times (8.33%) and one infusion of 3.64%. Likewise, with catheter installation, respondents who received catheter installation twice got HAIs of 25%. Slightly different from the infusion and catheter installation, the respondents who got the first

oxygen facility got more HAIs (40%), while the respondents who got the oxygen setup twice as much as 18.75% while the respondents who did not get the oxygen installation got HAIs as much as 9.43 %.

Based on age group, there is a difference of opportunity to get HAIs based on age group in type B and type C hospitals. The age group in type B hospital is related to HAIs incidence with p- value= 0.008 whereas in type C hospital there is no relationship between age group and HAIs with p- value = 0.0445.

The association of gender with Healthcare Associated Infection in public hospital in Bandar Lampung City that the opportunity to get HAIs in type B hospital with p – value = 0,512 and in class C hospital with p - value = 0.426. The result of the analysis of the length of the day of care with the incidence of Healthcare Associated Infection indicates there is a relationship between the length of stay with the opportunity to get HAIs both in type B and type C with p- value = 0.000 and 0.002 respectively.

Based on the treatment ward class, patients treated in the third grade and isolation room did not differ in the chance of suffering HAIs in type B hospital with p - value = 0.529. However, in type C hospital there was a difference of opportunity between patient treated in VIP room and 1st Class with patients treated in 2nd class and 3rd class with the p- value = 0.000.

The surgical action is a risk factor for HAIs incidence where patients treated in type B hospital are not likely to get HAIs with a p - value = 0.529 .Furthermore, in hospital type C there is a difference in percentage of patients who get surgery and patients who are not receiving surgery with a p- value = 0.000.

Transfusion is one of the risk factors for transmission of HAIs in hospitals. The results of this study found no difference between patients receiving transfusions and patients who did not receive transfusions with HAIs both in type B and type C hospital with p- value = 0.379 and 0.562. Installation of infusion is one of the risk factors of HAIs. The results of this study found that there was a difference between patients who received infusion and patients who did not get infused with the incidence of HAIs both in type B and type C hospital with p- value = 0000.

There is a difference between patients who get catheter insertion with patients who do not get catheter installation with the incidence of HAIs

in type B hospital with p - value = 0.172. In class C hospital there is a difference between patients who get catheter with patients not get catheter insertion with HAIs incidence with p- value = 0.000.

In contrast, patients receiving oxygen in type B hospital with patients who did not get oxygen installation with HAIs incidence with the p value of 0.002 while in type C hospital p- value was 0.032.

4. DISCUSSION

Infectious diseases are still one of the world's health problems, including Indonesia. Infection can come from a community (Community acquired infection) or from a hospital acquired infection (formerly known as nosocomial infection). Medical measures taken by health personnel intended for treatment or cure of the patient, if performed are not by the procedure has the potential to transmit infectious diseases, either to the patient (other) or even to the health worker itself. To be able to perform infection prevention and control, especially hospital infections, need to have knowledge of the basic concepts of infectious diseases.

The results of this study found that the prevalence of HAIs patients in public hospitals in Bandar Lampung city was 13.77% in hospital type B and 10.03% in class C hospital. This result indicated that transmission of HAIs in hospitals in Bandar Lampung Still occurs. This condition can be caused by several factors such as cleanliness of the patient's treatment room environment, hand hygiene measures by health personnel. The prevalence of HAIs is probably much smaller than the actual results because the incidence of HAIs in hospitals is still an iceberg phenomenon. But these results are sufficient to give an idea of the prevalence of HAIs in public hospitals in Bandar Lampung City.

The prevalence of HAIs in this study is higher than that of Malhotra (2014) by 8.87%, while Riva (2013) found HAIs patients in the General Hospital of Sarjito Yogyakarta at 7.8%.

The high incidence of HAIs in public hospitals in the city of Bandar Lampung allegedly related to the ineffective implementation of hand hygiene conducted by officers who provide services to patients. In Indonesia, research conducted at 11 hospitals in DKI Jakarta in 2004 showed that 9.8% of inpatients received nosocomial infection (Departement Kesehatan, 2008).

By gender, there was no difference in the proportion between male and female sexes suffering from HAIs in type B hospital (p value = 0.51) as well as in hospital type C (p value = 0.63). This study is in line with a study by Shelley, et.al (2014) who found no difference in the proportion of male and female sex with a p value of 0.13. Age is a major factor in the transmission of HAIs in hospitals. The results of this study found by age the proportion of patients with the greatest HAIs experienced by age group > 79 years of 33.33% in hospital type B, whereas in general hospital type C no A significant difference in each age group. This conclusion is in line with the research conducted in England that the older age group the chances of getting HAIs was getting bigger (Shelley, 2014).

The results of this study found that patients treated for 6-10 days have a greater chance of suffering from HAIs compared with patients who were treated more than ten days in both type B and type C hospitals. The results of this study are not in line with research conducted by Nguyen (2009) who found that patients treated for 4-5 days had a greater risk than patients treated for 5-10 days or > 10 days.

Based on the type of action given to the patient to provide care and treatment to the patients, those who have infusion three times more likely to get HAIs compared with patients who received a one-time infusion. Whereas patients who received the first-ever catheter insertion got HAIs compared with patients, who did not get the catheter installation. Patients who received oxygenation were more likely to get HAIs than patients who did not get oxygenated.

5. CONCLUSION

The results of this study concluded that the prevalence of patients treated in public

hospitals in Bandar Lampung city was infected by Healthcare Associated Infection (HAIs) overall during hospitalization was 11.31%. This figure was 13.77% in type B hospital and 10.03% in class C hospital. Several risk factors suspected to be associated with HAIs incidence in type B hospital are age, the length of stay, infusion and oxygen installation. Risk factors alleged to be involved in the incidence of HAIs in type C hospital are the length of day care, surgery, infusion and installation of catheters.

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