The relationship of nutritional status with student learning outcomes

by Beltasar Tarigan

Submission date: 20-Oct-2022 11:39AM (UTC-0400)
Submission ID: 1930647934
File name: ionship_of_nutritional_status_with_student_learning_outcomes.doc (422.5K)
Word count: 3115
Character count: 16319

The relationship of nutritional status with student learning outcomes

Abstract

This study aimed to determine the relationship between student nutritional status and learning outcomes, especially physical education in junior high schools in Bandung City, West Java Province. The research used is correlational. The population of this study amounted to 98,289 students. Sampling using a simple random sampling technique. The research sample amounted to 1870 students. This study uses primary data that is obtained from the measurement of the nutritional status of students and secondary data from physical education teachers in Bandung. The data collection tool measures nutritional status based on body mass index and learning outcomes with student scores from teachers. The data were analyzed by correlation statistics through a computerized process using the SPSS program. From the study results, it can be concluded that there is no significant relationship between nutritional status and learning outcomes for both male and female students in junior high school. Further research by examining other factors related to BMI and other factors related to learning outcomes, such as socioeconomic and family factors.

Keywords: nutritional status, learning outcomes, students, junior high schools

INTRODUCTION

Nutritional status is a measure of the condition of the body that is consumed and the use of nutrients in the body (D'Angelo, 2019). Nutritional status is a state of balance between energy intake and expenditure (Boukrim et al., 2021). Nutritional status is influenced by several things, such as the individual's consumption patterns, food intake, psychology, education, and income (Økland, 2012). Nutritional status can affect the level of intelligence and students' ability to capture lessons (Cavuoto Petrizzo et al., 2021). Students with good nutritional status can more easily receive lessons on campus and are able to get satisfactory and maximum learning outcomes, on the contrary, students who have less or more nutritional status will be less than optimal in capturing lessons and less good in learning outcomes (Kupolati et al., 2016).

One indicator of human resource quality is the Quality of Life Index or Human Development Index (HDI) (Som et al., 2007). The three main determinants of HDI are Education, Economy, and Health (Abdel-Aziz et al., 2014). These three factors are closely related to people's nutritional status. Indonesia is ranked 109th out of 174 countries, lower than ASEAN countries such as Singapore, Brunei Darussalam, Malaysia, and Vietnam.

Health problems are very important to know about in everyday life, especially in junior high school-age children because this period is a period of growth and development of children, which is in line with the age of the child (Tariku et al., 2019). To understand children's health problems. One of the most decisive factors is the nutritional factor in the food consumed by the child every day (Mbhatsani et al., 2017). Good food is the foundation of a child's life (Upadhyay et al., 2011). Their whole life, children need food to maintain normal life processes, without sufficient food can cause children are malnourished (Soriano et al., 2018). Knowledge of children's nutrition is very necessary, which includes the sources of nutrients in food and the types of nutrients contained in foodstuffs that are needed for the growth and intelligence of children (Nkhoma et al., 2013). Besides that, the nutritional status of children can be used as a measure for the success of multi-sectoral development, including education.

The development of learning human resources in schools can be carried out in physical education lessons in schools (Irawan et al., 2017). Improving good learning outcomes in schools is not only in the fulfillment of existing facilities and infrastructure in schools, the availability of teachers but is no less important is the condition or adequate nutritional status to build or make students passionate and enthusiastic about learning at school (Li et al., 2019). To get a good physical condition to study Physical Education at school, it is necessary to have a balanced intake of nutrients, meaning that the amount of energy and nutrients that enter the body is the same as that required by the body and is the same as that which is removed from the body (Verburgh et al., 2016). Students who do Physical Education learning at school must consume nutritious food (Lorente, 2017). Before going to school, a child should eat foods that contain lots of calories such as carbohydrates, fats, and proteins, and the important thing is to pay attention to the balance of these nutrients because if they are not balanced, it can cause wrong nutrition. The body needs nutritional status and food intake as a source of nutrients (Machefer

et al., 2007). Food intake that lacks nutrients can cause changes in metabolism in the brain, which will reduce learning ability and concentration (Narayanan & Rao, 2019). So, if there is malnutrition (lack of nutrition or over-nutrition), it will affect health.

The need for food and drink is a daily basic need for humans and other living things. Even the smallest creatures, such as cells, still need food to survive. Growth, physical and psychological abilities, and human behavior are influenced by the food they eat (Kupolati et al., 2016). Consumption of food as one of the human pleasures must also pay attention to the principles and the appropriate composition (Galasso & Umapathi, 2009). If the food program is arranged regularly, it will get delicious food as well as a long life (de Brauw et al., 2015). The study from Nkhoma et al., (2013) demonstrates the scope of Malawi's general public health issue of undernutrition among primary school students. The findings of this study show that to maximize cognitive development and academic benefits of the relatively significant financial investment in the education sector, implementers in Malawi must take into account relevant and all-inclusive interventions for the school-age group. Delicious food, if consumed in excess of the limit or contains harmful ingredients for the body, will cause various diseases. There have been many previous studies on nutrition and academic values, but not many have conducted research on male and female students of Bandung City Junior High School, especially since the new normal era of the Covid-19 pandemic.

METHOD

The research that will be used is correlational. The approach used is cross-sectional. This research was conducted in March - June 2022. In this study, the population used was Bandung City Junior High School students, amounting to 98,289. Due to lack of time, the researcher used simple random sampling so that the sample in this study only amounted to 1870 students. The instrument used in this study was a questionnaire. The questionnaire used in this study is a closed questionnaire, a questionnaire whose answers have been provided so that the respondents just have to

choose. Nutrient intake with needs assessed using Body Mass Index (BMI). Academic achievement is the result of learning at formal educational institutions in the form of grades or numbers (Wallhead et al., 2021). Academic achievement is seen by looking at the value of each student obtained from the service. The data analysis used in this research is the univariate analysis and bivariate analysis. The univariate analysis aims to analyze each variable from the research results to get an overview of each variable presented in the form of a frequency distribution according to the variables studied. The bivariate analysis aims to see whether there is a relationship between the dependent and independent variables.

Equation and formula

The analysis was carried out on two variables thought to be related or correlated, namely the criteria for Nutritional Status and Learning Outcomes. Analyzed using the formula:

$$r_{xy} = \frac{n\sum X_i Y_i - (\sum X_i)(\sum Y_i)}{\sqrt{\left\{n\sum X_1^{\,2} - (\sum X_1)^2\right\}\left\{n\sum Y_1^{\,2} - (\sum Y_1)^2\right\}}} \qquad (1)$$

Knowing the relationship between two variables, whether the significance or not, with a significance of 0.05, using the Spearman rank test with SPSS 19 software.

RESULT

In this section, the research results conducted on junior high school students in Bandung will be described with a total of 1870 respondents. The research was carried out from March 2022 to June 2022. The results of the research are as follows:

Male student data

The results of the analysis of nutritional status obtained the arithmetic mean (mean) = 17.55, standard deviation = 2.10, minimum value = 14.44 and maximum value = 20.38. While the results of the analysis of learning outcomes obtained the arithmetic mean (mean) =

77.50, standard deviation = 6.86, minimum value = 60, and maximum value = 85. For more details on the frequency distribution of nutritional status based on BMI (Body Mass Index) can be seen in the following table:

Table 1. Frequency distribution of nutritional status based on BMI (Body Mass Index)

No	BMI Value Interval Class	Frequency	
		f	%
1	14.44 - 15.63	439	23.48%
2	15.64 - 16.82	526	28.13%
3	16.83 - 18.01	337	18.02%
4	18.02 - 19.20	275	14.71%
5	19.21 - 20.39	293	15.66%
	Total	**1870**	**100%**

(Primary data of Body Mass Index male students, 2022)

Based on the table above, it can be seen that the results of the nutritional status of 1870 male junior high school students in the city of Bandung are in the range of 15.64 - 16.82 by 28.13%. More details can be seen in the image below:

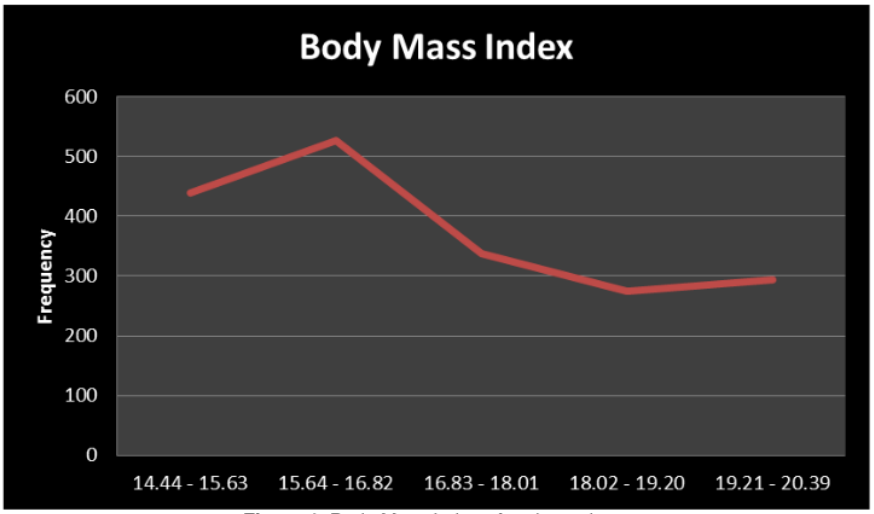

Figure 1. Body Mass Index of male students

Furthermore, for male students learning outcomes can be seen in the following table:

Table 2. Frequency distribution of learning outcome

No	Learning Outcome Interval Class	Frequency	
		f	%
1	60 – 65	1	0.02%
2	66 – 70	1	0.02%
3	71 – 75	451	24.18%
4	76 – 80	520	27.81%

5	81 – 85	897	47.97%
	Total	**1870**	**100%**

(Primary data of Learning Outcome, 2022)

Based on the table above, it can be seen that the results of the learning outcome of 1870 male junior high school students in the city of Bandung are in the range of 81-85 by 47.97%. More details can be seen in the image below:

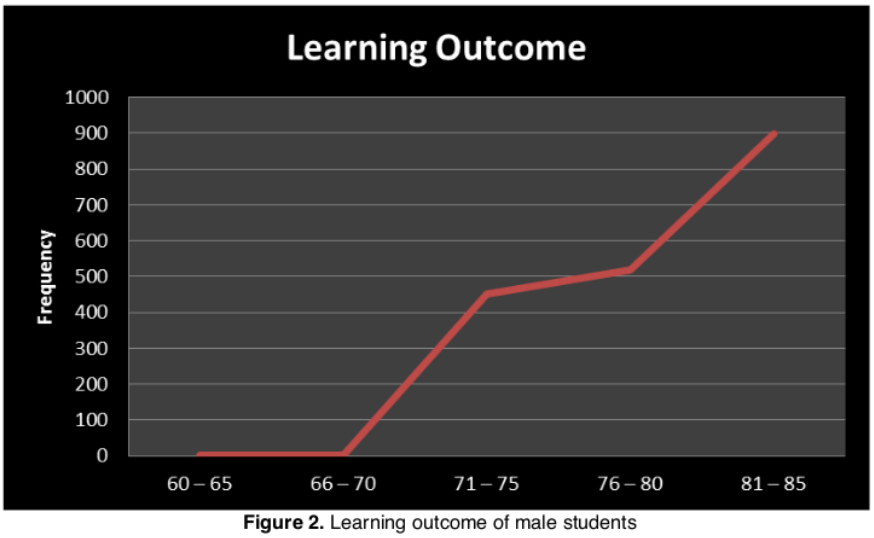

Figure 2. Learning outcome of male students

Female student data

The results of the analysis of nutritional status obtained the arithmetic mean (mean) = 14.25, standard deviation = 1.39, minimum value = 11.41 and maximum value = 16.40. And for the analysis of learning outcomes, the arithmetic mean (mean) = 72.50, standard deviation = 6.84, minimum value = 60 and maximum value = 82. For more details on the frequency distribution of nutritional status based on BMI (Body Mass Index) can be seen in the following table:

Table 3. Frequency distribution of nutritional status based on BMI (Body Mass Index)

No	BMI Value Interval Class	Frequency	
		f	%
1	13.41 - 14.40	293	15.67%
2	14.41 - 15.40	276	14.76%
3	15.41 - 16.40	438	23.42%
4	16.41 - 17.40	525	28.07%
5	17.41 - 19.40	338	18.07%

Total	**1870**	**100%**

(Primary data of Body Mass Index female students, 2022)

Based on the table above, it can be seen that the results of the nutritional status of 1870 male junior high school students in the city of Bandung are in the range of 16.41 – 17.40 by 28.07%. More details can be seen in the image below:

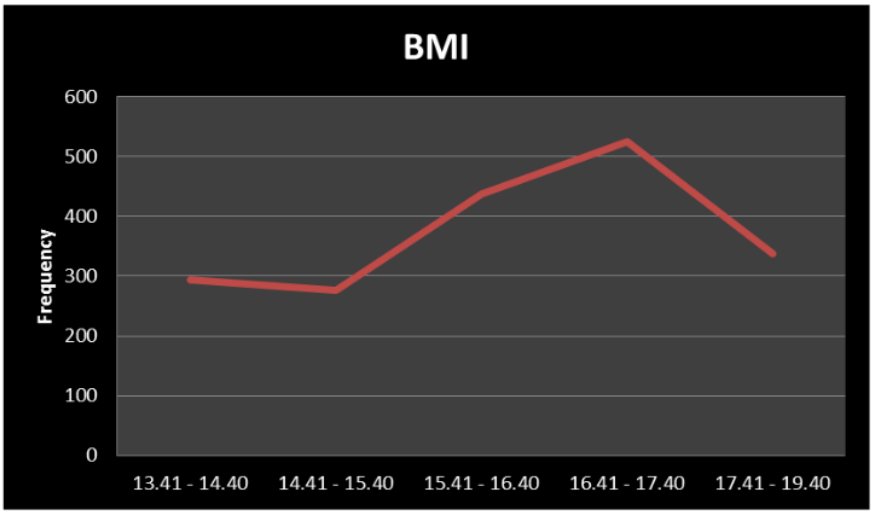

Figure 3. Body Mass Index of female students

Furthermore, for male students learning outcomes can be seen in the following table:

Table 3. Frequency distribution of learning outcome

No	Learning Outcome Interval Class	Frequency	
		f	%
1	60 - 65	1	0.06%
2	66 - 70	0	0%
3	71 - 75	347	18.55%
4	76 - 80	993	53.10%
5	81 - 85	529	28.29%
	Total	**1870**	**100%**

(Primary data of Learning Outcome, 2022)

Based on the table above, it can be seen that the results of the learning outcome of 1870 female junior high school students in the city of Bandung are in the range of 76-80 by 53.10%. More details can be seen in the image below:

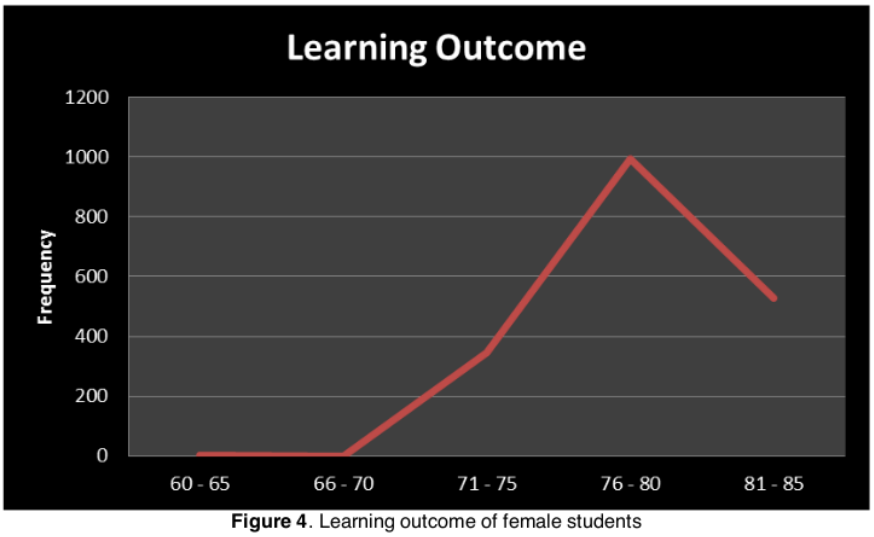

Figure 4. Learning outcome of female students

Table 4. Correlations test result

			Nutritional Status	Learning Outcome
Spearman's rho	Nutritional Status	Correlation Coefficient	1.000	.320*
		Sig. (2-tailed)	.	.002
		N	1870	1870
	Learning Outcome	Correlation Coefficient	.320*	1.000
		Sig. (2-tailed)	.002	.
		N	1870	1870

*. Correlation is significant at the 0.05 level (2-tailed).

The results of the study using Spearman's Rho test showed that the probability value or error level (p: 0.002) was smaller than the standard significantly (0: 0.05), so what was accepted meant that there was no relationship between Body Mass Index and learning outcome in junior high school students in Bandung, West Java Province. Based on the correlation analysis of male data, the value of the correlation coefficient (rxy) of nutritional status on learning outcomes = 0.273 < r_{tab} (0.492). Seeing that the correlation coefficient rxy is smaller than r table at a significance level of 0.05, it can be concluded that nutritional status has no significant relationship to learning outcomes. Based on the correlation analysis of female data, the correlation coefficient value (rxy) of nutritional status on learning outcomes = 0.203 < r_{tab} (0.467). Seeing that the correlation coefficient rxy is smaller than r table at a significance level of 0.05, it can

be concluded that nutritional status has no significant relationship to learning outcomes.

DISCUSSION

Based on the correlation analysis of male data, the value of the correlation coefficient (rxy) of nutritional status on learning outcomes = 0.273 < r_{tab} (0.492). Seeing that the correlation coefficient rxy is smaller than r table at a significance level of 0.05, it can be concluded that nutritional status has no significant relationship to learning outcomes. Based on the correlation analysis of female data, the correlation coefficient value (rxy) of nutritional status on learning outcomes = 0.203 < r_{tab} (0.467). Seeing that the correlation coefficient rxy is smaller than r table at a significance level of 0.05, it can be concluded that nutritional status has no significant relationship to learning outcomes.

We can compare the results of the study between the nutritional status of underweight and the nutritional status of body weight which more affects student achievement, namely overweight. However, it is undeniable that the nutritional status of body weight can be influenced by excessive food intake. So, if excessive food intake is excessive, it will affect learning concentration and can cause excessive sleepiness. In addition to external nutritional factors, learning success and academic achievement are also influenced by two factors, namely internal factors and factors. Internal factors include intelligence, interests, talents, parents, support, physical health, and one's way of learning. External factors include family, environment, teachers, community, schools, and learning equipment or facilities. Based on this, it is known that there are factors that influence learning achievement, including parental attention, learning facilities, study time, motivation, intelligence, interests, teacher teaching skills, and so on. It can be said that those who experience underweight nutritional status can get satisfactory results and unsatisfactory values, as well as normal nutritional status and overweight because of these factors. If students have a balanced nutritional intake, this will affect learning achievement because one of the factors to increase learning achievement is consuming

the nutrients the body needs. On the other hand, factors that can improve learning achievement can be seen in IQ, motivation, environment, family, school, and community (Wallhead et al., 2021).

Nutrition is food that the body needs in adequate amounts to grow and maintain a healthy body. At the same time, nutritional status can be interpreted as the state or position of staple food substances in a person's body that are needed for growth and health. The term nutritional status is closely related to the health of the body, which provides energy, builds and maintains body tissues, and regulates life processes in the body. As stated by Mbhatsani et al., (2017), nutrition is an organism's process of food consumed normally through the process of food metabolism and the expenditure of substances that are not useful to maintain life, growth, and normal function of organs and produce energy. In carrying out daily activities, we need energy, which is obtained from the food we eat. As stated by de Brauw et al., (2015) that, energy is needed by the body first to maintain the basic functions of the body called the basic functions of basal metabolism by 60-70% of the total energy needs. This means that the body requires a minimum of energy in a state of complete rest but not in a state of sleep. Meanwhile, other activities, such as walking, working, digesting, and studying, require more energy.

The quote above shows how important balanced nutrition is for a person's growth and physical fitness, especially for students whose main activity is learning. Balanced nutrition will increase their intelligence and physical fitness. The same thing was stated by Shi et al., (2014), that "the process of fostering a pattern or healthy lifestyle is with balanced nutrition so that there is an integrated knowledge of values, attitudes, and real behavior." Learning is a process marked by a change in a person. Where the change is a change in values or attitudes. Meanwhile, learning outcomes are benchmarks used to determine the level of success of students or students in knowing and understanding a subject.

Grebener et al., (2021) stated that learning outcomes are "behaviors that arise from not knowing to knowing, the emergence of new

understanding, changes in attitudes, skills, respect for the development of social, emotional and physical characteristics." Seeing this fact, it can be interpreted that an increase in nutritional status is not always in line with an increase in learning outcomes, on the contrary, low student learning outcomes are not always followed by a decrease in their nutritional status. Many factors influence this to happen, for example, (1) the method used by teachers in giving lessons to students, (2) the condition of the school environment, (3) the background of educators, (4) the economy of parents, (5) the physical activities of minimal students, (6) innate factors from the birth of each child, (7) the weather, (8) lack of student motivation, (9) the available resource books are not adequate. The description above states that physical fitness is one factor that affects learning outcomes, where physical fitness will be created if students have good nutritional status. However, to determine students' success in achieving learning outcomes, it cannot only be seen and consider their nutritional status, but other supporting factors are needed, such as the availability of educational facilities and infrastructure, student motivation, teacher abilities, environment, and other socioeconomic factors. This is evidenced by the research findings, which show no significant relationship between nutritional status and student learning outcomes.

CONCLUSION

Based on the research results on the relationship between nutritional status and learning outcomes of junior high school students in Bandung, West Java, it can be stated that there is no significant relationship between nutritional status and learning outcomes for male and female students.

ACKNOWLEDGMENT

Thanks to Universitas Pendidikan Indonesian, especially Physical education, health and recreation, Faculty of Sports and Health Education

The relationship of nutritional status with student learning outcomes

ORIGINALITY REPORT

14%	6%	10%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Higher Education Commission Pakistan Student Paper	2%
2	Siti Solikha, Siti Farida, Indasah Indasah. "Analysis of Mobilization Factors, Personal Hygienic, Nutritional Status in Washing Perenium Healing in Women in Lamongan Health and Health Center", Journal for Quality in Public Health, 2020 Publication	1%
3	R Mahmudah. "The influence pf TSOI hybrid learning model to physic learning outcomes in SMA Islam Athirah Bukit Baruga Makassar", Journal of Physics: Conference Series, 2019 Publication	1%
4	Submitted to Universitas Bung Hatta Student Paper	1%
5	Intan Fazrin, Katarina Kaka Daha. "The Role of Parents in Preparing Balancing Menu with	1%

Children's Nutritional Status", Journal Of Nursing Practice, 2022
Publication

6	Rina Nuraeni, Suharno Suharno. "Relationship Between Family Socio-Economic Status and the Incidence of Stunting Among Children Aged 24-59 Months in the Work Area Of Kadipaten Community Health Center Majalengka District in 2019", Asian Community Health Nursing Research, 2021 Publication	1 %
7	Submitted to Malta College of Arts,Science and Technology Student Paper	1 %
8	garuda.kemdikbud.go.id Internet Source	1 %
9	Rosmana Dadang, Munawaroh Silmi Dzakiyyah, Widartika Widartika, Dewi Maryati et al. "The Provision of Carrot Catfish Dumplings Affects the Weight of Elementary School Students with Low Nutritional Status", Open Access Macedonian Journal of Medical Sciences, 2021 Publication	1 %
10	Owen W. W. Nkhoma, Maresa E. Duffy, Philip W. Davidson, Deborah A. Cory-Slechta et al. "Nutritional and cognitive status of entry-level primary school children in Zomba, rural	1 %

Malawi", International Journal of Food Sciences and Nutrition, 2012
Publication

11	etd.repository.ugm.ac.id Internet Source	1 %
12	SITI - MARYAM. "EVALUATION OF SUPPLEMENTARY FEEDING (PMT) FROM THE GOVERNMENT TO STUNTING TODDLERS", Journal for Quality in Women's Health, 2022 Publication	1 %
13	Submitted to Universitas Riau Student Paper	<1 %
14	Submitted to Queen Mary and Westfield College Student Paper	<1 %
15	repository.upi.edu Internet Source	<1 %
16	Rasha M. M. Khairy, Mahmoud Shokry Mahmoud, Raghda Raouf Shady, Mona Abdel Monem Esmail. " Multidrug ‐ resistant in hospital ‐ acquired infections: Concomitant analysis of antimicrobial resistant strains ", International Journal of Clinical Practice, 2019 Publication	<1 %
17	jurnal.uin-antasari.ac.id Internet Source	<1 %

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		