RELATIONSHIPS AMONG KNOWLEDGE, ATTITUDE AND BEHAVIORAL INTENTION OF WASTE MANAGEMENT TECHNOLOGY

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ABSTRACT

Waste is a problem faced in the worldwide. One strategic to minimizing the volume of waste is waste management at school or campus. The purpose of this cross-sectional study was to examine the relationship between knowledge, attitude and behavioral intention of waste management among college student in Diploma Nursing and Midwife Pematangsiantar. The participants were composed of 228 nursing and midwife student, and they were selected by stratified random sampling from Diploma of Nursing and Midwife, Pematangsiantar. The data was collected by using questionnaires consisting of information, knowledge, attitude and behavioral intention. Spearman Rank Correlation was used to identify relationships between, knowledge, attitude and behavioral intention. The study found that the majority of participants (88,2%) with the average age was 20,27 years old. The major study was nursing (39,5 %) with the VI semester. Knowledge and attitude were related to behavioral intention ($r=0.550$, $p<0,01$; $r=0.183$, $p<0,06$) respectively. Students reported good knowledge, positive attitude, and high behavioral intention. The study suggested that student should maintain their behavioral intention towards waste management. Also, the institution should provide more information on campus about how to recycle waste into useful.

Keywords: Knowledge, Attitude, Behavioral Intention, Collage, Waste Management

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1. INTRODUCTION

Waste is a problem faced in the world today. The higher the population, the greater the amount of waste produced [1]. In the world, waste reaches up to 1.3 billion tons per year and the World Bank estimates this amount to increase to 2.2 billion tons by 2025. The amount of waste in Indonesia is approximately 38.5 million annually or 200,000 tons every year and increased by 2-4% annually [2]. Waste volume in Sumatra reaches 8.7 million tons every year [3]. In Pematangsiantar, a population of 236,947 people that produced 587 m³ / day of solid waste generation [4]. The increased volume of waste that is not managed sustainably can cause various impacts, such as water pollution, soil, and air, various diseases, many flies, unpleasant odor, work accidents, poisoning in cattle, etc. [5][6].

One strategic to minimizing the volume of waste, namely waste management at school or campus. Schools as a gathering place for many people can be the biggest waste producer besides markets, households, industries, and offices [7]. The campus is a strategic place to educate future generations about environmental development sustainability and as agents of change [8]–[13] Nursing and midwifery academy campuses in Pematangsiantar are those that have dormitories. It is interesting to study because many students spend more time in the dorm than other campuses without a dormitory.

Based on the previous study the factors related to the intention of waste management such as knowledge and attitudes. Knowledge was related to intention ($r = 0.569$, $P < 0.01$) [14][15]. The previous research was conducted at the University of South Florida [16] and the University of Twente [17] suggests that knowledge does not correlate with intention. Prior study found that attitudes associated with intention ($r = 0.213$, $p < .000$) [18]. Also, Gadiraju suggested that attitude was related to intention ($r = 0.310$, $p < 0.01$). However, Phillippsen did not found the relationship between attitude and behavioral intention. Thus, are still conversely and need further investigation related to behavioral intention.

2. METHODOLOGY

2.1. Design and Sample

This study was used a cross-sectional survey design. The total number was 228 students included in this study. A stratified random sampling technique was carried out to select the sample from 2 diploma nursing campus and two diploma midwife campus in Pematangsiantar, Indonesia. All participants were able to write and read in Indonesia Language, willing to participate and live in the dormitory. The student who not lives on the campus was excluded from this study.

2.2. Research Instruments

A self-administered questionnaire was used to collect the data. The questionnaires were based on the recycling literature and previous applications of the theory of planned behavior.

However, the questionnaires were developed by the researcher. This instrument consisted of 4 parts.

- Demographic Characteristic: it was used to assess personal data that includes, age, gender, and semester.
- Behavioral Intention: it consisted of 12 items using 5-point Likert scales, where 1=strongly disagree, and 5=strongly agree. The reliability obtained Cronbach's alpha 0.90.
- Knowledge: it consisted of 15 items using 5-point Likert scales, where 1=strongly disagree, and 5=strongly agree. The reliability obtained Cronbach's alpha 0.91.
- Attitude: it consisted of 24 items that positive and negative question. Items 1-12, 16-18 and 22-24 were positive questions. Items 13-15 and 19-21 were negative questions. Positive question using 5-point Likert scales, where 1=strongly disagree, and 5=strongly agree. Negative question using 5-point Likert scales, where 1=strongly agree, and 5=strongly disagree. The reliability obtained Cronbach's alpha 0.83.

2.3. Data Collection

The data were collected from June until July 2018. After approval and permission letter were granted by the director of nursing and midwife campus, the researcher met with the participants. The researcher explained the study to potential participants based on the information sheet. The student who agreed to participate was asked to perform self-administered questionnaires.

2.4. Data Analysis

Data analysis was performed by using a computer software program. The Cronbach's alpha coefficient was used to examine the reliability of the measurement tools. Descriptive statistics were used to analyze for frequency, mean, median, and percentage. The relationships between knowledge, attitude and behavioral intention were used Spearman coefficient correlation.

3. RESULT

Table 1 describes the result from 228 were female (88,2%), and the average age was 20,27 years old. Regarding the semester, the study found that 39,5 % respondent were semester VI. Regarding majors study, 63,6% of respondents were nursing.

Table 1 Demographic data diploma student nursing and midwife (n=228)

Demographic Data	Frekuensi	Persentase (%)
Age	M=20,27 SD=1,29	
Gender		
Male	27	11,8
Female	201	88,2
Semester		
II	56	24,6
IV	82	36,0
VI	90	39,5
Majors Study		
Nursing	145	63,6
Midwife	83	36,4

Table 2 Number and percentage of variables (n=228)

Variables	n	%
Behavioral Intention		
High	122	53,5
Low	106	46,5
Knowledge		
Good	121	53,1
Poor	107	46,9
Attitude		
Positive	119	52,2
Negative	109	47,8

The result showed that majority of participants (53,5%) had the high behavioral intention, 53,1% participants had good knowledge, and 52,2% had the positive attitude.

Table 3 Bivariate correlation between knowledge, attitude and behavioral intention (n=145)

Variables	Behavioral Intention	
	Coefficient	p-Value
Knowledge	0,550	0,01
Attitude	0,183	0,06

The knowledge and attitude were the statistically positive significant correlation with the behavioral intention. In other words, the student who had high scores of knowledge were more likely to have the high behavioral intention, and those who had the high score of attitude were more likely to have high behavioral intention.

4. DISCUSSION

The finding of this research indicated that majority of participants (53,3%) had the high score of behavioral intention which is the low prevalence rate comparable to previously reported studies 77,8 % of participants highly intended to dispose of recyclable waste into separate specific waste bins. Furthermore, the previous study reported that more than half of the students indicated that they are extremely or somewhat likely to intend to recycle at home and university [17]. Several explanations could be presented in this study. One possible explanation is that most of the students reported good knowledge. A previous study has documented that knowledge is a cognitive domain that is very important in the formation of one's actions. Knowledge based on experience and research results turns out to be a better behavior than without knowledge [15]. Another explanation is that most of the students were female as reported by Vassanadumrongdee. S and S, Kittipongvises [19], female tended to have a higher intention [20]. The researched secondary school students in Nigeria, female tended to perform cleaning and full activities than male in developing countries both in school and households.

The present study found that knowledge was positively related to behavioral intention among student nursing and midwife in Pematangsiantar. It indicated that high score knowledge tends to have a high behavioral intention. This study supported by [16] suggesting students who have appropriate knowledge of recycling were more likely to have the intention of recycling. Also, these findings are consistent with a report by Gusti suggesting knowledge of sustainable waste management was positively associated with intentions of sustainable waste management.

There might be several reasons in this study why knowledge linked to behavioral intention. This observation can be explained by the fact that most of the students reported good knowledge (53,1%) such as they were known to reduce, reuse and to recycle waste. Besides, the level of education of respondents in this study was Diploma of nursing and

midwife. The level of education, age, occupation, and media are the factors that influence of knowledge [21][22]. Moreover, most of the student in this study had a mean age of 20-27 years old. The group age more than 20 years old had high knowledge than those of other groups. Increasing age, the level of thinking someone will be more mature thus, indirectly the knowledge will increase too [23]. Thus, it may be explained why the knowledge related to behavior intention.

Others argued that most of the students stated that more information about how to reduce materials that have the potential to become waste must be available on campus. Furthermore, students stated that they would reuse used goods that could still be used if I had more information about reusing used goods. The environmental knowledge that taught in class during lectures provided the students with extensive information about the consequences of the use of plastic in the environment show that a significant positive association between attitude and behavioral intention was observed. This reveals that the high score attitude tends to have a high behavioral intention. This study supported by the theory of planned behavior [24] that the attitude, which will form the intention of an individual whether to participate or not in specific behavior. The attitude was related to behavioral intention [25]–[27]. The student who had the attitude which makes them feel good whenever they do the waste separation [28].

One could be possibly explained that the most of students (52,2%) had the positive attitude towards waste management which could mean they have more attention to the environment. Also, the previous study stated that the more comfortable to recycle, the higher the influence to engage positive attitude. Another explanation is that respondents in this study lived in the dormitory which had rules to be obeyed. The households' intention to recycle is influenced primarily by their attitude toward recycling, and to some extent by the pressure and expectation of people around them, and their perceived control over recycling. However, another study found that attitude was not correlated with the behavioral intention.

5. CONCLUSION

The study showed student had the high behavioral intention, right knowledge, and positive attitude. Also, knowledge and attitude were related to behavioral intention. Based on the results of the study, it is expected that institution should provide more information on campus about how to recycle waste into useful because there is little information about reducing materials that have the potential to become waste on campus so students can recycle waste into useful items and can be sold. Future studies need to develop regarding information about reuse, reduce and recycling waste.

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