The student knowledge of infectious diseases related to the immune system

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Abstract. Education plays important role to form attitude related to the health. When immune system does not work properly it allows microorganism to attack. In the reality most of high school students do lack of knowledge about infectious diseases. With regard to this issue, the current study was carried out to examine student knowledge about infectious diseases related to immune system. The samples of this study were eleventh grade students in SMAN 5 Banda Aceh. The method that used in this study is observation method. Data of student knowledge about infectious diseases was obtained from essay test, whereas the data of student motivation and ability to receive biology information were obtained from the test that provides yes or no question. The data were analyzed by percentages correction and analysis. According to the data the result are all students have low knowledge about infectious diseases whereas the students have good motivation to learn biology and good ability to receive biology information. Based on this study the conclusion is high school students in eleventh grade have low knowledge about infectious diseases that has no relation with learning motivation and the ability to receive information.

1. Introduction

Health is one of the most important things in life which brings us to the goodness of long life. The basic knowledge about health has been taught from family. It is necessary because we live in the environment that consist of countless invisible microorganism. Thus we have to be aware about health and the way to avoid diseases that caused by microorganism. The awareness literally can be formed towards education. Education plays important role to change behavior and awareness. The success of next generation is based on education. Education develops a country’s economy and society therefore it provides knowledge and skills to the population [1]. Education should be taught in school because it is the basic of thinking before anyone take decision. Education plays a very important role in forming the character of an individual [2]. That is why the basic education such as environment education and health education must be learned from early ages. School is one of the key settings for health education [3].

Health knowledge is important to be given since primary school because we live together with microorganism that spread in the air. Countless microorganism lives in the environment. Coughing, sneezing, talking, bed-making, turning pages of books all generate microbial aerosol which are carried and dispersed by air movements [4]. Even a healthy person in a hospital can get an infection. Nosocomial infections or healthcare associated infections occur through medical care [5]. Microbes which make up
most of Earth’s biomass, have been found virtually every environment [6]. Every microorganism enters a human body will cause the diseases only if the immune system can’t work properly. Each individual immune system is highly specific but extremely distant from other individuals [7]. In case the immune system starts to get weak then the diseases can raise the infection of human body. High school students need to have a basic knowledge about diseases that caused infection. When the individual lack of knowledge about infectious diseases it will affect to the daily life especially about health literacy. Health literacy is important because it literally closed related to health care, diseases prevention and health promotion [8]. The purposes of this study are to find out the students’ knowledge about infectious diseases and the factors affect students’ knowledge about infectious diseases.

2. Method
The method that used in this research is observation method. The purposes of this observation method are to examine the students’ knowledge about infectious diseases and the presence of learning motivation and the students’ ability to receive biology information. This research was conducted in SMAN 5 Banda Aceh. As well the participants were 24 students. The instrument that used in this research are essay questions and yes-no questions. Essay questions are used to measure the knowledge of students about infectious diseases. Meanwhile the yes-no questions are used to measure the learning motivation and the students’ ability to receive biology information that has been given by biology teachers. The data of students’ knowledge was analysed by percentages correction then graded based on the level of infectious diseases knowledge. Meanwhile the data about students’ motivation and students’ ability to receive the information were analysed by percentages analysis.

3. Result and Discussion

3.1. Students’ knowledge About Infectious Diseases Related to Immune System
Figure 1 shows that the results data in measuring the students’ knowledge about infectious diseases. The result of this research is the mean score of students’ result only reach 15.38%. It is definitely lower than 25%. Due to the students’ can’t answer the questions related to infectious diseases. Only fewer students answered the questions correctly.

Based on Figure 1, students’ highest score 24.25% and students’ lowest score is 0%. The average students got a score lower than the highest and higher than the lowest. The questions in this examination are not difficult, they only asked about diseases and microorganism. The students had learned this material in the first semester of school but still there is a student got only 0% for the right answer. Through this result we can see that how important health education is. Terefore it is important to the teachers to improve and increase the education that leads to health awareness. The increase of education will affect the productivity and improvement of health [9].

Figure 1 shows the students’ result range variously. The lowest score that had been measured is 0%. Meanwhile the highest score is 24.25%. No one of the students’ reach about 25%. Based on the Figure 1 that had been shown, there are four students get the same score as 15.38% and the other are 2.56% and the last two students reach 12.82%. Based on the Figure 1 it can be informed that the students have low level of knowledge about infectious diseases related to immune system. The highest score is 24.25% then followed by 23.07% then followed by 17.94% and 16.66 %. The score range still stands about 20%. Based on this result obviously can be informed that the health education regard to biology learning is still unconnected. The students in this research had learned about microorganism in the first semester of school but the students still can’t answer the questions about infectious diseases related to immune system. In the reality, the education related to health is useful because the students can protect their self from contagious diseases that caused by microorganism. Improving the education can bring many effects to get healthier behaviour. Education and health are developed and linked [10].
3.2. Students’ Motivation

Table 1 shows the results data in measuring students’ motivation. On the questions the students had been asked about how their motivation while learning biology. Based on the answer, mostly students have good motivation to learn biology because biology is close to our daily life. Learning biology makes students more careful in maintaining their health and the health around the environment. Through biology learning the students feel curious to know more. It makes the students more motivated. Motivation in learning biology is important because motivation is the important factor in the students’ success of biology teacher [11].

Table 1. Students’ Motivation in Learning Biology Lesson.

| Motivated Students | Not Motivated Students |
|--------------------|------------------------|
| 83%                | 17%                    |

Table 1 shows the percentages number of students who have motivation to learn biology and who have no motivation to learn biology. Based on Table 1, there are 83% from 24 students confirm that they have motivation to learn biology continuously. Meanwhile there are still 17% from 24 students who have no motivation to learn biology. When the percentages transform to the number of students it can be proved that only four students do not have motivation to learn biology, the rest twenty students still have motivation to learn biology. Motivation is essential in learning process. Without motivation students will not put more effort in their studies. Motivation is the backbone of learning process [12].

Table 2 shows the results data in measuring students’ ability to receive the information. Information that will be described in this research is information that related to biology. Students these days can gain information from anywhere, but due to other components in learning process it will affect the students’ ability to receive the information. In terms of information processing model, learning represents the process of gathering information, and organizing it into mental schema [13].

Table 2. Students’ Ability to Receive Information Learning Biology

| Good Ability | Weak Ability |
|--------------|--------------|
| 96%          | 4%           |
Table 2 shows that the percentages of students who have good ability to receive information related to biology is 96%. Meanwhile in contrast to this, there are still students who can’t receive biology information in a good way. They stand for 4%. Based on the data, it can be informed that more than half students in a class have a good ability to receive the information related to biology. Somehow in reality the students only reach low score for infectious diseases questions. The students did not give a good feedback. Feedback can affects the students to learn better. Feedback is one of the most powerful influences in learning and achievement [14]. Somehow according to the data has shown that the students have good ability to receive biology information from biology teachers.

4. Conclusion
Based on this research, the conclusion is there are three main important points in this research. Those three main points are the students’ knowledge about infectious diseases, the students’ motivation and the students’ ability to receive information related to biology information. According to the data the students’ knowledge about infectious diseases are categorized as a low knowledge because the students got less than 50% of the result. In contrast to the students’ knowledge result, the students’ motivation and the ability to receive biology information are categorized as high result because the students got more than 80% for students’ motivation and students’ ability to receive the information related to biology.

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