Analysis Of Knowledge Differences On The Use Of Geographic Information Systems For Mapping And Spreading Of Disease

Dina Fitriana Rosyada

Abstract: Health care is one area that requires a technological development. The development of the world of health services can not be removed with the need for presentation of data information that can be processed more accurately using an information technology software. A training of data processing using GIS application for health personnel in Puskesmas should be provided to support the knowledge of the main health officer in health data processing officer in order to have the ability to use geographic information system. The purpose of this study was to analyze differences in knowledge of healthcare workers before and after basic training of health data processing using GIS. This research is an experimental analytic research with cross sectional design. This research was conducted at Puskesmas working area of Health Office of Kulon Progo Regency, Yogyakarta. The samples are officers of health centers in the region of the Department of Health Kulon Progo as many as 25 people. The independent variables is variable basic training, while the dependent variable is the knowledge of health workers. Technical data analysis in this research is with statistical test that is Paired t-test to know difference before and after done tretmen or certain treatment on sample. From the statistical test using paired t-test p = 0.00 obtained with α = 0.05, which means that H_0 received so there are attendant knowledge before and after basic training of health data processing using GIS.

Index Terms: Geographic Information System, Knowledge Differences, Spreading of Disease

1 INTRODUCTION

Health care is one area that requires a technological development. The development of the world of health services can not be removed with the need for presentation of data information that can be processed more accurately using an information technology software. Besides, the increase of disease sufferers and the emergence of newly known diseases is a challenge that must be faced by the community and the government, especially the Health Office. Puskesmas as a party closely linked with the Department of Health is in need of proper consideration to take action in overcoming disease problems in an area. Taking action on the handling of diseases can be done by survey to the location of the patient, but it generally takes a long time. While the handling of a disease should be done immediately or as soon as possible so that the spread is not widespread. Therefore it is necessary that there is a tool that can help provide information to related parties regarding the spread of a disease in a particular region based on attribute data and spatial data that support. Geographic Information System is a computer-based information system used to process and store data or geographic information. The data to be processed in the geographic information system is geospatically oriented spatial data and is a location that has a certain coordination as the reference base. The application can answer some questions such as location, condition, trend, pattern and modeling. Tools that can be used to help analyze a region's condition of the disease to determine what action to take in the health of the existence of a geographic information system is needed. One of them is in putting the spread of disease in a region.

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The existence of an information system on mapping the spread of disease is the right solution to help overcome the problems of disease in an area, in addition to providing convenience in decision making handling the spread of disease. The existence of a system can accommodate all data spread of disease in a region becomes a more value for taking precautions due to the accuracy of data and convenience provided. A training of data processing using GIS application for health personnel in Puskesmas should be provided to support the knowledge of the main health officer on health data processing officer in order to have the ability to use geographic information system. In this case will be examined a level of knowledge of health workers through basic training of health data processing using GIS. The purpose of this study is to analyze the level of knowledge of health workers before and after basic training (basic) data processing health using Geographic Information System.

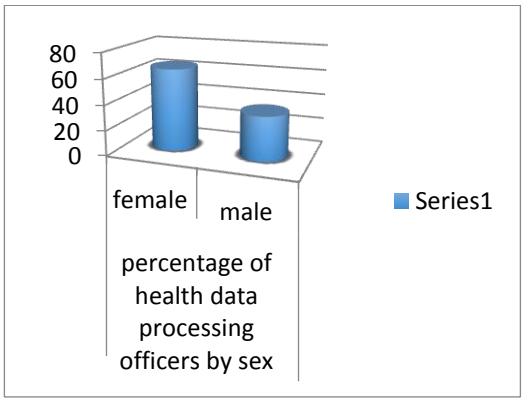
2 METHOD

This research is an experimental analytic research where the researcher gives treatment to the individual to further evaluated the influence of the relationship. Judging from the time dimension of the study, the design of this study was included in a cross sectional study. This research was conducted at Puskesmas working area of Health Office of Kulon Progo Regency, Special Region of Yogyakarta. The sample used in this study is the total population of the number of personnel / health officer of the data processing department at all health centers in Kulon Progo Regency. Where all Puskesmas in Kulon Progo Regency are 25 Puskesmas, with each one health center health data processing officer, so there are 25 officers. The independent variable in this research is the basic training variable (basic) of health data processing using GIS, while the dependent variable is the knowledge of the health worker. Instrument used in this research is instrument sheet of question before (pre) and after (post) test related with knowledge about health data processing using GIS. Research data were taken directly before the health worker

was given training and afterwards. Technical data analysis in this research is with statistical test that is Paired t-test to know difference before and after done tretmen or certain treatment on sample.

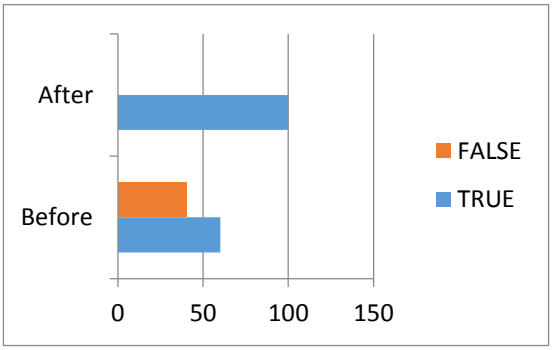
3 RESULTS AND DISCUSSION

The main health officer in the health data processing department has a minimum level of education is the Health Diploma (90%). Health workers in the health data processing division in Kulon Progo Regency are more women 65%, while men are 35%.



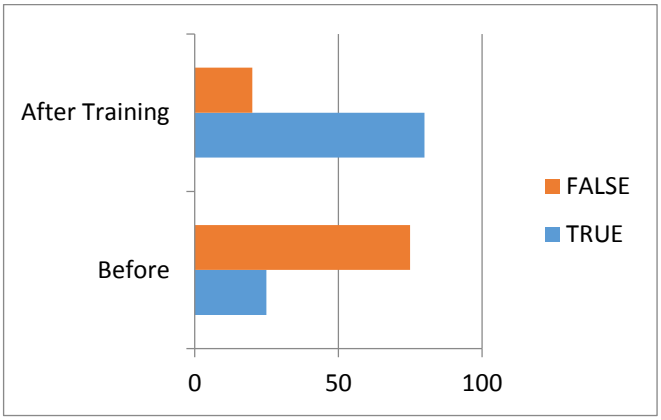
Knowledge of GIS Components

From the research results obtained respondents who answered correctly about the components of SIG when before training is 55% while the answer is not exactly equal to 45%. Then after the training the number of respondents who answered correctly about the component SIG increased to 85% while the wrong answer is 15%.



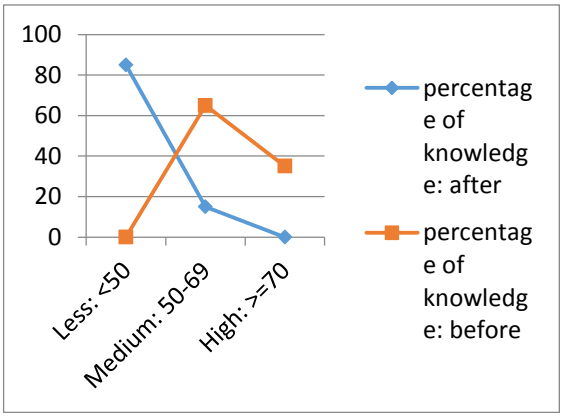
Knowledge of GIS Utilization in Dissemination and Mapping Disease

From the result of the research, it is obtained the knowledge of respondents who answered the question about the benefits of GIS in the health sector namely the dissemination and mapping of the disease properly before the training held as much as 20% of respondents, while at the time after the GIS training respondents began to know the benefits of GIS in the health sector that is equal to 75%.



Knowledge of Health Officers Before and After Performed Basic Training (Basic) Data Processing Dissemination and Disease Mapping Using Geographic Information System (GIS)

From the research result, it is found that the knowledge data are assessed and classified into less, medium and high knowledge. The value of high knowledge is more than equal to 70, the value of moderate knowledge is more than 50, and the value of less knowledge is less than 40. At the time before the training majority respondents included in less knowledge 80%, to moderate knowledge 20%, and nothing is in the high category. After the training, there were no respondents with knowledge category, respondents with medium category knowledge were 75% and respondents with high knowledge as much as 25%.



Knowledge of Respondents Concerning the Benefits of Geographic Information System for Health Data, GIS Components, Data Types and GIS Advantages

Knowledge of respondent that is about geographic information system at the beginning before getting training tend to less, it is indicated from result of percentage answer with not true question about understanding of geographic information system. Mostly before getting training, health workers understand that geographic information system is a location map of a region itself, without any supporting data that is attribute data. After training the officer understands that GIS is an important data computerization system that uses spatial data (spatial) and attribute data (descriptive). Increased knowledge of respondents regarding understanding of what is meant by SIG has increased from

15% to 85% after being given GIS training. In the knowledge of respondents about the benefits of GIS, increased knowledge when after being trained. Previously the respondents only knew the GIS could not be attributed to the health sector. Nevertheless there are some who already know the benefits in the field of health is to assist in the process of mapping disease, related later to take a health policy decisions. Increased knowledge about the benefits of GIS in the health world from the previous 20% to 80% after the training of GIS to process health data. Knowledge of respondents about SIG / GIS components sebellum held research was 55% and then more increasing almost all respondents understand the components of SIG after the training. The GIS component is 4:

1. Human resources
2. Hardware (Software)
3. Software (Software)
4. Data (Spatial data and attribute data)

On the respondent's knowledge about the type of data used in the GIS, when before the training only amounted to 40% who can answer correctly. But when the training was held there was an increase of knowledge that is to be 75% of respondents who correctly correct that the data used is attribute data (data description from the field such as the number of people with leptospirosis) and spatial data (spatial) consisting of vector forms (line shape, dots) and raster shapes (often called pixels). (Hartoyo et al, 2010) From the results of this study in accordance with the theory of the training itself, where through training can improve one's knowledge. Training is non-formal education. Training is a form of continuing education to develop the skills of learners with an emphasis on skills acquisition, competency standards, attitude development, entrepreneurship, and the development of professional personalities. (UUSPN No.20 of 2003) Analysis of Differences in Knowledge of Health Officers After and Before Basic Training (Basic) Health Data Processing Using Geographic Information System From the result of research which has been described above is analyzed by using statistical test that is Paired t-test to know the difference. from statistical test result using Paired t-test obtained p = 0.000 smaller than alfa (α = 0,05) then Ho rejected. Where meaning is there is difference of health officer knowledge before and after get basic training (basic) data processing based on Geographic Information System (GIS) / GIS. It has similarities according to Werdani, 2016 which states there is an increase in the achievement of standard medical record processing after the training. Training periodically needs to be done so that the quality of medical record services in the hospital can be continuously improved. Zain, 2010 which states that the pre-test results show that the average initial ability of high school teachers showed 55.5% had mastered GIS material. After attending the training, the teacher's ability to improve, this is shown by the mastery of the material increased 93%. Besides, another study that mentions the difference of knowledge after training is from Irtonugroho, 2009 states that there are differences in prevention prevention knowledge before and after K3 tratraining, and there are different practices of prevention of occupational accidents before and after K3 training. In addition to the role of training in that it supports further in improving the knowledge and also GIS application in the field of health is the importance of motivation for health personnel to deepen the capabilities as the development of information system technology, as stated by Kusuma et al, 2015 ie employee job training on employee performance , showed a partial significant influence of employee motivation variable and employee job training to employee performance. It is hoped that there will be an increase in knowledge of health workers, especially in data processing, to better apply geographic information system in mapping disease spread or other health problem solving.

4 CONCLUSION

The existence of differences of knowledge before and after basic training (basic) health data processing using geographic information system in Kulon Progo Regency, Yogyakarta. Increased knowledge of health personnel tend to be higher after training than ever before. Increased knowledge includes the understanding of geographic information systems, the benefits of GIS in the field of health, components in GIS, the type of data used and the benefits of processing health data using GIS. The development of knowledge enhancement supported by the provision of effective and efficient performance motivation is expected to make health workers, especially the health data processing department can find new innovations in performing its role well.

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