

*Regional Case Study***Factors Related to Community Waste Management in Kota Baru Sub District Jambi City in 2022****Willia Novita Eka Rini<sup>1\*</sup>, Fajrina Hidayati<sup>1</sup>, Marta Butar Butar<sup>1</sup>, Oka Lesmana<sup>1</sup>,  
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36121\*Corresponding Author, email: [willianovita95@gmail.com](mailto:willianovita95@gmail.com)**Abstract**

Waste that is not managed properly can cause environmental pollution and health problems. This study is to find out what factors are related to waste management in the community to reduce the amount of waste generation in Kota Baru SubDistrict, Jambi City. This study used an analytical survey method with a cross-sectional. The population in this study was 80,062 families with a sample of 106 respondents with a sampling technique using stratified random sampling. The independent variables in this study were knowledge, attitudes, subjective norms and control over behavior, while the dependent variable was waste management. The measuring tools used are observation sheets and questionnaires. Data analysis was carried out univariate and bivariate (using chi-square = 0.05). The results showed that there was no relationship between attitudes (p value = 0.132), subjective norms (p value= 0.138) with waste management and there is a relationship between behavioral control (p value = 0.00), knowledge (p value = 0.00) with waste management. From the results of this study, knowledge and control of behavior greatly affect waste management. It is suggested to increase public knowledge by providing information in the form of posters and so on as well as increasing waste management facilities.

**Keywords:** Waste management; knowledge; attitude; subjective norm; control over behavior**1. Introduction**

Waste is material that is discarded or no longer used in human activities. In Law No. 18 of 2008 concerning Waste Management, waste is the remainder of human daily activities in the form of solid or semi-solid which is considered no longer useful and is thrown into the environment. Garbage problems are often encountered in everyday life. Garbage that accumulates can affect the health and aesthetics of the environment. Law Number 18 of 2008 concerning Waste Management explains that in terms of reducing waste, it includes restrictions on waste generation, recycling of waste, and reuse of waste. One of the community's efforts to help overcome the waste problem is to familiarize themselves with 3R waste management (reduction, reuse, recycle). The community also selects waste before it is disposed of to the temporary dump, the waste is separated into 2 types of waste, namely inorganic and organic waste. Without a segregation process, waste processing becomes difficult and expensive, increasing the risk of pollution and health hazards (Prasojo, 2013).

In 2025, it is estimated that the amount of waste produced globally will reach 2.2 billion tons/year. This figure will certainly increase along with the increase in population every year. In Indonesia, according to the Ministry of Environment and Forestry, national waste in 2020 has reached a

total production of 67.8 million tons. Each resident produces about 0.68 kilograms of waste per day. This means that 270 million people produce around 185,753 tons of waste every day. Based on the 2018 Indonesia Environmental Indifference Behavior Index Report, which also cites Susenas data, states that 53 % of Indonesian households use methods that are harmful to the environment in waste management, namely by burning it, and only 1.1 % of households manage their waste further by being recycled, or made into compost, or deposited in a waste bank (Wildawati, 2020). Burning waste causes greenhouse gas emissions and air pollution has a negative impact on the environment and health (Burke et al., 2012).

In Indonesia, Jambi Province is in 16th position with the amount of waste generated reaching 287,374.46 tons. In the city of Jambi, the volume of waste generated is 423,446.09 kgs/day and only 316,175.92 kgs of waste transported to the Landfill are carried out per day. For Kota Baru District, based on data on Jambi City's 2019 Waste Generation, Kota Baru District has the highest waste generation reaching 54,633.47 kgs/day and only 40,975.10 kgs/day transported to the Landfill (DLH Kota Jambi, 2020). This number will continue to increase along with population growth. From the results of the location survey in the Kota Baru sub-district, it was found that the problem of mixed organic and inorganic waste still piling up in temporary dump and scattered on the roadside. Garbage that accumulates in temporary dump causes unpleasant odors and damages the aesthetics of the surrounding environment, leachate from piles of garbage can contaminate surface water, soil and can cause disease. For this reason, it is necessary to do good waste management from the source so that waste problems can be handled and do not have an impact on health and the environment (BPS Kota Jambi, 2020).

Garbage can be a risk factor for a disease. Garbage contains various viruses, parasitic bacteria that can transmit directly or indirectly. Direct transmission is the route of transmission in which the disease is transmitted directly from waste to humans. This transmission route occurs when a person comes into direct contact with garbage that contains germs, viruses or parasites. Indirect transmission occurs when garbage becomes a breeding ground for disease-causing animals, such as mosquitoes, flies, and rats. Various diseases that can be caused such as diarrhea, dysentery, intestinal worms, malaria, and dengue fever (Yeni, 2013) Some of the factors that influence waste management, namely education, knowledge, attitudes, support from community leaders, subjective norms, control over behavior and the availability of infrastructure are one of them (Rahman R dkk., 2020)

Knowledge is the result of "knowing" this occurs after people sense a certain object, especially through the eyes and ears. Knowledge has an effect on changing a person's behavior, such as public knowledge of waste management. The process is based on awareness knowledge and a positive attitude, then the behavior will be long. Conversely, if the behavior is not based on knowledge and awareness, it will not last long. Knowledge of people with low levels of education, knowledge of waste management is also low, for example the separation of waste between inorganic and organic types of waste, people with low knowledge cannot distinguish (Notoadmodjo, 2012; Rahman, 2013; Prasojjo, 2013; Darmawan A, 2014; Syam, 2016; Wildawati, 2020; Akbar, 2021).

Attitude is the extent to which a person has an acceptable or unacceptable evaluation or assessment, likes or dislikes behavior. in this case behave in waste management. In general, a person will do a positive attitude that benefits him compared to an attitude that causes harm to him. It can be concluded that attitude is a behavior that is believed to produce positive results compared to behavior that produces negative results. Attitudes that are considered positive are choices that individuals make in their lives. The attitude of the community has not been able to accept the ways of good waste management, so that a lot of waste is ignored or left unattended without thinking about the negative risks to health, this is because the habits of people's attitudes are not guided by health science about waste (Ajzen, and Icek 2005, Notoadmodjo, 2012; Syam, 2016; Rahman dkk, 2020; Ilma dkk, 2021; Tayeb dan daud, 2021).

Subjective norms, the second major determinant of intention in the theory of planned behavior, are also assumed to be a function of beliefs, but beliefs of a different kind, namely one's belief that a

particular individual or group approves or disapproves of performing the behavior. Subjective norms are factors that are social in nature about a person's perception of social pressure to perform or not to perform a behavior. Subjective norms are individuals who are motivated to follow the behavioral perspective of others. Subjective norms aim to find out whether there is support from other people who are considered important (Ajzen and Icek 2005; Darmawan A, 2014; Eka, 2019).

Control of behavior is a consideration of things that can facilitate or hinder the conduct of behavior. Perception of behavioral control is the perception of the ease or difficulty in performing the behavior. A person tries to perform an action when they find it easy to do it because something is helping them. The behavior of managing waste in the community by burning is formed by the control beliefs factor, namely the belief that there is something that facilitates behavior in the form of a place to burn such as a home page. It is also strengthened by the perceived behavioral control factor, namely the consideration of facilitating factors in the form of favorable weather and opportunities/free time and the normative beliefs factor, namely the individual's belief that the behavior of burning garbage is not a problem for others (Ajzen and Icek, 2005; Darmawan A, 2014; Ismail, 2019).

Based on the above background, initial data and site surveys found that Kotabaru subdistrict has the 3rd most waste generation with the amount of waste 54,633.47 kilogram/day. This number will continue to increase along with population growth. Garbage scattered in the TPS area causes an unpleasant odor, can pollute the ecosystem, cause disease and damage the aesthetics of the environment. The results of the study can be used as a consideration in determining intervention strategies in the community by looking at the relationship between Knowledge, Attitudes, Subjective Norms and Control of Behavior on waste management in Kotabaru subdistrict in order to increase the contribution of positive community behavior, not only throwing garbage in its place but also sorting waste.

## 2. Methods

This study used an analytical survey method with a cross sectional approach. In this study, the cross sectional design was used to obtain an overview by studying the dynamics of the correlation of risk factors including knowledge, attitudes, subjective norms and control of behavior and waste management simultaneously at one time so that the cross sectional research design was considered appropriate compared to other types of research methods with other observational designs taking into account time, other required resources and other considerations.

The sampling technique used is stratified random sampling. The population is 80,062 families with a total sample of 106 respondents. There are 5 Village in Kota Baru, Simpang III Sipin Village (29 respondents), Suka Karya Village (12 respondents), Paal Lima Village (12 respondents), Kenali Asam Bawah Village (12 respondents), and Kenali Asam Atas Village (41 respondents). The data in this study used secondary data obtained from the environmental service and the Kotabaru sub-district such as the amount of waste generation, profile and population in the Kotabaru sub-district and primary data collected directly from residents using a questionnaire measuring instrument.

In this study, 4 (four) independent variables were used, Knowledge, Attitude, Subjective Norms and Control of Behavior based on Theory of Planned Behavior (TPB) popularized by Fishben and Ajzen. This theory can be used to predict whether a person will perform a certain behavior or not. The theory that is usually used to explain pro-environmental behavior in this case is in the management of waste in the community. The research was conducted in three stages: the preparation stage, the implementation stage, and the data processing and analysis stage. The preparation stage includes obtaining permits to existing sub-districts in the Kotabaru sub-district to distribute questionnaires and questionnaire sheets to be distributed to the community who are respondents. The next stage of the research was carried out by distributing questionnaires that had been prepared and filled out by the community. In the final stage, the primary data obtained were processed by processing and analyzing the data according to the specified analytical method with SPP 22. The data can be presented in tabular form and the average

percentage related to the variables studied in this study. Furthermore, the results of the processed data are interpreted so that it can be seen that the variables studied have a relationship or not.

### 3. Result and Discussion

#### 3.1. Univariate Analysis

**Table 1.** Characteristics of respondents, knowledge, attitudes, subjective norms, control of behavior, waste management

No	Characteristics Respondents	Frequency [f]	Percent [%]
1	<b>Gender</b>		
	Male	27	25.5
	Female	79	74.5
	<b>Total</b>	106	100
2	<b>Jobs</b>		
	Housewife	76	71.7
	Entrepreneur	24	22.6
	PNS	6	5.7
	<b>Total</b>	106	100
3	<b>Knowledge</b>		
	Good	55	51.9
	Bad	51	48.1
	<b>Total</b>	106	100
4	<b>Attitude</b>		
	Good	56	52.8
	Bad	50	47.2
	<b>Total</b>	106	100
5	<b>Subjectif Norm</b>		
	Positive	75	70.8
	Negative	31	29.2
	<b>Total</b>	106	100
6	<b>Behavioral Control</b>		
	Positive	48	45.3
	Negative	58	54.7
	<b>Total</b>	106	100
7	<b>Waste Management</b>		
	Good	48	45.3
	Bad	58	54.7
	<b>Total</b>	106	100

Based on table 1 that the characteristics of respondents based on male sex are 27 people (25.5%) and female sex are 79 people (74.5%), the characteristics of respondents based on housewife work are 76 (71.7%). %, private sector as many as 24 people (22.6%) and civil servants 6 people (5.7%). There are 52 people (48.1%) who have poor knowledge and 55 people good knowledge (51.9%). The description of people's attitudes that have a bad attitude are 50 people (47.2%) and 56 people are good (52.8). There are 31 people (29.2%) who have negative subjective norms and 75 people positive subjective norms (70.8%). The description of the control on the behavior of people who have control over negative behavior is 58 people (54.7%) and 45.3% are positive. The description of waste management in the community that has bad waste management is 58 people (54.7%) and 48 people (45.3%) are good.

### 3.2. Bivariate Analysis

**Table 2.** Cross tabulation of knowledge with waste management at Kota Baru SubDistrict, Jambi City.

Knowledge	Waste Management				Total	
	Bad		Good		N	%
	n	%	N	%	N	%
Bad	45	42.5	6	5.7	51	100
Good	13	12.3	42	39.6	55	100
Total	58	54.7	48	45.3	106	100
P-Value			0.00			
PR (95%CI)			3.733 (2.297-6.006)			

Based on table 2 The results showed that (42.5%) of respondents had poor waste management knowledge, with a p-value of 0.00 <0.05, meaning that there was a significant relationship between knowledge and waste management in the community. The PR value is 3.733 and 95% Confidence Interval (CI) 2.297-6.006, which means that respondents who have poor knowledge are 3.733 times more at risk of having poor waste management compared to respondents who have good knowledge.

Knowledge is the output of people who are sensing a particular object. Most of human knowledge is obtained through the senses of sight and hearing. Knowledge is considered essential for the formation of one's actions, because behavior based on knowledge will be more durable in practice than one that is not based on knowledge (Notoadmodjo, 2012; Rahman, 2013; Prasojjo, 2013; Darmawan A, 2014; Syam, 2016; Wildawati, 2020; Akbar, 2021).

Public knowledge about waste management which is defined as knowledge consisting of the understanding of waste, types of waste, sources of waste, factors that affect waste production, the effect of waste on health and the environment, activities in waste management and tools used in waste management and how to dispose of waste. rubbish. It can be concluded that knowledge comes from reason with reasoning, the result of knowing from one's own experience or the experience of others which is a very important domain for the formation of action (Saputra S, Mulasari SA. 2017; Tyeb and Daud, 2021).

In line with the research by Hairil Akbar et al (2021) in Mutoi Village, Bolaang Momgondow Regency, which obtained a p-value of 0.001 <0.05, it means that there is a relationship between public knowledge of household waste management in Muntoi Village. The same research by Syam ( 2016) in Loli Tasiburi Village, Banawa District, Donggala Regency, which obtained a p-value of 0.000 <0.05, which means that public knowledge has a relationship with waste management (Syam, 2016)

The results of this study are not in line with Triana Srisantyorini's research (2018) in the Sekitas Kereta Api area, Jombang Village, Ciputat District, South Tangerang City, which obtained a p-value = 0.449 meaning that there is no relationship between knowledge and waste management behavior in the District. Ciputat, South Tangerang City (Srisantyorini and Kusumaningtyas, 2018)

Good public knowledge has a tendency to carry out good waste management behavior as well. Public knowledge is not good, waste management is also not good. However, it is possible that the community has good knowledge but the behavior of waste management is not good because it is not in line between knowledge and attitude, which is lazy and doesn't want to bother with waste problems. It is necessary to increase public knowledge in managing waste obtained from socialization and counseling as well as information from print media such as posters, pamphlets on how to manage waste properly.

**Table 3.** Cross tabulation of attitudes with waste management at Kota Baru SubDistrict, Jambi City.

Attitudes	Waste Management					
	Bad		Good		Total	
	n	%	n	%	N	%
<b>Bad</b>	24	22.6	26	24.5	50	100
<b>Good</b>	34	32.1	22	20.8	56	100
<b>Total</b>	58	54.7	48	45.3	106	100
<b>P-Value</b>			0.132			
<b>PR (95%CI)</b>			0.791 (0.553-1.140)			

From the results of the analysis there is no relationship between attitudes and waste management in the community with a P-Value value of  $0.132 > 0.05$  and a Prevalence Ratio (PR) value of 0.791 with a 95% CI of 0.533-1.140. Which means, respondents with unfavorable attitudes are 0.791 times more at risk of having poor waste management compared to respondents who have good attitudes.

Attitude is a tendency to accept or reject an activity in this case waste management behavior based on one's experience, knowledge, and norms. Attitude is a reaction or response of someone who is still closed to an object. Boedjo in Prawidya argues that an individual's attitude towards his environment can be in the form of an individual rejecting his environment, namely if the individual is not in accordance with his environmental conditions, an individual who accepts his environment, namely if the environmental conditions match the individual's circumstances, and individuals who are neutral if the individual does not get compatible with the environmental conditions but in this case the individual does not take further steps as should behave (Akbar et al., 2021).

The results of this study are in line with Sangga Saputra's research (2017) at campus X Yogyakarta, which obtained a p-value of  $0.547 > 0.05$ , meaning that there is no significant relationship between attitudes and waste management on campus X Yogyakarta. Research by Novita Sari (2017) in the Benar Village, Tegalrejo Subdistrict, Yogyakarta, where the p value of the statistical test using the Chi-square test was obtained, the p-value was  $0.875 > 0.05$ , which means that there is no significant relationship between attitudes and waste management behavior in Benenr Village, Tegalrejo SubDistrict, Yogyakarta (Jacob, 2021).

In contrast to the research conducted by Surahma (2012) in the hamlet of Padukuhan, Sidokarto Village, Godean District, Sleman Regency, Yogyakarta, which obtained a p-value of  $0.088 < 0.05$ , it means that there is a significant relationship between attitudes and community behavior in managing waste in the Padukuhan village. Sidokarto, Godean sub-district, Sleman district, Yogyakarta ( Humaira, 2021).

Attitude can be interpreted as a form of someone's opinion, or someone's belief in something. From the results of interviews with respondents, respondents think that managing waste is something that is too difficult and complicated to do because they have to provide a special place for sorting wet and dry waste, processing food waste into compost and so on so that respondents think it is more practical if waste is burned, and according to respondents burning garbage is a common thing.

**Table 4.** Cross tabulation of subjective norm with waste management at Kota Baru SubDistrict, Jambi City.

Subjective Norm	Waste Management					
	Bad		Good		Total	
	n	%	N	%	N	%
<b>Negative</b>	20	18.9	11	10.4	31	100
<b>Positive</b>	38	35.8	37	34.9	75	100
<b>Total</b>	58	54.7	48	45.3	106	100
<b>P-Value</b>			0.138			
<b>PR(95%CI)</b>			1.273 (0.903-1.795)			

Based on table 4, the results show that (18.9%) of respondents have negative subjective norms towards waste management in the community, with a p-value of  $0.138 > 0.05$ , meaning that there is no relationship between subjective norms and waste management in the community. The PR value is 1.273 and 95% CI 0.903-1.795, which means that respondents who have negative subjective norms are 1.273 times more at risk of having poor waste management compared to respondents who have positive subjective norms.

Subjective norms are the pressure felt by individuals to perform or not to perform certain behaviors. Subjective norms can be measured by assessing a person's perception of how much influence other people who are their role models, such as family, neighbors, co-workers, even experts who will approve or disapprove of certain behaviors they do.

In accordance with the Theory of Planned Behavior which states that a person's intention to perform a behavior is also influenced by subjective norms, namely a person's belief that is formed due to the influence or coercion of the people around him to perform a behavior. When a person gets more and more influence from neighbors or friends to manage waste, then the intention of that person to do waste management will be stronger (Ajzen., Icek. 2005; Gusti, A., Isyandi, B., Bahri, S., Afandi, D. 2017.)

In line with research conducted by Daniel (2021) in the sub-district of South Denpasar, Denpasar City, no significant relationship was found between subjective norms and waste management behavior, as evidenced by the p-value  $0.120 > 0.05$ . Research was also conducted by Naila Humaira (2021) in the fort village, ciampea sub-district, bogor district, a p-value of  $0.05 = 0.05$  was found, which means that there was no significant relationship between subjective norms and waste management behavior in fort village, ciampea sub-district, bogor district (Humaira, N. 2021).

Subjective norms that refer to perceived social demands to take an action or not to perform certain behaviors were found to have an effect and positively contribute to the intention to implement good waste management behavior. In the case that this study is different from the research conducted by Aria Gusti et al (2017) in elementary schools in the city of Padang, the p-value of  $0.001 < 0.05$  means that there is a significant relationship between subjective norms and sustainable waste management behavior of elementary school students in Padang city.

Subjective norms are the influence of other people or the environment to behave in a certain way (Eka, 2019; Jacob, DB. 2021.) used on interviews with respondents, they agreed to manage waste when there was encouragement from family members, neighbors who were the closest environment to them. But in reality, family members or neighbors do not encourage each other to manage waste, so the respondents also do not manage waste.

**Table 5.** Cross tabulation of behavioral control with waste management at Kota Baru SubDistrict, Jambi City.

		<b>Waste Management</b>					
<b>Behavioral Control</b>	<b>Bad</b>		<b>Good</b>		<b>Total</b>		
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	
<b>Positive</b>	45	42.5	13	12.3	58	100	
<b>Negative</b>	13	12.3	35	33.0	48	100	
<b>Total</b>	58	54.7	48	45.3	106	100	
<b>P-Value</b>			0,00				
<b>PR (95%CI)</b>			2.565 (1.765-4.650)				

Based on table 5, the results show that (42,5%) of respondents have control over negative behavior towards waste management in the community, with a p-value of  $0.00 > 0.05$  meaning that there is a relationship between control of negative behavior and waste management in the community. The PR value is 2.565 and 95%CI is 1.765-4.650, which means that respondents who have control over negative behavior are 2.565 times more at risk of having poor waste management compared to respondents who have control of positive behavior.

Control of behavior is a consideration of factors that facilitate or hinder the conduct of behavior. These factors can be in the form of the frequency with which individuals have carried out

certain behaviors, the need for facilities and the time required to perform these behaviors, so that individuals have a benchmark for their ability to perform these behaviors (Ajzen and Icek, 2005; Darmawan A, 2014; Ismail, 2019).

In the Theory Planned Behavior, control over behavior has the greatest contribution to waste management in society, followed by subjective norms and the lowest contribution is attitude towards waste management behavior in the community. Control of behavior is the community's consideration of the factors that make it easier or hinder them to carry out waste management. Control parameters on behavior include facilities, economic capacity, time owned by respondents, socialization from the village/kelurahan regarding waste management, availability of waste transport services, and sanctions for poor behavior in managing waste. (Kan, 2017; Srisantyorini T, Kusumaningtias F. 2018; Humaira, N. 2021). The results of this study are in line with Astuti and Linarti (2020) in Bantul, Yogyakarta, the p-value of  $0.000 < 0.05$  means that there is a significant relationship between control over behavior and the intention of residents to become customers of the waste bank in Bantul, Yogyakarta (Astuti RD, Linarti U. 202). Research was also conducted by Jacob (2021) in the district of South Denpasar, Denpasar City. found a significant relationship between control of behavior and waste management behavior in the community with a p-value of  $0.016 < 0.05$  (Jacob, DB. 2021).

Control of behavior is defined as a person's perception of the presence or absence of opportunities or conveniences needed to perform a behavior. Sometimes the available facilities do not guarantee someone to carry out waste management due to lack of knowledge and attitudes towards waste management (Ajzen and Icek, 2005; Darmawan A, 2014; Ismail, 2019). In terms of this study, in contrast to the research conducted by Nasrudin Syam (2019) on the Losari beach, Makassar City, the obtained p-value =  $0,602$  means that there is no significant relationship between control over littering behavior in the Losari beach area, Makassar City (Syam, N., Abd, G., Hamzah, W. 2019).

Control parameters on behavior include facilities, economic capacity, time owned by respondents, socialization from the village/kelurahan regarding waste management, availability of waste transport services, and sanctions for poor behavior in managing waste. From the results of interviews with respondents, respondents do not have much time to manage waste, there is no socialization and sanctions are given to the community from the village / urban village if they do not manage waste so that people do not manage waste.

#### 4. Conclusions

From the results of research conducted in Kota Baru SubDistrict, Jambi City, it can be concluded that there is a relationship between knowledge (p value =  $0.00$ ), PR (95% CI)  $3.733 (2.297-6.006)$  and control of behavior (p value =  $0.00$ ), PR (95% CI)  $2.565 (1.765-4.650)$  with waste management in the community . Meanwhile, there is no relationship between attitudes (p value =  $0.132$ ) and subjective norms (p value =  $0.138$ ) towards waste management in the community. For future research mix method research needs to involves local authorities and related agency.

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