

Knowledge level of the elementary school of Arjasari students after education regarding natural background radiation and oral health care

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ABSTRACT

Introduction: Environment and behaviour are the main factors affecting the health status of a human being. People living in high natural radiation exposure area (radon zone), which is as much as 85% of the air content, characterized by many presents of granite rocks. The village of Arjasari is an area with many granite rocks presence. The objective of this study was to determined the knowledge level of the elementary school students after education regarding natural background radiation and oral health care. **Methods:** The research was a descriptive survey research, with data sampling taken by using questionnaires towards as much as 150 elementary students. Previously, respondents were given first education regarding natural background radiation and oral health care. Instruments in this study using questionnaires that was tested for validation and reliabilities. Data analysis used was a descriptive survey technique processed by using computer program. Data was percentages of three rating categories, which were high, medium and low. **Results:** The results showed that the knowledge level of student regarding natural background radiation and oral health care. was as much as 14% in the high category; as much as 45% in the moderate category; and as much as 41% in the low category. **Conclusion:** Knowledge level of student after education about natural radiation and the effect of oral health was in the moderate category level.

Keywords: Radiation, oral health knowledge

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INTRODUCTION

Health development aims to increase awareness, willingness and ability to live healthy for every person, in order to realize a higher degree of health. According to the Hendrik L. Blum (Health Determinant Factor) theory, the natural and behavioural environment is a factor affecting human health status.¹ This can be done through knowledge enhancement (promotive), disease prevention (preventive), curative (curative), and health (rehabilitative) recovery that is implemented thoroughly, integrated and sustainable.² One of the causes of dental and oral health problems is a behaviour factor based on a lack of knowledge of dental and oral health maintenance that will increase the incidence of dental and oral disease at an early age.¹

In addition to behavioural factors as well as environmental factors that can not be controlled one of which is natural radiation sourced from groundwater and air (radon).³ About 85% of the total dose a person receives comes from nature. Approximately 43% of the total doses received are from radionuclides.⁴

The knowledge based on proper understanding will lead to new behaviours that are expected. Knowledge and health are two things that are related to one another. Health is an important part of achieving the success of an elementary school (SD) education can be seen as an agent of change in the family. Therefore, the increase of knowledge in elementary school students and also expected to give an increase in knowledge for other family members school-aged children are the nation's inventory because the next generation of the nation aged 6-12 years so that health education can be improved.² The objective of this study was to determine the knowledge level of the elementary school students and their parents on the oral health affected radiation.

METHODS

This research uses descriptive survey method. The sample population is 150 students of SD Arjasari, West Java. After that, the respondent asked for informed consent (informed consent) to collect data to students. Previously, respondents were given first education regarding natural background

Table 1. Variable of questionnaire

Variable	Sub-variable	Item number	Point
The knowledge level of the students	Knowledge of radiation	1,2,3,4,5	5
	Knowledge of tooth brushing	6,7,8,9,10	5
	Knowledge of good dietary for oral health	11,12,13,14,15	5
Total			15

Table 2. Questionnaire value measurement results

Number	Scale	Category
1	$X \geq M + SD$	high
2	$M - SD \leq X < M + SD$	medium
3	$X < M - SD$	low

Notes: x = Score; M = Significant; SD = Deviation Standard

radiation and oral health care. with 3 indicator (Table 1). The results showed that radiation level about dental and oral health in Arjasari Elementary School students was 14% for high category, 45% for moderate category and 41% for the low category. Upon approval and questionnaire data were filled in by the child and data were collected and processed using the computer programme. Data percentages using three categories: high, medium and low, as presented in Table 2.

RESULTS

The study involving 150 students of SDN Arjasari class IV to class VI showed the different levels of knowledge that can be categorized high and low. Instruments in this study using questionnaires that was tested for validation and reliabilities (Table 3 and 4). The form of tests with a choice of correct and wrong answers. If the student answers with the answer would get a score of 1 whether no answer got a score of 0. Implementation is to divide the questionnaire directly to all students as respondents. Long fill questionnaire is limited and awaited at the time of charging.

One of the aims of education is a change in the level of knowledge, from which it was less favourable to something profitable. Based on the data of students knowledge level, it is known that the increase of student's knowledge about radiation. Increasing the number of correct

Table 3. Questionnaire's validity test

Sub-variable	Item	Countable r value	Critical point	Notes
Knowledge of radiation	p1	0.674	0.3	Valid
	p2	0.751		Valid
	p3	0.597		Valid
	p4	0.713		Valid
	p5	0.694		Valid
Sub-variable	Item	Countable r value	Critical point	Notes
Knowledge of tooth brushing	p6	0.689	0.3	Valid
	p7	0.396		Valid
	p8	0.472		Valid
	p9	0.724		Valid
	p10	0.803		Valid
	p11	0.613		Valid
	p12	0.609		Valid
	p13	0.685		Valid
Sub-variable	Item	Countable r value	Critical point	Notes
Knowledge of good dietary for oral health	p14	0.621	0.3	Valid
	p15	0.574		Valid
	p16	0.568		Valid
	p17	0.655		Valid
	p18	0.645		Valid
	p19	0.634		Valid
p20	0.753	Valid		

Table 4. Questionnaire's reliability test

Sub-variable	Countable r value	Critical point	Notes
Knowledge of radiation	0.715	0.7	Reliable
Knowledge of tooth brushing	0.807		Reliable
Knowledge of good dietary for oral health	0.715		Reliable

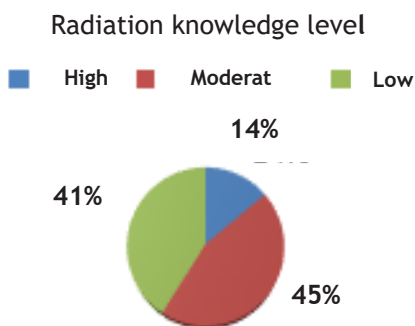


Figure 1. Diagram of the knowledge level of students on the radiation after training

answers in general and decreasing the number of answers incorrectly and not knowing, shows the effectiveness of the education that has been done in increasing the knowledge of the students.

This means that the average value of the knowledge level of the respondent's students indicates a non-compliance with a larger amount. Based on the t-test that has been done, the value of P (Sig.) Is 0.000, which means less than 0.05. So can be said education about the radiation can affect the level of knowledge of respondents.

DISCUSSION

Knowledge is the result of knowing, and this happens after people have sensed a particular object. Sensing occurs through the five senses, namely the sense of sight, hearing, smell, taste, and touch. Much of human knowledge is obtained through the eyes and ears. Knowledge or

cognitive is a very important domain in shaping one's actions (over behaviour). Knowledge is divided into 6 (six) stages including Know, Comprehension, Application (Application), Analysis (Analysis), Synthesis (Synthesis), and Evaluation.¹ Research conducted on 150 students from class VI until class VI SDN 1 Arjasari Arjasari Regency shows the differences in each individual including in terms of knowledge even at the age.

One that influences the respondent's knowledge level is education. Education is an attempt to develop personality and abilities in and out of school and lasts a lifetime. Education affects the learning process, the higher a person's education the easier the person will receive the information. With a high education then someone will tend to get information, both from other people or from the mass media. The more information that goes into the more knowledge gained about health.

Age also affects the knowledge possessed. Age affects the ability to catch and the mindset of a person. Growing age will grow also the ability to catch and mindset So that knowledge gets better. And as people get older they will also experience a change in physical and psychological aspects (mental). This is not in accordance with research conducted because in class V tends to be higher its influence compared with class IV and VI when viewed from radiation knowledge. This may be due to intellectual, emotional physical growth being experienced by school-aged children where the growth rate is different so that there are variations among them.¹

Environments such as parents and from the environment outside the home such as school can also affect the level of knowledge. Nature also affects the health of teeth and mouth because there is a natural ionizing radiation among which will affect the balance of normal flora in the oral cavity. The natural ionizing radiation in question is radon Based on the NCRP (National Council on Radiation Protection and Measurement), more than 80% of the released atmospheric radon is derived from the topsoil.⁴ The natural radiation contributes to higher radiation doses than artificial radiation. The contribution of the largest natural radiation dose from the Earth's crust comes from Radon. About 85% of the total dose a person

receives comes from nature. Approximately 43% of the total doses received are from radionuclides radon.⁵

Rural areas generally have lower socioeconomic levels and inadequate health care facilities compared with urban areas.⁷ The socioeconomic level of population and the quality of health-care facilities is a determinant factor of oral diseases, so the probability of periodontal disease in rural areas is greater than in the region urban.⁸

Radon is toxic, due to its radioactivity characteristic as an alpha particle transmitter (a). Negative health effects caused by long-term and out-of-control radiation have been proven through epidemiological studies.⁵ The radiation effects produced by radon may result in a decrease in the immune system oral cavity. The principle of immune work in the oral cavity is to induce cellular immune responses and humoral immune responses in the oral cavity to prevent the formation of dental plaque and colonization of *Streptococcus mutans*.⁶

In accordance with the DMF-T index study and caries prevalence in the western district of Bandung, high natural radiation due to limestone and granite are 4.38 and 86% and so on the Mount Masigit and 5.94 and 98% in the village of Cipatat village.⁹ DMF-S research index in these two villages is categorized as medium.¹⁰ Natural environmental radiation factors are suspected to be factors vital supporters who can improve the cause of the health of dental and mouth status. Therefore it is necessary for further research on a large scale and knows the levels of radiation that can trigger the occurrence of oral and dental disease caused by natural radiation.

CONCLUSION

Knowledge level of student after education about natural radiation and the effect of oral health was in the moderate category level.

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