AN ANALYSIS OF THE PREVALENT OF PNEUMONIA FOR CHILDREN UNDER 12 YEAR OLD IN TAWAU GENERAL HOSPITAL

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Pneumonia is one of the serious illnesses which involve lung infection specifically alveoli. Nearly 40000 to 70000 people died each year in United State due to pneumonia. Therefore, it is not a surprise that pneumonia is one of the most critical illnesses for children under 12 years old in many parts of the world including Malaysia and particularly in Tawau, Sabah. The objectives of this study are; to develop a summary on the prevalent of pneumonia in Tawau General Hospital, to analyze the best practice to prevent this illness and lastly to determine an overview of which area that widely affected by pneumonia. The results can assist doctors and government to take major precaution and prevention efficiently to the fullest extent. This paper presents an analysis of the data, retrieved from the medical report at the Tawau General Hospital, using descriptive analysis. Through the findings, pneumonia is widely spread among young children under 12 years old. Moreover, there's more than one major factor that leads to this critical illness such as family background, genetic and environment. Therefore, the government, doctors and parents should take major step for preventing children suffering from pneumonia

Keywords: Prevalent pneumonia, Quantitative method, Statistical Analysis.

1. INTRODUCTION

Pneumonia is one of the serious illnesses which involve lung infection specifically alveoli. Nearly 40000 to 70000 people died each year in United State due to pneumonia. In Europe and North America, it was found that the prevalence of pneumonia for children under 5 years of age is 34 to 40 cases per 1000, which is higher than any other time of life [1], [2], [3], [4], [5]. Therefore, it is not a surprise that pneumonia is one of the most critical illnesses for children under 12 years old in many parts of the world including Malaysia and particularly in Tawau, Sabah.

The definition of pneumonia is too subjective. However, according to [3], pneumonia is defined as the presence of fever, acute respiratory symptoms, or both, plus evidence of parenchymal infiltrates on chest radiography. In the worse situation, it can affect our

lung where alveoli are filled with pus and fluid, which makes breathing painful and limits oxygen intake. There are large number of microorganisms and viruses that can cause pneumonia such as respiratory syncytial virus, influenza virus, parainfluenza viruses, and adenovirus [1], [2], [3], [4], [5]. These viruses and microorganisms can be found in a child's nose or throat, and can be spread via air-borne droplets from a cough or sneeze and blood during after birth. The symptoms of pneumonia can be seen through difficulty of breathing, continuous coughing, frequent fever, chills, loss of appetite, and wheezing.

Serious prevention have to be taken by parents, government and medical center in order to avoid more pneumonia phenomena among children such as taking immunization against Hib, adequate intake of nutrition, providing affordable clean indoor stoves and encouraging good hygiene in crowded homes. In addition, continuous research may assist them to view the latest statistics so that any prevention and action plan can be done to control the infection of pneumonia among children.

This paper organized as follows. Section 2 presents the related data of pneumonia taken from Tawau General Hospital. Section 3 describes research methodology of analyzing the data. Section 4 shows the results and analysis obtained and Section 5 concludes the paper.

2. DATA

This paper presents an analysis of the secondary data that obtained from the Tawau General Hospital. A patient, who comes to hospital, will be asked to fill out a special form before the actual medical checkup. The form requires some information such as the patient age, area of origin, parent's smoking background, parent's medical background (if known), patient medical background (if known) etc. Recent research found that, analytical research relies heavily on the secondary data in term of model construction and estimation. This study analyzed the patient profile data that was collected for 6 months period, from June 2010 to December 2010. Due to highly confidential data, a total number of 102 patients' profile data were allowed to share with. Therefore, the finding of this study was based on 102 sample size of the patients.

Figure 1 shows the number of patient that visited Tawau General Hospital from June 2010 to December 2010. The data was used to show the patent of patient visited the Tawau General Hospital due to pneumonia. The diagram shows that the highest number of patient visited the hospital was in October. This is because; October is categorized as part of the monsoons season. The weather is cold and clammy; therefore it could also lead to an increment of children suffering from pneumonia.

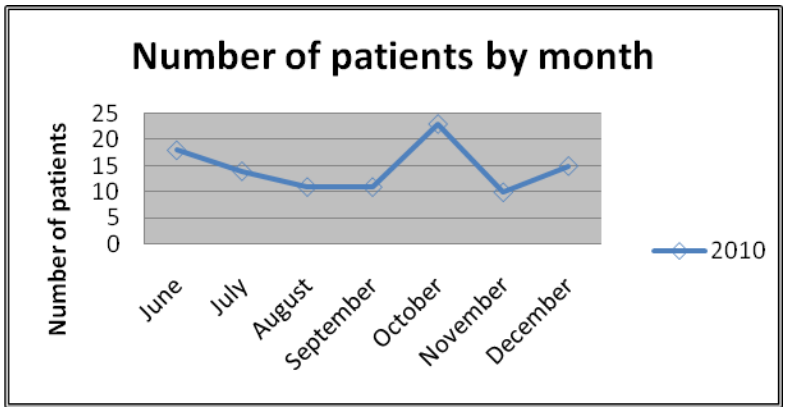

Figure 1: Number of Patient Visited Tawau's General Hospital from June 2010 to December 2010

3. RESEARCH METHODOLOGY

The 102 data were analyzed by using a statistical quantitative method along with Microsoft Excel. We start with descriptive analysis, where we want to see the overall pattern of the data set. The statistical techniques normally involved in the descriptive analysis are percentage, frequency distribution, mean, median, variance, standard deviation and coefficient of variation. Frequency distribution is a multiple-column table containing information on certain parameters; presented in frequencies and percentages. Mean and median are the measurements of average values on all data cases. Variance, standard deviation and coefficient of variation are the measurement of variability values of a variable. They have likely known to measures the reliability of the mean. Most researches used these techniques at the initial stage of data analysis in order to explore the data and understand their characteristics with their statistical implications [1].

4. RESULTS AND ANALYSIS

This section describes the data analysis and the results obtained from the study. The main objective of this study is to develop a summary profile of the patient that came to Tawau General Hospital due to pneumonia. This summary was graphically shown in Figure 2 until Figure 7. From the findings, Figure 2 shows that children aged 2-3 years old are mostly infected by pneumonia compared to other age category. They are still considered as infant. Based on the sample of the patient, shown in Figure 3, the number of percentage of parents that smokes are 37.25 percent and non-smokers are 62.75 percent. However, we are just considering a small sample of the population. Fair enough to say, a total of 102 patients might lead to small portion of results on the smoking percentage.

Based on Figure 4, we can see that most of the patients were admitted for 3 to 4 days. There was a case where a patient was admitted for 14 days. Probably it involves a

serious case of pneumonia. Figure 5 shows that 15.69 percent of the parent was infected by pneumonia since their childhood. Therefore there's no doubt that the children might inherit the illness from their parents.

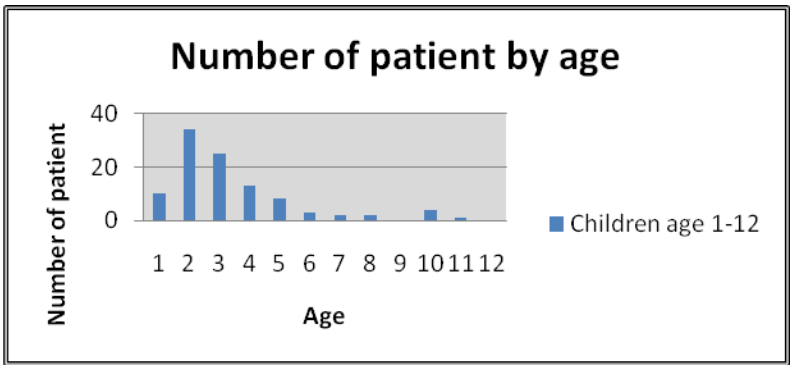

Figure 2: Number of Patient based on age category.

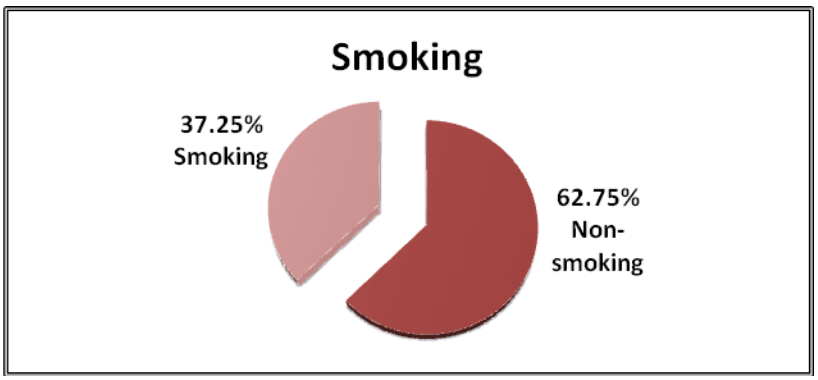

Figure 3: Percentage of parents that smokes.

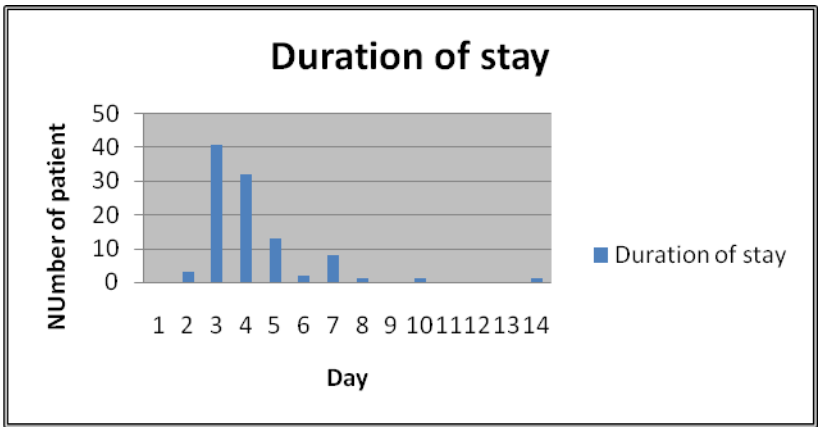

Figure 4: Number of Patient admitted in the hospital by days.

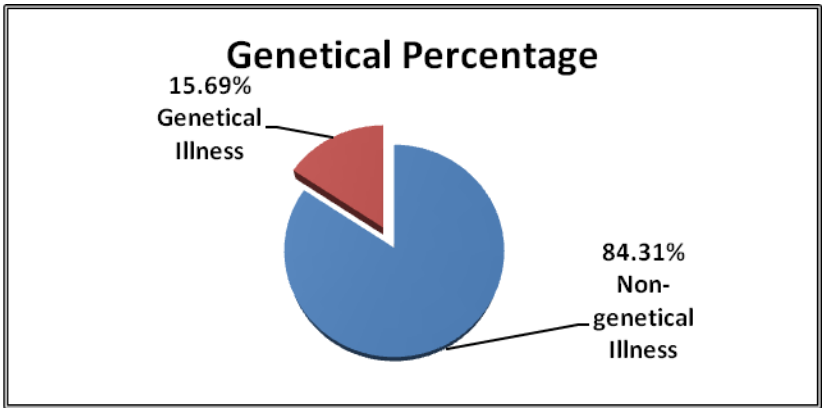

Figure 5: Percentage of parents that have the same illness.

Figure 6 shows that most of the patients are from rural area. It contributes 86.27 percent compared to urban area where it only contributes 13.73 percent. As we know rural area in Tawau may suffer from a low hygiene surroundings and lack of knowledge on good health. They still doing open burning and most of their source of water is from the nearby river or stream. The government should be well aware of this lackness in order to prevent any undesired illness among children in the future. In another hand, Figure 7 shows that, besides environment and genetical factor, the children were infected by pneumonia through several diseases. These diseases lead the children to be easily infected by pneumonia. Bronchiol asthma contributes 11 percents and it's normally caused by a combination genetic and environmental factors.

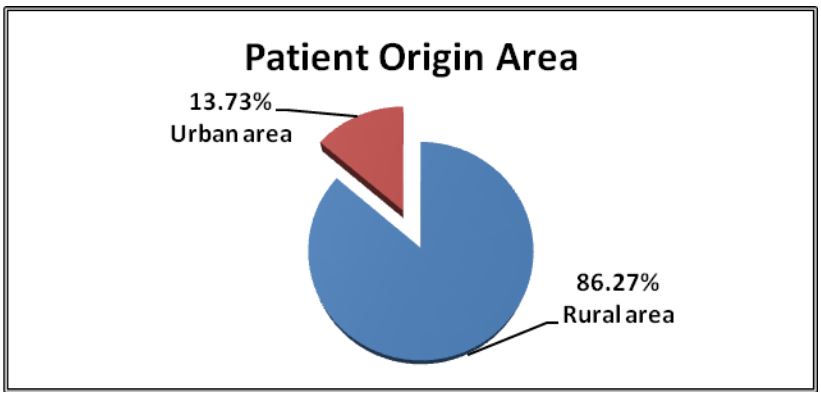

Figure 6: Percentage of patient origin area.

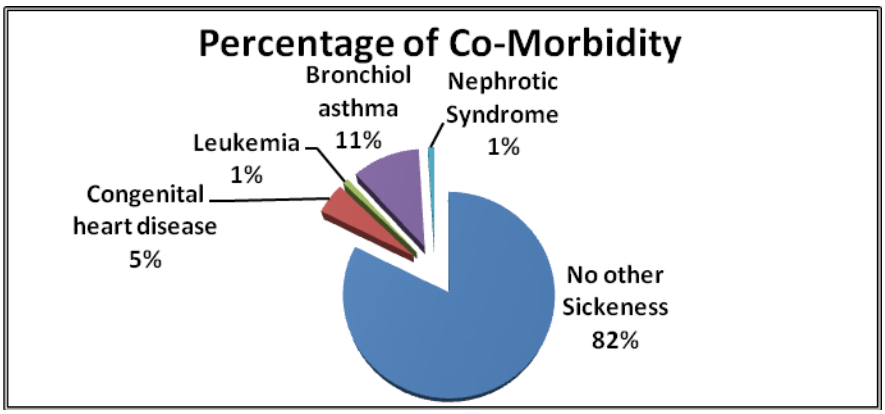

Figure 7: Percentage of co-morbidity.

5. CONCLUSION

Pneumonia is one the most dangerous disease that effecting children under 12 years old. Based on the data, we manage to do some statistical analysis and produce some results. The fluctuations of the infection of pneumonia among children are influenced by many factors, but most studies are focusing on hygiene. It has been the main objective for the Malaysian Health Ministry to prevent any disease affections and create a better life for children in Malaysia. The purpose of this article is to incorporate the prior process of the information-transmission that individually undergoes into the pneumonia infection among children under 12 years old. Few steps of prevention can be done in order to stop the spreading of the diseases. We will extend the research in certain part of the Johor region.

Acknowledgments
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References

[1] Foy, H.M., Cooney, M.K., Allan, I. and Kenny, G.E. (1979). Rates of pneumonia during influenza epidemics in Seattle, 1964 to 1975. *JAMA.* 241: 253-258.
[2] Jokinen, C., Heiskanen, L., Juvonen, H. et al. (1993). Incidence of community-acquired pneumonia in the population of four municipalities in eastern Finland. *Am J. Epidemiol.* 137: 977-988.
[3] Kenneth McIntosh, M. D. (2002). Community-acquired pneumonia in children. *The New England Journal of Medicine.* 346(6): 429-437.
[4] Murphy, T.F., Henderson, F.W., Clyde, W.A. Jr., Collier, A.M., and Denny, F.W. (1981). Pneumonia: an eleven-year study in a pediatric practice. *Am J. Epidemiol.* 113: 12-21.

[5] McConnochie, K.M., Hall, C.B. and Barker, W.H.(1988). Lower respiratory tract illness in the first two years of life: epidemiologic pattern and costs in a suburban pediatric practice. *Am J. Public Health,* 78: 34-39.