

WASTE MANAGEMENT KNOWLEDGE AND MOTIVATION OF HOUSEWIVES TO MAINTAIN ENVIRONMENTAL HEALTH IN THE CITY OF WATAMPONE

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This research was aimed at describing the waste management knowledge and motivation of housewives in relation to maintaining a healthy environment. in the city Watampone, South Sulawesi. A quantitative approach was used for the survey research. Data were collected using instruments including tests of knowledge about waste management, and a questionnaire for housewives relating to their motivation for maintaining the health of the environment. The survey was based on a random sample of 200 housewives from the population of approximately 26,000 within Watampone City. The data was then processed and analyzed using descriptive statistics. The results indicated that housewives generally have a low level of knowledge about waste management. In addition, their motivation for maintaining environmental health was in the middle category. The public's knowledge of the habits of life were reflected in the study site, where many people dispose of plastic waste on roads and in public places, while housewives often burn generated waste, although some housewives do make compost and organic liquid fertilizer from household waste. The motivation for maintaining environmental health is coming from the reactions to garbage being left to accumulate on streets and public areas, where it becomes infested by flies, develops strong odors, and can also clog drains. The motivation for maintaining environmental health is still in the middle category the community are not motivated because government has not put any sanctions on people who are not obey the waste management act. Waste management by communities and local governments is still an issue of low priority.

Keywords: waste management knowledge, household's motivation, environmental health.

Introduction

Current waste management practices in parts of South Sulawesi are includes open dumping, incineration and sanitary landfill. These combined approaches do not provide a good solution for waste management, especially if their implementation is not disciplined (Hadiwiyoto, 1982). Many people still perceive garbage as being synonymous with junk or worthless waste products, while not using opportunities to convert waste products into a useful form is regarded as a failure to maximize the use of an item (Ivonilla, 2009).

To handle the waste problem, the government of Indonesia enacted Law No. 18 of 2008 on Waste Management and Government Regulation No. 81 of 2012 on the Management of Household Waste. However, the accumulation of garbage in large cities still occurs. Waste generation by communities is not matched with the implementation of appropriate waste management strategies.

Chandra (2006) stated some of the benefits of good waste management in terms of the people and environment include the following: (1) a reduction in

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places for the breeding of insects or rodents; (2) reduction in incidence of infectious diseases that are closely related with garbage; (3) the aesthetics of a clean and healthy environment.

Waste management is associated with the control of waste generation, collection, storage, processing, and waste disposal, in a manner consistent with the best principles relating to public health, economics, engineering, environmental protection, beauty and consideration of other environmental parameters and when considering the benefits/implications for the wider community (Fadhilah A, 2011).

One of the cities in the province of South Sulawesi which faces a problem of waste management is the Watampone district capital of Bone. Watampone district has an area of 4,599 km² and has a population of 135,500 inhabitants. Waste transportation services by the sanitation department extend to only about 126 km² of the district. Waste management by communities and local governments is an issue of low priority. This can be observed from the accumulation of domestic garbage strewn along the streets of the city and piled on dumpsters, and blockage of waterways. Based on data from the Hall Regional Environmental Bone regency, the amount of household waste generated is 8 tons/month but only 1 ton is processed and just 2 tons per month are recycled (Regional Environmental District Bone, 2014).

Integrated waste management between the public and the government has not implemented optimally. The perception of the community about waste management is the duty of the government, while the government argues that the implementation of the service not optimal due to the limited budget and a low interest of the private sector to invest in this field (Hikmah, 2014).

Based on the above, the issue raised in this research is how to improve waste management knowledge and motivation to maintain the environmental health of the housewives in Watampone City. Further, the research aimed to describe the current waste management knowledge and motivation to maintain the environmental health among housewives in the Watampone City.

Research Method

This research approach used was a quantities survey approach. The research target was the housewives who live in three sub-districts of Watampone City, these being the sub-districts of Taneteriattang, West Tanenteriatang and East Taneteriattang. The sampling procedure was based on the randomized selection of 200 housewives in the target districts in Watampone city. Data was collected related to housewives knowledge about waste management and environmental health, based on the use of questionnaires. The data was then processed and analyzed using descriptive statistics. Indicators of knowledge of waste processing was categorized into factual knowledge, conceptual and procedural, as measured by cognitive tests based on the revised taxonomy of Bloom (1981) with levels: remember (C1), understanding

(C2), applying (C3), analyzed (C4), evaluating (C5), and creates (C6). The motivation of housewives to maintain a healthy environment was also categorized in relation whether the source of the motivation was personal or externally based, and what were the goals, expectations and rewards.

The questionnaire about waste management knowledge, a four-page document with an introduction and contact information for reference and feedback purposes, was divided into five sections, namely: (1) generic questions on waste knowledge; (2) generic questions on type waste knowledge; (3) generic questions on recycling knowledge; (4) generic question on produce compost or organic liquid fertilizer; and (5) evaluation of wastes dumping practices.

The questionnaire about environmental health motivation, a five-page document with an introduction and contact information for reference and feedback purposes, was divided into two sections, namely: (1) statements about the external factors that influence the motivation of maintaining a healthy environment; (2) statements about the external factors that influence the motivation of maintaining a healthy environment.

Data was described by the average, maximum value, minimum value, standard deviation, median, mode, range and variance. Data was processed using SPSS version 20 to obtaining the validity, homogeneity, normality and reliability of the data.

Research Results

Description of Housewives Knowledge of Waste Management

Descriptive analysis to determine the profile housewife knowledge about waste management in Watampone City used a test instrument consisting of 25 questions as described in Table 1. The level average level of knowledge was 11.73 out of a potential score of 25, with the minimum knowledge level of 5 and a maximum of 19 (Table 1). The data on knowledge levels was then grouped into grouped into five categories: very low, low, medium, high, and very high. Table 2 summaries the final grouping of the data. The majority (58%) of respondents were in the low knowledge level category, while a further 39.5% were in the moderate knowledge level category. Only 1% (2 respondents) was in the high knowledge level category.

Motivation of Housewives to Maintaining Environmental Health

The results of descriptive analysis of the motivation of housewives to maintain environmental health (through waste management) are summarized in Table 3. The average motivation score was 63.68 from a potential maximum value of 75.00, while the minimum score was 49 (Table 3). Table 4 groups the respondents into five categories: very low, low, medium, high, and very high. The majority (55%),

TABLE 1: DESCRIPTIVE STATISTICS OF THE LEVEL OF KNOWLEDGE OF HOUSEWIVES RELATING TO WASTE MANAGEMENT IN WATAMPONE CITY

		<i>Value</i>
N	Valid	200
	Missing	0
Item number		25
Mean		11.7300
Std. Error of Mean		.17985
Median		12.0000
Mode		13.00
Std. Deviation		2.54351
Variance		6.469
Range		14.00
Minimum		5.00
Maximum		19.00
Sum		2346.00

TABLE 2: FREQUENCY DISTRIBUTION OF KNOWLEDGE LEVELS OF WASTE MANAGEMENT

<i>Score range</i>	<i>Category</i>	<i>Frequency</i>	<i>Percent</i>	<i>Valid percent</i>	<i>Cumulative percent</i>
0.00 – 5.00	Very low	3	1.5	1.5	1.5
6.00 – 11.00	Low	116	58.0	58.0	59.5
12.00 – 17.00	Moderate	79	39.5	39.5	99.0
18.00 – 23.00	High	2	1.0	1.0	100
24.00 – 29.00	Very high	0	0.0	0.0	0.00
Total		200.	100	100	100

were categorized into the moderate category and 45% were categorized into the low category.

TABLE 3: DESCRIPTIVE STATISTICS RELATING TO MOTIVATION FOR MAINTAINING ENVIRONMENTAL HEALTH

		<i>Value</i>
N	Valid	200
	Missing	0
Item number statement		24
Mean		63.6750
Std. Error of Mean		.39226
Median		64.0000
Mode		64.00
Std. Deviation		5.54736
Variance		30.773
Range		26.00
Minimum		49.00
Maximum		75.00
Sum		12735.00

TABLE 4: FREQUENCY DISTRIBUTION MAINTAINING MOTIVATION ENVIRONMENTAL HEALTH

Score range	Category	Frequency	Percent	Valid Percent	Cumulative Percent
24 – 43	Very low	0	0	0	0
44 – 63	Low	90	45.0	45.0	45.0
64 – 83	Moderate	110	55.0	55.0	55.0
84 – 103	High	0	0	0	100.0
104 – 123	Very high	0	0,0	0,0	
	Total	200.00	100.00	100.00	

Discussion

Description of Government Policy on Waste Management in Watampone

Waste management is not only the responsibility of the government but the responsibility of all parties, including the community, to achieve a healthy environment. According Nuzuli *et al.*, (2015) waste management aims to: 1) control waste to actualize environmental life; and 2) improve the health of society, the quality of the environment and to increase the economic value of trash. The ultimate target of improved waste management efforts and awareness in the community is to produce a clean environment and healthy living (Nuzuli *et al.*, 2015).

Data of this study demonstrated that the average knowledge of waste management housewives in Watampone City is still low (Table 1). The results of this analysis are also consistent with the observation in the field that housewives do not separate organic from non-organic waste; they do not undertake the composting of waste leaves. Left-overs and vegetables they produce; they do not undertake the processing of household wastes. No housewife undertook the production of liquid fertilizers from leaf litter, trash or paper material directly burned. Leftovers are only stored in plastic bags and dumped in temporary shelters. The state of temporary shelters is of concern because they are not equipped with adequate covers. People also leave their garbage outside the dumpster so it piles up and becomes strewn along the streets. In addition, people still dispose of used food and beverages packaging directly onto the roads, resulting in the drains becoming clogged. These practices were observed when the author visited the study area in the company of the neighborhoods chairman, and when doing focus group discussions with the respondents in research location.

The results of this study are supported by the findings of Riswan *et al.* (2011) who reported that the household behavior of disposing of garbage around the house has become a habit in some communities in the district of South Daha Hulu Sungai Selatan. His research reported that the management of household waste in the district of South Daha has not been optimal (Riswan *et al.*, 2011). Education level,

income level, attitudes towards environmental cleanliness, knowledge of waste legislation, as well as the willingness to pay the garbage levy, are positively correlated with the way household waste is managed. Setyowati (2013) reported that 56.8% of respondents (housewives) do not have sufficient knowledge of household waste management, and approximately 60.8% of the respondents (housewives) did not have good waste management practices. There was also a significant relationship between the level of knowledge of housewives with behavioral management of plastic waste materials.

Results of this study are also supported by Yunia, *et al.* (2006) who did a study on domestic waste management of housewives in Bandung city in West Java. The results showed that most housewives (69%) already had a knowledge about the sorting of waste materials; however, but most (53%) did not apply this knowledge. The study's findings are also supported by Susanto, *et al.* (2009) who, as a result of a study, showed that there is a correlation between the level of knowledge about waste management, with about 8% of household respondents managing their organic and non-organic waste materials well. Meanwhile about 82% of respondents household were found to not to properly manage their organic and non-organic waste material. Similarly, research conducted by Yusuf and Wawan (2012) about the process of waste management in the market of Watampone Bone regency found that the disposal sites in the market area of central Bone is still very poor, due to the lack of participation of traders in the preparation of disposal facilities, and the lack of regular collection of waste materials by the Sanitation Department. Aisyah (2009) also conducted research on the public participation in environmental waste management in the district of Taneta Riattang in Watampone City. The results showed that: (1) the environmental knowledge of society tends to be in the medium category; average education level was high school level; income levels tended to be in the low category; and public participation in environmental management tends to be in the moderate category; (2) there is a significant relationship between environmental knowledge, education level and income level, with public participation in environmental management in Tanete Riattang District. The variable most closely related to public participation in environmental management in Tanete Riattang District of Watampone City is environmental knowledge.

According to Chandra (2006) the factors are the main determinants of the amount of waste materials within a community include: (1) the increasing population, whereas the waste disposal sites were not increased or have even been reduced; increased activity of the population also generates more waste. (2) socio-economic factors and culture; (3) people's habits; (4) a lack of knowledge of housewives on waste management and low motivation for maintaining a healthy environment; (5) collection system or garbage disposal; (6) facilities for recycling waste facilities; (7) technological advances, and (10) types of waste.

Knowledge is based on personal observations of specific objects. Bloom (1981) divides knowledge into six categories: (1) knowing and remembering, or knowing something without understanding it; (2) understand something that is communicated without the need to understand the relationships among items communicated; (3) the application of a general concept to solve specific problems; (4) analysis with division into components; (5) synthesis to produce something new by combining different ideas; and (6) evaluation, giving opinions on the matter or methods which should be applied in specific situations.

Anderson and Krathwohl (2010) stated that knowledge is a specific for a contextual domain that reflects the domain's specifications and the role of experience, and the social context in constructing and developing knowledge. Further Anderson and Krathwohl (2010) categorized knowledge into four types: (1) factual knowledge is knowledge of the basic elements that should be known to solve the problem; (2) conceptual knowledge is knowledge of the relationships between the basic elements in the wider structure; (3) procedural knowledge of the way of doing things; and (4) metacognitive knowledge, which is knowledge of cognition in general.

Knowledge of the community about waste can vary, depending on the public knowledge about environmental management. Knowledge of waste management by housewives can be categorized as follows: 1) factual knowledge that includes the terms and specifications, and verbal information about litter; 2) conceptual knowledge including classification, principles and generalizations, and theories, about waste management; 3) procedural knowledge in relation to how to do things like recycling, composting, and production of organic liquid fertilizer (POC); 4) metacognitive knowledge, which relates to the ability to apply their own knowledge for garbage management as a housewife.

Housewives should have a good knowledge of waste management because, according Azrul Anwar (1995), waste management is considered good if the waste does not become a breeding ground for germs and does not provide an intermediary medium extent for the spread of disease. Other requirements relating to waste management is that the waste should not pollute the air, water or soil, should be odorless (aesthetic), and should not be a cause a fire, etc. In line with these prerequisites, Slamet (1996) stated that waste management should be based on the following considerations: (a) to prevent the occurrence of disease; (b) the conservation of natural resources; (c) prevent interference with aesthetics; (d) to provide incentives for recycling/utilization; and (e) the quantity and quality will increase. Therefore, the behavior of housewives to waste management should be in accordance with the principles of environmental health.

The management of household waste and similar household garbage consists of two parameters: waste reduction and waste management (Adnani, 2011). Waste reduction activities include, restrictions on waste generation, recycling bins or re-

utilization. Waste handling activities include: 1) the grouping and segregation of garbage according to type, amount and nature of garbage; 2) collection and removal of garbage from waste sources to temporary shelters (dumpsters) or integrated waste treatment facilities (dumpsters); 3) movement of waste from the source or from temporary landfill or from dumpster, to the place of final processing; 4) processing to change the waste's characteristics, composition and quantity; 5) final waste processing and the return of the waste to a safe environment.

Motivation for Maintaining Environmental Health

From the results of the analysis of respondent's data, based on the motivation to maintain a healthy environment, it can be seen (Table 4) that there were no respondents in the category of a very low level of motivation, while 45% (90 of the 200 respondents) were in the category of having a low level of motivation (110 of the 200 respondents). Of particular significance was that 55.0% were in the category with a moderate level of motivation. The results of this study are supported by the results of a study by Arwaty (2014) who reported that the housewife motivation also affects the participation in waste management.

The results of this study clearly indicate that the motivation of housewives is a clear determinant of community involvement in environmentally sound waste management. In accordance with the theory Notoatmodjo (2010) that behavior is influenced by, among other things, motivation. Furthermore, motivation can be determined by a range of both internal and external factors. Internal motivation factors from within housewives related to maintaining the health of the environment include personality, attitude, experience and education.

External factors that can potentially influence the motivation of housewives in maintaining environmental health include factors such as the neighborhood, immediate neighbors, and family economics. This is supported by the findings of Al Muhdhar (2003) who reported that the contributing factors to be the social, economic, and the attitude of the mothers/housewives, in the management of household waste. Similarly, Sunardi (2014) stated that motivation has a positive direct effect on waste management behavior and environmental considerations.

The success of housewives in independently carrying out waste appropriate management practices is also determined by the factors that provide motivation for maintaining a healthy environment. This encouragement and motivation from housewives come both within as well as an impact of external factors, and is reflected in the waste management behavior in terms of waste collection, transportation, destruction or waste treatment, such that the garbage or waste does not become a nuisance for public health and the environment.

The motivation of housewives to maintain environmental health is the impetus that exists in housewives through certain activities, with the hope of meeting their individual needs through indicators of environmental hygiene, and the prevention

of certain disease by controlling some disease vectors, such as flies and mosquitoes. This motivation also comes through the housewives gaining insights and knowledge through educational activities.

A healthy environment is a basic need of humans for their daily lives and to provide an appropriate environment for the conduct their activities. The internal needs of individuals can provide the personal stimulus for individuals to help address the issue of creating a healthy environment. This has been stated by Maslow (Bangun 2012), that humans have five levels or hierarchy of needs, namely: (1) physiological needs, which are the most basic needs for humans, and include such things as hunger, thirst, rest and sex; (2) safety needs, not just in the sense of physical safety, but also mental, psychological and intellectual safety; (3) social needs, including affection, a sense of belonging, and friendship; (4) the need for self-esteem, which is generally reflected in various status symbols related to recognition and attention; and (5) self-actualization, in the sense of the availability of opportunities for someone to develop the potential that there is in themselves and turn it into real ability.

The results of this study highlight the importance of extension and education programs for Watampone housewives. The education program should consider appropriate delivery methods, based on the local culture and habits within the Watampone area. A range of engagement techniques should be adapted to suit the motivation and knowledge of the housewives. Appropriate techniques of engagement may provide better opportunities to reach communities and change their attitudes and behavior in order to achieve better waste management practices.

Conclusion

Based on the results of research and discussion, it can be concluded that the knowledge of housewives in Watampone City in relation to waste management is in the low category, whereas their level of motivation to maintain environmental health is in middle category. This is supported by observations in the area where the research was undertaken, where it was found that many people still leave their garbage lying about and unmanaged. Similarly, the water channels are also sometimes used places for the disposal of garbage and solid waste materials, without concern about the potential impact on the environmental health of the area.

Acknowledgment

Thanks to Dr. Krisantini, Dr. John Schiller, Dr Shirin Jamarani, from the University of Queensland, the help improve the manuscripts, and Staff BLDH Bone regency who helped obtain secondary data/

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