

Original research papers

Knowledge, Attitude and Practice towards Waste Management among Primary School Children

ABSTRACT

Introduction: Waste is become a problem until recently in many countries. The number of wastes has increased along with the growing population and the level of consumerism in society globally. One investment in the future to control waste production is by providing the value of waste treatment from an early age of children. The purpose of this study was to describe the knowledge, attitude, and practice regarding waste management among primary school children.

Study design: Pre-experimental, with a one-shot case study design, was used in this study.

Methodology: Forty children in primary school, aged between 11-12 years old, participated in this study. The intervention was delivered through an oral presentation and play video followed by a survey using tested questionnaires contained knowledge, attitude, and practice towards solid waste management questions.

Results: More than 70% of respondents answered with a satisfying score in all questions. However, respondents had less than 70% in knowledge about waste type. Most of the respondents said there was no waste treatment facility in their school. Respondent dislikes about punishment for who careless of waste disposed of.

Conclusion: Our result implies, respondent knowledge about waste management is sufficient, but it is essential to push them to practice the knowledge in their daily life.

Keywords: education, children, knowledge, waste management

1. INTRODUCTION

Nowadays, the waste problem received serious attention globally. Waste is a material result from human activity, which is useless material and directly discharged without any treatment [1][2]. Waste production increased along with the increase in the population and urbanization [3], leading to increased waste and high consumerism in society [4].

The problem of waste management can be categorized into three aspects: upstream, processing, and downstream. Upstream stage-related garbage production, which is increasing every year due to the increase in the population. Process stage associated with the limited resources for performing waste management either by society or government. Downstream stage related to the lack of system on waste management in society [5]. The community has a significant role in waste management based on community empowerment, particularly in the upstream stage. Society responsible for reducing the volume of waste they are produced [6]. In the process stage, a community can do waste management by treating the garbage by using a proper method such as recycling trash. Community empowerment and synergy among the stakeholder is often suggested to improve waste management in a particular region [7],[8]. The community's role in waste management is still shallow, not only in Indonesia but also in other countries such as Myanmar [9]. This is because the level of

public awareness regarding waste is still low [10]. Indicators for their little awareness can be seen from the emerge of many illegal waste disposals around the settlement. Illegal waste disposal can be found in the riverbed, empty yard, roadside, or road itself [11]. All mentioned improper attitude implies that knowledge and attitudes towards waste management are still low [4].

Neglected rubbish leads to a bigger problem that affects disease transmission [12], such as malaria and diarrhea [13]. Another impact of bad waste management is the contamination of groundwater sources, garbage landslides, floods, and air pollution due to the garbage smell [14]. Labors to involve the community on waste management need to start from an early age because it is not easy to change behavior in a short time [15]. It can be seen from the ongoing program of waste management that is not running correctly because of lack of compliance from the society [16]. Accordingly, the internalization of the waste management value needs to be started at an early stage [17]. Environmental care education plays a role as a provision for children growing into the adult phase, including reducing waste and managing waste.

In this research, we provide education followed by a survey among the children in primary school age regarding waste management. We provided knowledge about waste management trough oral presentation and showing a short film about waste management [18].

2. MATERIAL AND METHODS

2.1 Study design and procedure

This research was conducted in a state primary school of Ngoro-oro, Patuk, part of Gunungkidul, Yogyakarta, Indonesia. The reason for choosing this school because this area is part of our project to develop healthy village tourism. We conducted this study through a pre-experimental research design with a one-shot case study design [19].

2.2 Study participants and sampling

We took total sampling, which means all the population is taken as samples [20]. Respondent was all students at 5th and 6th degree in the State Primary School of Ngoro-oro, Patuk, Gunungkidul.

2.3 Study instruments and measures

We surveyed the respondents after delivering information about proper waste management by performing an oral presentation and playing a video. The survey was managed using a tested questionnaire in terms of validity and reliability. Tested was conducted in different schools among 30 respondents who were not included in this study. The questionnaire was divided into four sections: 1) respondent information, 2) knowledge, 3) perception of waste treatment facility, 4) practice.

2.4 Data analysis

All responses were checked and inputted to excel spreadsheets for descriptive statistic purposes. The favourable answer was scored as one, and the non-favorable response was scored as 0.

3. RESULTS AND DISCUSSION

We report knowledge, attitude, perception of waste facilities in the school, and behavior on waste management. Our respondent, most of them were male (60%), and the rest was

female. Fifty percent of the respondents came from the 5th degree in primary school (Table 1).

Table 1. Characteristic participants

Item	n	%
Sex		
Male	24	60.0
Female	16	40.0
School-level		
5 th	22	55.0
6 th	18	45.0

Based on the knowledge assessment, in each question, most of the respondents >70% answered correctly. An item that needs attention is about respondent knowledge about rubbish type: organic and an-organic (Table 2).

Table 2. Knowledge regarding waste behavior

Study Population	N = 40
Knowledge item	Correct answer N (%)
All stuff that is not used and disposed of called as trash	30 (75.0)
Dispose of rubbish not in proper place will make dirty and flooding	39 (97.5)
Dispose of rubbish carelessly can raise a diarrheal	38 (95.0)
Trash should be thrown in the trash place	39 (97.5)
The example of organic waste/rubbish is junk food scraps, vegetables, fruits, and leaves	27 (67.5)
Garbage sorting separates between wet waste and dry waste	36 (90.0)
The good dump trash should have a cover	38 (95.0)
Types of waste that easily biodegradable/destroyed by the soil called as organic waste	22 (55.0)
When we throw garbage in the ditch or gutter school, it will lead to clogged gutters and makes flood	38 (95.0)
If the garbage bins not equipped with a cover, there will be a lot of flies	37 (92.5)
Recycling is reusing goods that are still useable	36 (90.0)

Respondent, most of them performed an excellent attitude regarding waste management. The only item that requires attention is the presence of a waste treatment facility in the respondent school (Table 3).

Table 3. Attitude towards waste management

Study Population	N = 40
Disposing of Waste Facility	N (%)
The trash bin in my school distinguished between organic and an-organic	
Yes	37 (92.5)
No	3 (7.5)
There are trash bins in every classroom	
Yes	35 (87.4)
No	5 (12.6)
The trash in my school no less than ten pieces	
Yes	10 (25.0)

No	30 (75.0)
The trash bin my school is appropriate	
Yes	31 (77.5)
No	9 (22.5)
There is a trash bin in the bathroom / WC	
Yes	22 (55.0)
No	18 (45.0)
There are trash bins in the school cafeteria	
Yes	39 (97.5)
No	1 (2.5)
There are trans bins in the infirmary	
Yes	23 (57.5)
No	17 (42.5)
There is a waste treatment facility at the school	
Yes	13 (32.5)
No	27 (67.5)
There are bins in the school library	
Yes	38 (95.0)
No	2 (5.0)
The trash bin in my school have a cover trash	
Yes	35 (87.5)
No	5 (12.5)

Table 4 describes the respondent perception regarding waste management facilities in their school. Most of the respondent (> 70%) answered the facility is proper, but there is statement need to be highlighted, that is about the presence of waste treatment facility at the school.

Table 4. Perception about waste management facility in their school

Study Population	N = 40
Statement	N (%)
The trash bin in my school distinguished between organic and an-organic	37 (92.5)
There are trash bins in every classroom	35 (87.4)
The trash in my school no less than ten pieces	30 (75.0)
The trash bin my school is appropriate	31 (77.5)
There is a trash bin in the bathroom / WC	22 (55.0)
There are trash bins in the school cafeteria	39 (97.5)
There are trans bins in the infirmary	23 (57.5)
There is a waste treatment facility at the school	13 (32.5)
There are bins in the school library	38 (95.0)
The trash bin in my school have a cover trash	35 (87.5)

Most of the respondents stated already done waste management in their daily life. However, there is one statement about respondent dis-agreement about the enforcement of punishment who disposes of the waste carelessly.

Table 5. Practice towards waste management

Study Population	N = 40
Practice item on waste treatment	N (%)

I never throw rubbish carelessly in the school	31 (77.5)
I am not littering my schoolyards	37 (92.5)
When I am in picket class, I collected the trash and put it in the trash bin	31 (77.5)
At school a lot of friends who throw garbage in the trash bin	33 (82.5)
There is a punishment at school for who carelessly dispose of the waste	29 (72.5)
I am happy there is a punishment at school for who dispose of the waste carelessly	25 (62.5)
I never throw waste carelessly in my class	36 (90.0)

Some populous developing countries such as Indonesia and India remain struggle from the waste problem. Waste growth, along with the abundant population. Indonesia and India are two countries that are shifting from an agricultural state to industrial [21], which trigger waste from industrial sectors. On the other hand, it is not accompanied by an increase in the community's understanding of waste management [22]. In Indonesia, waste categorized as an emergency because of the overloading of the trash in some final disposal [23]. Until recently, the problem not totally solved. A conflict between the community and the government was rising, related to the impact of the final landfill to the surrounding community[24]. Beside requires a fast response, an effort that emphasizes sustainability needs to be initiated.

Improving knowledge on waste management should be delivered from an early age, for instance, in children, including the content on the school syllabus or in extracurricular activities. This activity aimed to familiarize children with waste management to reduce the amount of waste. The simple education of waste management in children, for example, disposes of the waste based on the type such as plastic, paper, or organic waste, needs to be strengthened [25].

This study shows that our intervention was influencing the understanding of the children about waste management. It is indicated by the mean score of more than 70, meaning that respondent knowledge, attitude, and behavior is acceptable. The score of knowledge was more than 90, meaning very high. Ideally, knowledge will be translated into attitude and practice [26][27].

In some knowledge that is still lacking, labor to improve it can be completed by providing training or counseling [28]. Counseling through interesting media such as film animation attracts the children's attention and more understandable. In general, children fancy visual and audio-visual such as cartoon animation [29], because it avoids boredom. Each section on the visual will affect the vision, send it to the brain, and influence memory. A combination of visual and audio are considered influencing the children in a good way [30].

Excellent knowledge, attitudes, and behaviors about waste management that internalized in early-stage expects can reduce the waste amount in the future [31]. When children understand the waste problem early, it is expected that they will care to waste problem when they come to an adult. The same method is applied in Japan and Taiwan. They educate their children on waste management since the early stage also provides insight that waste is not only government responsibility, but a shared responsibility among the stakeholder [32].

Moreover, an effort to resolve the waste problem needs another action: strengthening the regulation about how to use the waste, organic and an-organic, more useful, such as changing it to the energy source [33]. For education stakeholders, it is essential to include

the value of waste management for safe earth in children in the early phase, such as in primary school. This effort will not be successful without the government's support as an educational regulator and the community itself.

4. CONCLUSION

In conclusion, knowledge, attitude, and practice among primary school children is sufficient. However, there is some aspect that should be improved. Strengthening the school curricula with waste management content is requires as part of our investment for the future generation.

CONSENT

Informed consent was obtained before the data collection was started

ETHICAL APPROVAL

We did not apply ethical clearance to conduct this research because this research was part of cooperation implementation among the school and the university. Informed consent was obtained before the data collection was started.

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UNDER PEER REVIEW