

The correlation between formal education and knowledge of used cooking oil management at Kampung Tersenyum society in South Jakarta

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Abstract. The phenomenon of used cooking oil collection at Kampung Tersenyum in South Jakarta has not been optimal. According to the data, there are only 36 sub-districts out of 65 sub-districts in South Jakarta that have been monitored to collect used cooking oil in the period October 2019 – June 2020. This research aims to analyze the knowledge of used cooking oil management in Kampung Tersenyum Society, South Jakarta. This research used a quantitative descriptive method. The population in this research is the residents of Kampung Tersenyum, South Jakarta. The sampling technique in this research was carried out with a purposive sampling method of 60 respondents. Data collection techniques used observation and interviews with questionnaires. Data analysis used percentage descriptive techniques. The results of the research showed that the last formal education majority of the society is at the high school level. The knowledge of used cooking oil management in South Jakarta is in the high category. From the results of the analysis, it was found that there is a correlation between formal education that has been taken with waste management knowledge which is the majority of elementary and junior high school education are knowledgeable in the category tends to be low, while the majority of education at the senior high school, bachelor, and master levels are knowledgeable in the high category.

1 Introduction

One of the top waste contributors is Indonesia [1]. there is 62% organic waste, 10% plastic, 6% paper and 22% other waste such as glass and metal which dominate the distribution of Indonesian waste characteristics. [2]. the most common type of waste produced by Indonesia. Efforts to properly place and manage used cooking oil can reduce the percentage of organic waste in Indonesia [3]. Restaurants and households use cooking oil for cooking. in Jabodetabek, households use around one liter of cooking oil in one week. Used cooking oil that is no longer used will become waste if it is thrown away carelessly and is not managed [4]. If used cooking oil is thrown into the gutter and it will end up in rivers, lakes or the sea, according to a report from the Badan Pengelolaan Lingkungan Hidup Daerah DKI Jakarta quoted by Ahmad Syarifuddin as Direktur Eksekutif Komite Penghapusan Bensin Timbal untuk penghijauan in 2016, the health of water bodies in Jakarta is only 3%. [5]. The high level of discharge of used cooking oil waste into waterways has an impact on dirty water in Jakarta [6]. Usually 5000 -15000 liters of used cooking oil are carried away by water flow and settle on the ground. This cooking oil waste can affect the balance of the water ecosystem [7]. The environment in Indonesia is currently polluted due to poor waste management. This pollution occurs in water, soil, and air. This happens because of the rapid rate of population growth which results in waste production being increased. The Jabodetabek area contributes 15,000 tons of waste every day [8]. The most

of waste that disposed away comes from households and 54% of the waste is organic waste [9]. Liquid waste originating from households will usually end up in rivers, if not managed it will have an impact on the sustainability of living things, water and land in these waters. [10]. TNP2K and Traction Energy Asia recorded cooking oil in Indonesia on a national scale in 2019. Globally, cooking oil consumption was 16.2 million kiloliters. Around 40-60% then becomes used cooking oil. Used cooking oil production in 2019 was around 6.5-9.7 million kiloliters. However, only 3 million kiloliters of used cooking oil could be collected from a total of 16.2 million oil consumed [11]. Currently, there are three groups of waste that have been successfully grouped in society [12]. The first is organic waste that can decompose naturally, for example leaves, vegetable waste and fruit. The second type is inorganic waste that cannot be decomposed naturally, such as plastic, cans and styrofoam. [13]. third, the type of hazardous waste that contains dangerous compounds or poisons [14]. The negative impact of all types of waste creates encouragement to make efforts to manage waste and household liquid waste in order to reduce environmental pollution.

Currently, the household waste that needs to be managed is used cooking oil because used cooking oil is organic waste and can be processed to obtain its economic value and not pollute the environment. Used cooking oil can be used as a renewable fuel, namely biodiesel using an esterification process. Several organizations are working to address the problems

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caused by used cooking oil. Rumah Social Politik is an organization that facilitates a group of people in South Jakarta to process used cooking oil into washing soap and purchase used cooking oil by giving alms [15].

In the South Jakarta Administrative City area, there is a massive collection of used cooking oil that has been carried out, which is called the Kampung Tersenyum program. From the data collected in October 2019 – June 2020, this program succeeded in handling 22,104 liters of used cooking oil and distributed funds of Rp. 73,680,000 to 36 sub-districts from 65 sub-districts in South Jakarta. The process of collecting used cooking oil requires societal participation, in which societal participation requires knowledge regarding used cooking oil itself and a certain level of education.

Knowledge is a person's ability that influences the actions taken. A person's knowledge can be influenced by their level of education [16]. Knowledge is not absolutely influenced by education, because knowledge can also be obtained from experience [17]. However, the level of education also determines whether it is easy or not for a person to absorb and understand the information that has been received which then becomes understood [18]. Therefore, the higher a person's level of education, the easier it will be to receive information about objects or related to knowledge [19].

Education is one of the basic human needs for self-development. Generally in Indonesia, formal education is divided into several levels, that is basic education which includes elementary and junior high school or equivalent, then secondary education, which includes high school or equivalent, and higher education which consists of programs available at universities such as Bachelor's, Master's or Doctoral degrees [20]. In addition to formal education, waste management knowledge can also be obtained from society's participation in discussion forums or seminars on the theme of waste management [21]. Therefore, researchers are interested in finding out the correlation between formal education that has been completed with environmental insight or good knowledge about managing used cooking oil. This is considered important for further increasing public awareness of collecting used cooking oil that they produced. Based on the description above, researchers are interested in conducting research with the title "The Correlation between Formal Education and Knowledge of Used Cooking Oil Management at Kampung Tersenyum Society in South Jakarta".

2 Methodology

This research uses using quantitative descriptive method. The descriptive method is research that is conducted to determine the value of independent variables, either one or more variables without making comparisons or connecting them with other variables. This research uses a descriptive approach which aims to describe, represent, and summarize various variables found in society [22].

The data collection technique in this research uses 1) Observation, the questionnaire technique in this research is used to determine environmental conditions and obtain data of research location and a general description of the sub-district area. This research includes quantitative research using descriptive analysis techniques. 2) Interviews using closed questionnaires, the interview technique in this research was used to obtain information regarding the level of education and knowledge of used cooking oil management in the society of Kampung Tersenyum, South Jakarta.

The analysis technique used in this research is percentage descriptive statistics using percentage distribution tabulation which is used to make it easier and more efficient to interpret the meaning of two variables tabulated in one table. This analysis technique aims to describe the data that has been collected as it is using questionnaires and percentage distribution tables to determine trends in nominal data, data descriptions, and determine the situation based on the results of field research.

3 Results and discussion

3.1 Research Results

3.1.1 Description of Kampung Tersenyum Society's Formal Education in South Jakarta

It cannot be denied that education is used to transform society in resource management and waste management [23]. There is an opinion that states that education is very important to encourage sustainable development and increase community capacity in overcoming environmental and development problems [24]. Educational programs are built on knowledge, values, skills, experience and determination of human capacities that is needed to work on solving waste management problems at the individual and community levels.

Table 1. Formal Educations of Kampung Tersenyum Society, South Jakarta

Recent Education	Qty (People)	Percentage (%)
Elementary School	1	1,7%
Junior High School	5	8,3%
Senior High School	37	61,7%
Bachelor's Degree	16	26,7%
Master's Degree	1	1,7%

Source : 2023 research results

Based on formal education research data, Kampung Tersenyum Society in South Jakarta has several different educational backgrounds, including elementary school graduates/equivalent, high school graduates/equivalent, and university graduates consisting of bachelor's and master's degrees. The amount of respondents is 16 respondents or 26.7% are bachelor's degrees and 1 respondent or 1.7% is a master's degree. Most of the respondents are from a high

school graduate background with 37 respondents or 61.7%. The amount of respondents that is a junior high school graduate background is 5 respondents or 8.3%. The amount of respondents coming from an elementary school graduate background was 1 respondent or 1.7%. The diagram of the education level of Kampung Tersenyum Society can be seen in Fig.1

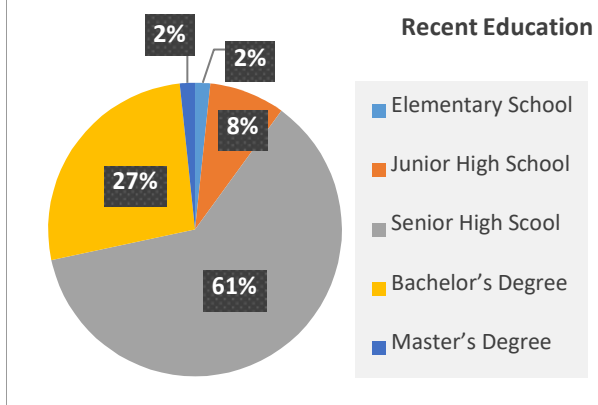


Fig. 1. Respondent's Formal Education Diagram

3.1.2 Description of Kampung Tersenyum Society's Knowledge of Used Oil Management in South Jakarta

The community approach is a way to overcome waste problems at the household level. Efforts to overcome the waste problem are by increasing knowledge and practices of waste management [25]. Knowledge is the result of learning and occurs after the process of sensing certain objects. [26].

Table 2. Distribution of Used Oil Management Knowledge Category of Kampung Tersenyum Society in South Jakarta

Knowledge Categories	Qty	Percentage (%)
Low	6	10%
High	54	90%

Source: 2023 research results

Based on Table 2, it can be seen that 10% of respondents have a low level of knowledge because respondents were only able to answer questions correctly below 55%. Furthermore, 90% had a high level of knowledge because they were able to answer questions correctly in the range of 56%-100%.

3.1.3 Description of Formal Education with Knowledge of Used Cooking Oil Management in Kampung Tersenyum Society in South Jakarta.

A deeper analysis was carried out by combining the formal education characteristics table with the table of Kampung Tersenyum society's knowledge of used cooking oil management in South Jakarta. This was done to make it easier for researchers to find out the distribution of respondents between formal education and the knowledge category. The results of the formal education matrix with knowledge of waste management can be seen in Table 3 below.

Correlation Matrix		Knowledge Level		
		Low	High	Total
Education Level	Elementary	1	-	1
	Junior High School	2	3	5
	Senior High School	1	36	37
	Bachelor	2	14	16
	Magister	-	1	1

Table 3. Matrix of Formal Education with Knowledge of Used Cooking Oil Management at Kampung Tersenyum Society in South Jakarta
Source: 2023 research results

It can be seen in table 3 that respondents with elementary school education have low knowledge with 1 out of 1 respondents with elementary school education, then at the junior high school level there are more high level of knowledge with 3 out of 5

respondents with junior high school education, then at The high school level is more knowledgeable with 36 out of 37 respondents with a high school education, then the respondents with a bachelor's degree are more dominant with high knowledge with 14 out of 16 respondents with a diploma education, and for the Master's level, they have high knowledge with 1 out of 1 respondents with a master's degree.

3.1.4 The Correlation between Formal Education and Knowledge of Used Cooking Oil Management at Kampung Tersenyum Society in South Jakarta

Education provides people with knowledge, skills and attitudes to overcome any problem [27]. Scientific research shows that knowledge of a topic can increase, people can even change attitudes, but the process towards improving behavior and practice also depends on a complex set of social and psychological factors. [28] - [30]. The level of students' knowledge about the environment in daily life in higher education is influenced by the environmental exposure they receive. There are many studies stating that environmental knowledge is influenced by the level of environmental education [31]. This is in accordance with the results of the research analysis, which can be seen in table 4.

Table 4. Bivariate Analysis of Formal Education with Knowledge of Used Cooking Oil Management at Kampung Tersenyum Society in South Jakarta

Indicator		Education	Knowledge
Education	Pearson correlation	1	.314
	Sig. (2-tailed)		.015
	N	60	60
Knowledge	Pearson correlation	.314	1
	Sig. (2-tailed)	.015	
	N	60	60

Source: 2023 research results

From Table 4, we get a significance value of $0.015 < 0.05$, so there is a correlation between education and knowledge or vice versa. There is a Pearson correlation

value of 0.314, which means it is positively and weakly correlated. A positive correlation means that the higher the education, then the higher the knowledge

3.2 Discussion

3.2.1 Correlation between Formal Education with Knowledge of Used Cooking Oil Management at Kampung Tersenyum Society in South Jakarta

Society education is determined by the level of education that has been completed based on the last diploma held. The higher a person's education, the wider their knowledge and insight [32]. Based on the research results, it was found that the formal education level of Kampung Tersenyum Society in South Jakarta was dominated by education at the secondary level. It is known that 61.7% of the society has a high school education. Furthermore, 26.7% of the society are educated at the undergraduate level, then 8.3% are at junior high school. The elementary and master's degree education is as much as 1.7%.

The results of the research state that the average knowledge regarding used cooking oil management at Kampung Tersenyum in South Jakarta is in the high category, which indicates that the society already knows and understands about used cooking oil. The majority of society with high school and bachelor's degrees have high knowledge of waste management.

These results represent that knowledge related to used cooking oil management at the elementary, junior high school, high school, and undergraduate education levels has different knowledge about waste management. This difference in knowledge can be caused by different levels of education. This is suitable with the results of previous research that there is a correlation between differences knowledge levels of waste reduction due to differences in educational levels such as lecturers, employees, and FIS Unnes students [33].

From the explanation above, it can be seen that there is a correlation between formal education and public knowledge about waste cooking oil management. If we look at the higher level of education completed by Kampung Tersenyum Society, the knowledge about collecting used cooking oil also increases. which the level of education, both formal and non-formal, can reflect actions in waste management [34]. However, formal education does not absolutely influence knowledge, this is supported by the theory which states that a person's knowledge can be influenced by the level of education [18]. However, knowledge is not absolutely influenced by education because knowledge can also be obtained from experience, work, social culture, sources of information, age, and beliefs, but the level of education also determines whether it is easy or not for someone to absorb and understand the information that been received.

Even though knowledge is not only influenced by education, there are also other factors that can influence knowledge, suitable to the statement of Notoatmodjo (2003), education still has a big role in influencing knowledge because the higher a person's level of education, the more experience and information they have. You will also get much more [18]. According to Asmawati (2010), a person's high level of education can absorb information more easily and better, because they can absorb information so that it is easier to understand and realize something [35]

There is a correlation between the level of society education and knowledge of waste management in Bandengan sub-district. The level of formal education is included in the low criteria and the level of waste management knowledge is in the medium criteria which is 56.66%. The difference is that research from Rifka Charisa further discusses non-formal education so that it affects the level of society knowledge, even though formal education is low, community knowledge is in the medium category. This research further discusses the correlation with community behavior in managing waste [36].

3.2.2 Efforts to Increase Knowledge Through Education of Used Cooking Oil Management at Kampung Tersenyum Society in South Jakarta

Based on the analysis that has been carried out, there are important variables to strengthen the correlation between education and environmental knowledge on participation in the management of used cooking oil in the kampung tersenyum of South Jakarta, including the environmental education subjects in schools, socialization kampung tersenyum programs, environmental campaigns, provision of storage facilities, pick-up of used cooking oil, and workshops for making laundry soap and candles from used cooking oil [37] - [38], as well as socialization for selling used cooking oil for biodiesel raw materials [39] - [40].

4 Conclusion

The majority of Kampung Tersenyum Society in South Jakarta have at least a high school education with a percentage of 61.7%. People at the basic education level, that is elementary and junior high school, have an average knowledge about used cooking oil which is in the knowledge category tends to be low. At the secondary education level, that is senior high school and higher education, that is bachelor's and master's degrees, the average knowledge about used cooking oil is in the higher knowledge category compared to the knowledge owned by the basic education level. Meanwhile, at the higher education level, that is Bachelor's degree, the average knowledge of waste management is in the high category. These results show that elementary, junior high school, senior high school, diploma, and bachelor levels of education have different knowledge about managing used cooking oil.

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