



Universiti Malaysia
KELANTAN

DETERMINATION OF AWARENESS ON PROPER WASTE
DISPOSAL METHOD AMONG PEOPLE IN JELI, KELANTAN

By

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DECLARATION

I declare that this thesis entitled “Determination of Awareness on Proper Waste Disposal Method among People in Jeli, Kelantan” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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**Determination Of Awareness on Proper Waste Disposal Method Among People in
Jeli, Kelantan**

ABSTRACT

Awareness of the proper waste disposal method is still lacking in most of the community which can be seen by the way people throw their rubbish outside the collection bins. Environmental problems might happened due to the negligible of the community about this irresponsible behaviour. Thus, this research aims to determine the relationship between knowledge level and awareness about proper waste disposal of individuals, and to determine the relationship between people's attitudes and awareness about proper waste disposal and also to identify the environmental practices concerning waste disposal and awareness that individuals in Jeli communities engage in. This study was conducted by survey method. A total of 380 respondents from Jeli's community was being chosen by simple random sampling method. Before the questionnaires being distributed to the respondents, the questionnaires were tested by using Cronbach alpha test to know the reliability and the value of the questionnaires is 0.866. The data for the knowledge, practices and attitude were analysed using SPSS version 20. In this study, the result of independent t-test shows that the awareness of proper waste disposal method of women is higher than men. Besides, different level of education and age have effect on awareness. Other than that, the relationship between knowledge, attitude and practices with the awareness of proper waste disposal method is strong. Hence, each party need to give full cooperation in an effort to raise awareness on the proper disposal of waste.

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KAJIAN KESEDARAN MENGENAI CARA PELUPUSAN SAMPAH YANG BETUL DI KALANGAN KOMUNITI DI JELI, KELANTAN

ABSTRAK

Kesedaran mengenai kaedah pelupusan sampah yang betul masih kurang di kebanyakan komuniti. Hal ini dapat dilihat melalui cara komuniti membuang sampah di luar tong sampah. Masalah persekitaran boleh berlaku kerana pengabaian masyarakat tentang sikap tidak bertanggungjawab ini. Oleh itu, kajian ini bertujuan untuk menentukan hubungan antara tahap pengetahuan dan kesedaran tentang pelupusan sampah, untuk menentukan hubungan antara sikap dan kesedaran masyarakat tentang pelupusan sampah yang betul dan juga untuk mengenal pasti amalan alam sekitar mengenai pelupusan sampah dan kesedaran individu dalam masyarakat Jeli. Kajian ini dijalankan melalui kaedah survey. Sejumlah 380 responden dari komuniti Jeli telah dipilih melalui kaedah persampelan rawak mudah. Sebelum soal selidik diedarkan kepada responden, ia telah diuji dengan menggunakan ujian Cronbach alpha untuk mengetahui kesahihan soalan dan nilainya adalah 0.866. Data untuk pengetahuan, amalan dan sikap dianalisis dengan menggunakan SPSS versi 20. Dalam kajian ini, hasil uji t-bebas menunjukkan kesedaran mengenai kaedah pelupusan sampah wanita lebih tinggi daripada lelaki. Selain itu, PHD / Master juga mempunyai kesedaran yang lebih tinggi daripada tahap pendidikan yang lain. Seterusnya, hubungan antara pengetahuan, sikap dan amalan dengan kesedaran mengenai kaedah pelupusan sisa yang betul adalah kuat. Justeru itu, setiap pihak haruslah mengambil bahagian dalam usaha untuk meningkatkan kesedaran mengenai cara pelupusan sampah yang betul.

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CHAPTER 1

INTRODUCTION

1.1 Background of study

Most of human activities generate waste either in the form of solid, gaseous or liquid state (Statistics Canada, 2012). In Malaysia, the amount of wastes that are generated by Malaysian per day is 30,000 tonnes, and only 5 percent of these wastes are being recycled (Clean Malaysia Team, 2015; Global Environment Centre, 2009). In developing countries, solid waste is among the immediate, visible and serious environmental problems that confront municipal authorities (Rahman & Ali, 2000).

The wastes that are been generated will eventually being disposed into the collection bins that have been prepared by the authorities. The wastes need to be disposed in a proper way which is by disposing inside of the collection bins rather than just leaving the wastes outside the collection bins.

Jeli, one of the district in Kelantan, also having the issues of indiscriminate waste disposal. This might be due to the low awareness level of the community in Jeli towards the waste disposal. Waste disposal has been an issue because most of people improperly dump their solid waste which can gets washed into the drain. Apart from that, results from indiscriminate disposal of wastes are very common which are litter on streets and gutter (Essuman & Kofi, 2017)

Some people just dispose the waste outside of the collection bin, and this will lead to environmental pollution which will indirectly destroy the aesthetic value of the place, and create foul aroma. However, in some cases the collection bins or the containers are in low maintenance which will also result to the poor disposal of the rubbish (Abas & Seow, 2014). Some households just leave the garbage bags by the street side because the bins and containers are unusable. Hence, this gives an opportunity to the stray animal like cat and dog to scatter the waste (Abas & Seow, 2014).

Day by day, we can clearly see garbage that is lying uncollected in the streets, and what make it worse is that the garbage remain scattered at the place because no one want to clean up the mess that they made. Factors such as the poor community attitude towards the waste disposal, weak or absence of legislation on solid waste disposal create the adverse impact on the environment.

Following this prejudicial effects which resulted by the poor waste disposal practice, it has become more crucial to have a preventive way to slow down the effects. One of the best ways is by raising awareness among the society. Other than that, education is useful to enhance human's life by improving knowledge, skills, attitudes, values and awareness (Aminrad et al, 2013). Through the introduction of the proper waste disposal, the society will be more concerned about the issue that can adversely affect the environment and also the ecosystem.

The society should receive knowledge by now as this is important for them to act and behave in eco-friendly. Therefore, it is a must to strengthen society's knowledge, attitude and practice towards waste disposal practice.

1.2 Problem statement

The issue of the indiscriminate waste disposal method has continuously being debated. From any urban to rural area, we can see the garbage that is being disposed out of the collection bins. Community dispose waste indiscriminately without knowing the impacts of their behaviour will affect their health and environment as well as affect the living standard of future generations. Although this problem has been a serious matter, there is no solution to it as there is no support from the community.

Other than that, the mindset of the community which the waste generated need to be collected by the government therefore it is the responsibility of the government to pick up the waste that are disposed whether it is disposed inside or outside of the collection bins. This mindset indirectly contribute to the negative attitude of the community. The community may think that it is okay to dispose the waste outside of the collection bins as the waste still be picked up by the officers.

So far there is no record about the awareness of the proper waste disposal method among society in Jeli. Thus, the purpose of this study is to determine the knowledge, attitude and practices of the people in Jeli. The awareness and knowledge are lacking among Malaysian community about the proper disposal of solid waste, and also being ignorant about the effect that improper solid waste management to the environment and also to themselves make the problem worsened (Desa, Ba'yah Abd Kadir, & Yusoooff, 2011). Besides that, it is important to know that any change that are going to be made need

to start from people themselves. Thus, if the waste that is generated is dumped at the designated place, waste management institutions can effectively and efficiently do their job as required which means that for proper waste management system to be in place, individuals, organisations and government institutions must come together and work collectively (Kofi et al., 2017).

Therefore, the community's knowledge, attitude and practices towards a proper waste disposal need to be raised to ensure that every party that involved can get a good benefit from it. The information received from this study can be used for further research to enhance the awareness among society.

1.3 Objectives

The objectives of this study are:

1. To determine the relationship between knowledge level and awareness about proper waste disposal of individuals in Jeli communities.
2. To determine the relationship between people's attitudes and awareness about proper waste disposal among Jeli communities
3. To identify the environmental practices concerning waste disposal and awareness that individuals in Jeli communities engage in.

1.4 Scope of Study

This study is focused on the behavior of community on their disposal method of waste. The three dominant aspects in this study are in term of their attitude, knowledge and awareness towards the disposal of waste. These three aspects are important as they are needed to know how the community think and throw their rubbish whether inside or outside the collection bin.

The method of survey is used in this study. Research instrument used for this survey was questionnaire. The questionnaire was developed to collect the needed data. This study is conducted in Jeli. The target population of this study is the households near the collection bin. Besides, the survey questions were distributed to different background of respondents such as different races, education background and also different age since they may have different perception on the waste disposal. The total respondents were 380.

1.5 Significant of Study

The main contribution of this study is to raise awareness among community at Jeli towards the waste disposal method. It is also to ensure that community knows that it should not be a habit to just improperly dispose the waste outside of the collection bin. They will become conscious to the way they dispose waste as it can cause harm to every aspects of life. This study contributes in assist the government, as well as agencies and NGOs that are working to improve solid waste management, to improve on management of waste in term of to get a clearer understanding of what is actually happening at the collection bin. Furthermore, the result of this study can also be used for future research.

Other than that, if the community properly dispose waste to where the waste belong, it will also indirectly lessen the environmental impact at the place. The environmental pollution that can be caused by the improper waste disposal can also be avoided. Besides that, it will also benefit the waste collector. This can happen in which works of the waste collector can be eased by properly disposed the waste into the collection bin. Hence, the wastes can be easier and faster to pick up to be eventually disposed to the landfill.

CHAPTER 2

LITERATURE REVIEW

2.1 Definition of waste

Most of human activities will generate wastes. Waste is defined as everything that no longer has use or purpose and needs to be disposed of (AVMA, 2011). Most of the waste from household is considered as “solid waste”. Environment Protection Authority Southern Australia (2009) described waste as any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.

2.2 Types of waste

Waste can be categorized from the sources that it comes. Table 2.1 below shows the source of waste which was mentioned by Hoornweg et al., (1999). The common categories of wastes are municipal solid waste, industrial waste, agriculture waste and hazardous waste.

Table 2.1 Source of waste

| SOURCE | TYPICAL LOCATION | TYPES OF SOLID WASTE |
|----------------------|--|--|
| Residential | Single-family and multifamily dwellings, low-medium, and highrise apartments | Food wastes, rubbish, ashes, paper, cardboard, plastics, textiles, special wastes |
| Commercial | Stores, restaurants, markets, office buildings, hotels, medical facilities, and institutions. | Food wastes, rubbish, ashes, demolition, Paper, cardboard, plastics, wood, glass, metals, special and construction |
| Industrial | Construction, fabrication, light and heavy manufacturing, refineries, chemical plants, mining etc. | Demolition and construction wastes, special wastes, occasionally hazardous wastes, Housekeeping wastes, packaging, and food wastes |
| Open areas | Streets, alleys, parks, vacant plots, playgrounds, and recreational areas. | Special wastes, rubbish, paper, plastics, and glasses. |
| Treatment plant site | Water, wastes water, and | Treatment plant wastes, |

| | | |
|-------------|--|---|
| | industrial treatment processes. | principally composed of residual sludge |
| Agriculture | Field and row crops, orchards, vineyards, dairies, feedlots, and farms | Spoiled food wastes, agricultural wastes, rubbish, hazardous wastes |

Source: (Hoornweg et al., 1999)

2.2.1 Municipal wastes

This research is focused on municipal wastes. Municipal waste is generated by households, commercial activities and other sources whose activities are similar to those of households and commercial enterprises. The major components of municipal waste are food waste, plastic, paper, metal, rags and glass (Eight, n.d.). Sometimes demolition and construction debris also included in collected waste but in a very small quantity. Other than that, there are also some hazardous wastes such as batteries, electric light bulbs, discarded medicines and chemicals.

2.3 Behavior towards waste disposal

The storage and collection of solid waste in Malaysia does not differ from other developing countries. In Malaysia, solid waste is stored in the plastics bags or bins until the collection day. The wastes will being disposed to the nearby collection bin by the person himself until the waste collectors pick the wastes and transport to landfills. Most

of the wastes are not being segregate properly, so it will be filled with all types of domestic solid waste. The behavior of community at the collection bin can clearly be seen. The wastes are not being throw into the collection bin but being left outside the collection bin.

2.4 Waste Management Awareness

Dourish & Bellotti (1992) defined awareness as an understanding of the activities of others, which provides a context for own activity. Lack of general public awareness of waste management results in many waste being dispose outside the collection bin. When people lack interest in environmental issues, it means that they are not well informed which affect their actions and also makes them feel not included in waste management decision making (Kofi et al., 2017). The community themselves do not aware the consequences of doing so that might affect their live and the environment. The habit of familiarize with the wrong way is also one of the contribution. This has become habits for most of the community as they might think that it is normal if the wastes are being disposed out of the collection bin because of a lot of people are doing the same. They also might thinking that the wastes will eventually being picked up by the waste collectors. Thus, this will lead to the improper waste disposal at the collection bin and adversely affect the waste collection process as it can slow down the collection process.

2.4.1 Knowledge towards waste disposal

When citizens are given education or awareness about waste, they turn to be informed as well as know the essence of waste management which will make them responsible. Keeping them informed or educated means improving their knowledge in waste management which will call for participation in decision making (Kofi et al., 2017). In previous study in Malaysia, quite number of people(63.8%) have knowledge concerning solid waste management, but their attitude does not consistent (Desa et al., 2011). More than half of the community have negative attitudes toward waste management (Desa et al., 2011). A study in South West Ethipopia indicates that all respondents know what the meaning of waste, but they interpret waste in different ways (Shewasinad et al, 2017). Therefore, this means that the knowledge of community on the waste are moderate but need to be educated for a better life.

2.4.2 Attitude on waste disposal

A research assessment that took place on Bauchi said that attitudes to solid waste handling is one of the factor that caused indiscriminate waste disposal. In the study, out of respondents that have storage facilities, only 40 % kept their full containers for over three days, meanwhile another 60.10% emptied their containers into the collection centres immediately when they are full. Filled containers when not dispose of immediately may overflow to the ground thereby littering the environment and subsequently make collection very difficult (Gani, Abubakar, & Babanyara, 2013). In another study at

Ethiopia, 77.5% of the study participants had positive attitude concerning liquid and solid waste disposal management (Shewasinad et al, 2017).

2.4.3 Practice on waste disposal

Waste management practices has a great impact on our health and the environment (Kofi et al., 2017). Study from Thailand gives the result of 15.90 m tons (64.29%) was disposed of in prepared waste bins. Meanwhile, more than half of the waste (13.62 m tons or 55.08%) was untreated or incorrectly treated (Apinhapath, 2014). Other than that, in the previous study in one of Ghana cities, indicates that 92.2% of households used waste bins which suggest that most of the people are concerned about hygiene and the need to keep the environment clean; 6.1% had no specific storage system and therefore disposed their waste directly at a disposal point after collection in the house. This probably accounts for littering of waste around some homes and in the communities. 1.7% stored waste within the house before disposal later. There were also differences in the way in which waste bins were used from one residential area to the other. 51.8% of the waste bins used were covered and 48.2% uncovered (Ojewale, 2014).

2.5 Waste management

Generally, waste management is collection, transportation, and disposal of garbage, sewage and other waste products (Rinkesh, n.d.). Waste is managed to avoid its adverse effect over human health and environment (Resources, 2009). The management of waste's method varies for developed and developing nations (Resources, 2009). For this purpose of research, the waste management that stressed out are the waste disposal and also the waste collection. Success of the waste management practice can be possible if the producers of waste and the collectors are educated or trained.

In Malaysia, National solid waste management department has been set up under the Ministry of Housing and Local Government (Malaysia Economic Planning Unit, 2006). Solid Waste and Public Cleansing Management Corporation Act 2007 (SWPCM Act 2007) has been gazette for the management of waste (Manaf, Samah, & Zukki, 2009). Through the SWPCM Act 2007 the Federal Government of Malaysia will take the responsibility of Solid Waste Management from state local authorities and privatized them to concession companies (Yahaya & Larsen, 2008).

2.6 Causes of improper waste management

The major causes of improper management of waste are related to the lack of financial management and logistics, lopsided planning pastures, deficient municipal infrastructures, disregard for basic aesthetics as well as the perceptions and sociocultural practices (Shaibu & Awunyo-vitor, 2014).

Although inadequate management of solid waste might be attributed to numerous factors, it is essential to emphasize the role of community residents, their attitudes, their waste handling practices, and their interactions with other actors in the waste system because they are the main end-users of waste management facilities (Ojewale, 2014).

2.7 Effect of improper waste disposal practices

Indiscriminate disposal of solid waste has adverse effect on live and the environment in general. Some of direct health impacts of the mismanagement of waste are well known and can be observed especially in developing countries (Giusti, 2009). The UNEPA, (2006) stated that wastes that are not properly managed, especially excreta and other solid and liquid wastes from households and the community are a serious health hazard and can cause the spreading of disease. The report also state that unattended wastes lying around attract flies, rats and other creatures that, in turn, spread diseases. According to Star (2018), the irresponsible dumping has led to the surrounding to become an eyesore. Other than that, the rubbish that is scattered will tend to be washed into nearby drains whenever it rains (Star, 2018). The drains might be clogged with the scattered rubbish and lead to flood.

CHAPTER 3

MATERIALS AND METHOD

3.1 Study area

This study was conducted at Jeli, Kelantan. As of 2000, the district's population is estimated to be 40,637 (Department of Statistics Malaysia, 2010) . Jeli is administered by the Jeli District Council. Jeli is divided into three districts which are Batu Melintang, Jeli and Kuala Balah. The hotspot area that was chosen was at the Jeli Town, Ayer Lanas, and Rest and Recuperation (R & R) Jeli.

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3.2 Theoretical Framework

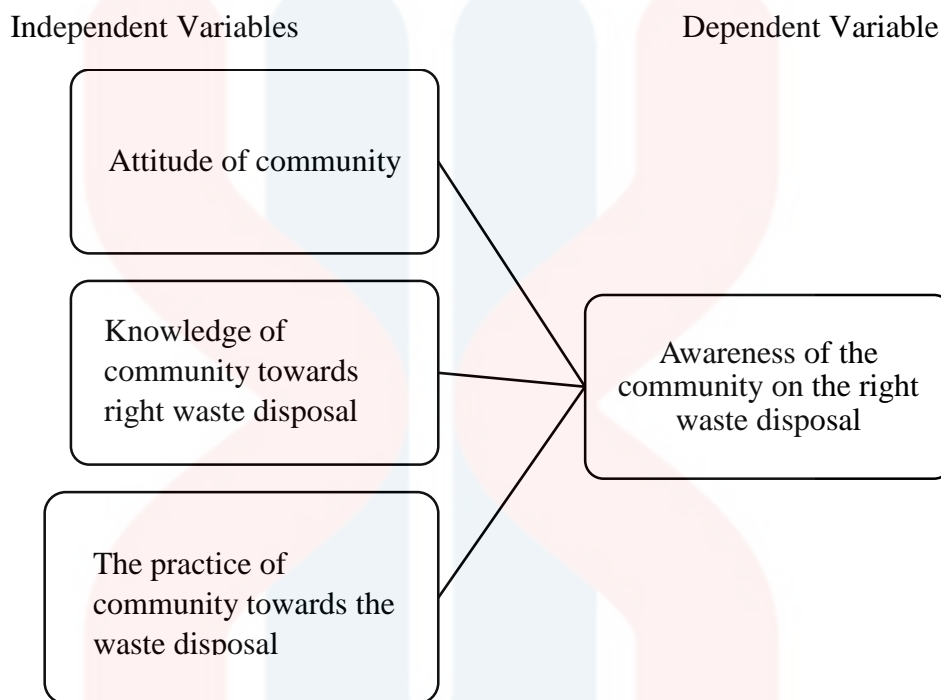


Figure 3.1 Theoretical framework of this study

The dependent variable of this study is the awareness of the community on the waste disposal. Meanwhile, the independent variables of this are the attitude, knowledge and the practice of community towards the waste disposal. All this three will determine the community's awareness on waste disposal at the waste collection bin.

3.3 Data, Measurements and Scales

3.3.1 Types of Data sources

Generally, this study was using primary data as the type of data that suit the study purpose. The primary data sources are also called as the “first hand data”. Primary data is defined as data that are collected for a specific research project (Care, 2014). This data sources may come from surveys, interviews and direct observations.

3.3.2 Type and Level of Measurement

The types of measurement can be divided into four which are nominal, interval, ratio and ordinal. The variables in terms of its own category was described by the nominal scale data. Nominal scale was used in this study in order to identify respondent’s gender, marital status, place of origin and ethnic groups. Besides, ordinal level of measurement describes about classifying data according to the rank (Glen, 2014). Interval scale that was used in the survey questions of this study are scale 1 to 5; number one represent “strongly disagree”, number two represent “disagree”, number three represent “uncertain”, number four represent “agree” and number five will represent “strongly agree”.

3.4 Instrumentation

This survey use questionnaire in order to obtain the primary data about the community's behaviour towards the waste disposal. This instrument was used because of the suitability to collect the needed data so that consistent and relevant information can be obtained. The survey collected detail information on respondents at their houses on the practice of waste disposal.

In this study, awareness on community's waste disposal practice was used to represent the outcomes measures while community's knowledge, attitude and practice were the factors affecting the community's awareness. Section A consists of the demographic information of the respondents. The information like age, gender, races, and education level were asked in this section. Section B consists of questions about respondent's knowledge on the solid waste disposal, whereas in section C, community's attitude on solid waste disposal were enlighten in this section. Section D were about the practice toward waste disposal.

3.5 Population and Sample Size

The population that were chosen was the residents that live in Jeli, Kelantan. According to the latest statistics given by the Department of Statistics Malaysia, the total population for Jeli, Kelantan is 40,637. Due to time constraint, only 380 questionnaires were distributed randomly to the targeted respondents. The target population for this study

are the households near the collection bins. The questionnaires were distributed to all races including Malay, Chinese, Indian and others.

3.5.1 Sampling Method

Sample is chosen to represent the population because it is less time consuming and cheap. The simple random sampling were chosen in this study. Simple random sampling will only be applicable if the target population is homogenous in term of the characteristics of interest in study and it could be socio-economic, gender and the culture. The chances for all respondents in the population to be selected is equal. The problem of bias does not arise in this sampling method.

3.5.2 Sample Size

One of the important step in any research study is to determine the number of sample to be selected. Samples that are too small will lead to inaccurate results, meanwhile samples that are too large may waste resources, money and time. In order to get the sample size, the size of the population need to be determined first.

In this study, 380 respondents were chosen as the sample size. In determining the specific size of sample, Roscoe (1975) proposed the rules of thumb. 30 or more sample are recommended in conducting the experimental research. The process of choosing the sample size will be a lot easier by just referring to the table of the sampling size. The information that is needed is just the population size. The table will then straight away give the sample size value.

Table 3.1 Sampling Size

| <i>N</i> | <i>S</i> | <i>N</i> | <i>S</i> | <i>N</i> | <i>S</i> |
|----------|----------|----------|----------|----------|----------|
| 10 | 10 | 220 | 140 | 1200 | 291 |
| 15 | 14 | 230 | 144 | 1300 | 297 |
| 20 | 19 | 240 | 148 | 1400 | 302 |
| 25 | 24 | 250 | 152 | 1500 | 306 |
| 30 | 28 | 260 | 155 | 1600 | 310 |
| 35 | 32 | 270 | 159 | 1700 | 313 |
| 40 | 36 | 280 | 162 | 1800 | 317 |
| 45 | 40 | 290 | 165 | 1900 | 320 |
| 50 | 44 | 300 | 169 | 2000 | 322 |
| 55 | 48 | 320 | 175 | 2200 | 327 |
| 60 | 52 | 340 | 181 | 2400 | 331 |
| 65 | 56 | 360 | 186 | 2600 | 335 |
| 70 | 59 | 380 | 191 | 2800 | 338 |
| 75 | 63 | 400 | 196 | 3000 | 341 |
| 80 | 66 | 420 | 201 | 3500 | 346 |
| 85 | 70 | 440 | 205 | 4000 | 351 |
| 90 | 73 | 460 | 210 | 4500 | 354 |
| 95 | 76 | 480 | 214 | 5000 | 357 |
| 100 | 80 | 500 | 217 | 6000 | 361 |
| 110 | 86 | 550 | 226 | 7000 | 364 |
| 120 | 92 | 600 | 234 | 8000 | 367 |
| 130 | 97 | 650 | 242 | 9000 | 368 |
| 140 | 103 | 700 | 248 | 10000 | 370 |
| 150 | 108 | 750 | 254 | 15000 | 375 |
| 160 | 113 | 800 | 260 | 20000 | 377 |
| 170 | 118 | 850 | 265 | 30000 | 379 |
| 180 | 123 | 900 | 269 | 40000 | 380 |
| 190 | 127 | 950 | 274 | 50000 | 381 |
| 200 | 132 | 1000 | 278 | 75000 | 382 |
| 210 | 136 | 1100 | 285 | 1000000 | 384 |

**Note: N is population size and s is sample size*

Source: (Krejcie & Morgan, 1970)

3.6 Data Analysis

In this study, Statistical Package for Social Science (SPSS) was used to analyze the data. SPSS is a popular statistical software which has the ability to perform multiple complex data analysis.

3.6.1 Descriptive Statistics

The descriptive analysis is the transformation data in the form that will make it easy to understand and interpret. Descriptive statistics was used to describe the studied population. It summarizes the data and measures that were obtained in a simple visuals analysis. This analysis involves measurements or calculations like mean, mode, median, standard deviation and etc. Descriptive analysis also includes the pie chart, bar chart and others.

3.6.2 Inferential Statistics

3.6.2.1 Independent Sample T-test

The statistical test that was used in this study is independent sample T-test. This test was used to study two groups of subjects such as the gender of the community in Jeli which are female and male. The differences in attitude, knowledge and practice between genders can be determined by using this test.

3.6.2.2 One-way ANOVA

One-way ANOVA was used to compare the mean differences among more than 2 groups. This statistical test was done for the respondent's level of education and age.

3.6.2.3 Correlation test

Pearson correlation coefficient was used to determine the relationship between the knowledge and awareness, attitude and awareness, and also between the practices and awareness.

3.6.3 Reliability Test

The reliability test that was determined using Cronbach's Alpha value. This test was carried out to measure the reliability of the questionnaire by considering zero or very little random measurement error. The acceptable values of alpha was ranging from 0.70 to 0.95. Thus, if the value of the Cronbach's alpha is unacceptable, the question is not reliable and it will need to be revised. 30 respondents were selected to answer the questionnaires during pilot study.

Table 3.2 The Cronbach's Alpha test (Sekaran & Bougie, 2013)

| Cronbach's Alpha | Internal Consistency |
|----------------------------|----------------------|
| $0.9 \leq \alpha$ | Excellent |
| $0.8 \leq \alpha \leq 0.9$ | Good |
| $0.7 \leq \alpha \leq 0.8$ | Acceptable |
| $0.6 \leq \alpha \leq 0.7$ | Questionable |
| $0.5 \leq \alpha \leq 0.6$ | Poor |
| $\alpha < 0.5$ | Unacceptable |

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Response Rate

The population in Jeli, Kelantan are over 40, 000 people, thus the number of respondent that were selected to answer the questionnaires are 380. Before the real survey took place, a pilot test was performed to 30 respondents at Jeli. The table 4.1 shows the rate of response for the real survey.

Based on Table 4.1, all 380 questionnaires that were distributed were completely answered by 380 respondents, which means that the data collected was 100%. All 380 respondents were cooperative which they answered all questions in the questionnaire.

Table 4.1 Response rate based on 380 respondents.

| | Number of Data | Percentage (%) |
|-----------------|-----------------------|-----------------------|
| Valid | 380 | 100 |
| Excluded | - | - |
| Total | 380 | 100 |

4.2 Internal Reliability Test

The reliability test was done to measure the consistency and validity of the obtained data over time and across (Zikmund, 2003). Table 4.2 show the reliability test that was done for this research.

According to the reliability Test in Table 4.2, the Cronbach's Alpha value recorded the values of 0.866 which concludes that all the questions are reliable enough to proceed to the real survey. Therefore, no question will be deleted.

Table 4.2 The reliability test result from the SPSS

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 0.866 | 27 |

4.3 Demographic Profile of Response

Referring to the figure 4.1, it shows that 59.5% of the total respondents are male and the other 40.5% of female were involved in this survey. From the level of percentage, it can be seen that there was no huge differences between the numbers of male and female.

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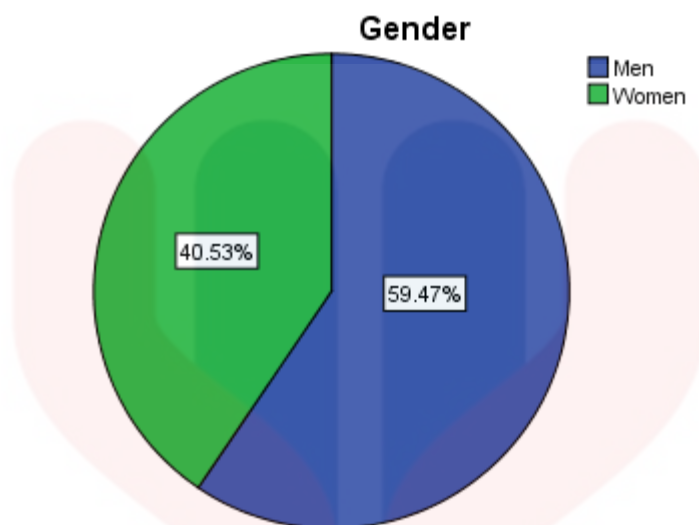


Figure 4.1 Percentage of respondents by gender

In terms of race, Malaysia consists of three main ethnics which are Malay, Chinese and Indian. Based on Figure 4.2, Malay has the highest percentage; 98.7%, followed by Indian; 0.5%, Others; 0.5%, and the least percentage is Chinese 0.3%. This can be explained as the majority of the residents in Jeli is Malay, thus the percentage of the Malay respondents are the highest compared to Chinese and Indian.

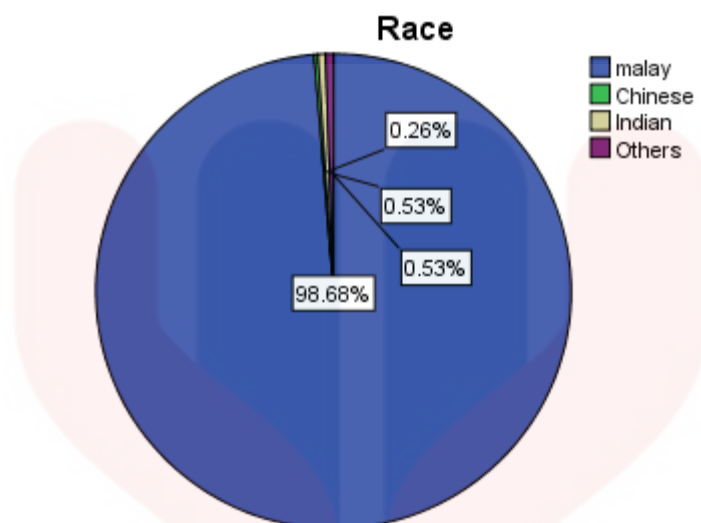


Figure 4.2 Percentage of respondents by race

For level of educational, figure 4.3 shows the highest percentage is 31.3% which is from SPM, and followed by STPM/Diploma with 30.3%. Meanwhile, 17.6% of them comes from degree, 13.9% of the respondent's educational level is UPSR/PMR, 4.5% of the respondent's educational level is others and the least percentage of the educational level is PHD/Master with 2.4%.

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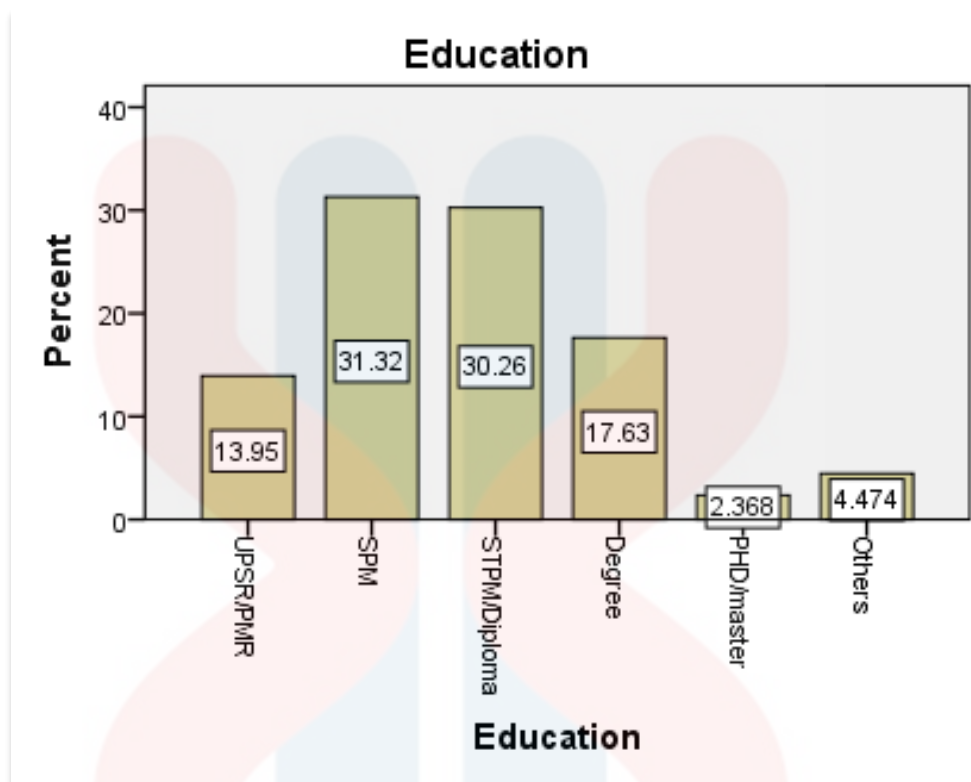


Figure 4.3 Percentage of respondents by education

In term of age, the respondents were divided into 5 groups. Based on figure 4.4, the youngest group is range below than 20, and it contributed to 51 out of 384 (13.4%). Next group's age range from 21-30; this group has the highest percentage with 44.2%. The third's group range from 31 to 40 years old, which there were 83 respondents in this group. The fourth's group age range from 41 to 50 years old and it contribute to only 12.4%. Last group age range from 51 and above, and this group has the least percentage with 8.2%.

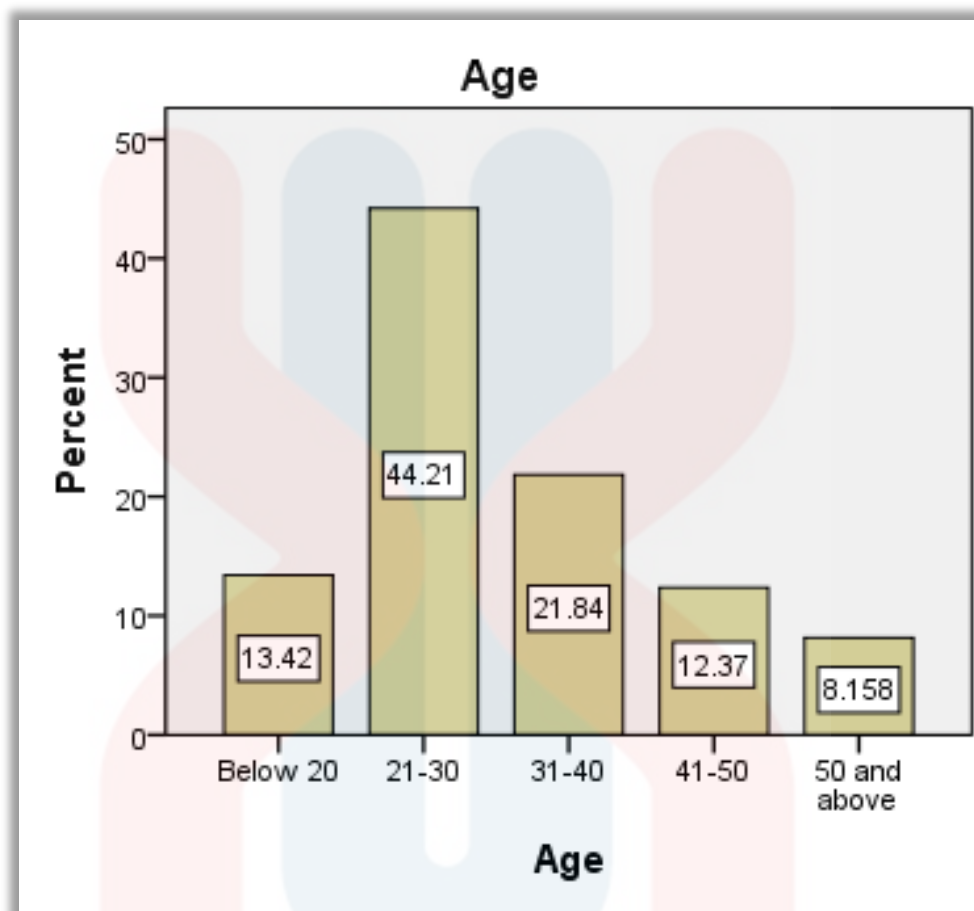


Figure 4.4 Percentage of respondents by age

4.4 Awareness on waste disposal method (Knowledge, Attitude and Practices)

In this section, the results were discussed about the awareness on waste disposal method. There are some analysis that were used in order to determine the awareness of the community in Jeli which is independent t-test, one-way ANOVA and also correlation test.

4.4.1 Independent t-test for Knowledge on waste disposal method

Knowledge is the most crucial part of awareness. People will likely to have less awareness if the knowledge is lacking. The knowledge can be enhanced by either giving them campaign in order to raise the awareness on how to dispose waste in a proper manner. Appendix C show the independent t-test that was used to test the knowledge on waste disposal method between male and female.

Table 4.3 shows statistical mean of knowledge for each gender. Based on the table, there are some differences of the knowledge between men and women on the knowledge of improper waste disposal will lead to environmental problem. Women likely to have a higher knowledge of the improper waste disposal can lead to environmental problem based on the materials at 4.69 than men at 4.53.

Table 4.3 Statistical mean of knowledge for Gender

| | Gender | N | Mean | Std. Deviation | Std. Error means |
|---|---------------|----------|-------------|-----------------------|-------------------------|
| Knowledge of improper waste disposal will lead to environmental problems. | Male | 226 | 4.53 | 0.640 | 0.043 |
| | Female | 154 | 4.69 | 0.476 | 0.038 |

Table 4.4 had shown that F value for Levene's Test is 21.81, and significant value is 0.00 meaning that it is less than $\alpha=0.05$, so the variances are not equal. Thus, the t-value for equal variances not assumed was used which is -2.858 and the corresponding

significant value is 0.04. Therefore, there is statistically significant difference between male and female for their knowledge of improper waste disposal will lead to environmental problems.

Table 4.4 Independent t-test of Knowledge for Gender

| | Levene's Test for Equality of Variances | | t-test for Equality of means | |
|--|---|-------|------------------------------|-----------------|
| | F | Sig. | t | Sig. (2-tailed) |
| Knowledge of improper waste disposal will lead to environmental problems | 21.812 | 0.000 | -2.706 | 0.07 |
| | | | -2.858 | 0.04 |

4.4.2 Independent t-test for Attitude on waste disposal method

Attitudes in this study were describing the behavior of community in Jeli towards the waste disposal method. There were seven questions in this section to describe the attitudes in this questionnaire. Thus, the independent sample t-test was analysed by using the mean score as shown in the table below.

Based on Table 4.5, it shows the mean of interest to recommend proper waste disposal manner to other people. The mean of interest to recommend proper waste disposal manner to other people of women is higher at 4.19 than men at 3.99. This means that women will likely recommend to other people on how to dispose waste in a proper manner.

Table 4.5 Statistical mean of Attitudes for Gender

| | Gender | N | Mean | Std. Deviation | Std. Error means |
|--|--------|-----|------|----------------|------------------|
| Interest to recommend proper waste disposal manner to other people | Men | 226 | 3.99 | 0.766 | 0.509 |
| | Women | 154 | 4.19 | 0.684 | 0.551 |

According to table 4.6, it shown that F value for Levene’s Test is 1.925, and significant value is 0.17 which means it is more than $\alpha=0.05$, so the variances are equal. Thus, the t-value for equal variances assumed that was used which is -2.57 and the corresponding significant value is 0.11. Therefore, there is no statistically difference of interest between men and women in recommend proper waste disposal manner to other people.

Table 4.6 Independent t-test of Attitudes for Gender

| | Levene’s Test for Equality of Variances | t-test for Equality of means | | | |
|---|---|------------------------------|-------|--------|-----------------|
| | | F | Sig. | t | Sig. (2-tailed) |
| Interest to recommend proper waste disposal manner to other people. | Equal variances Assumed | 1.925 | 0.166 | -2.571 | 0.11 |
| | Equal variances not assumed | | | -2.627 | 0.09 |

4.4.3 Independent t-test for Practices on waste disposal method.

The practices is the measurement of the application of the respondent's knowledge. In this section, there were six statements that implied the practices on waste disposal method. Table 4.8 shows the statistical mean practice for each gender.

Referring to table 4.7, it shows that the mean of practice on "If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing" of women is higher at 4.00 compared to men at 3.86. This shows that women likely to go to another collection bin if the collection bin is already fill up with rubbish to avoid overflowing.

Table 4.7 statistical mean of practice for gender

| | Gender | N | Mean | Std. Deviation | Std. Error means |
|---|---------------|----------|-------------|-----------------------|-------------------------|
| If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing. | Men | 226 | 3.86 | 0.898 | 0.597 |
| | Women | 154 | 4.00 | 0.817 | 0.658 |

Table 4.8 shows that the F value of Levene's Test for the statement "If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing." was 5.657 and the significant value was 0.018 which means that it is less than $\alpha=0.05$, so the variances were not equal. Thus, the t-value for equal variances not assumed was used which is -1.593 and the corresponding significant value is 0.11.

Therefore, there is no statistically difference for the mean practice of statement “If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing.” between men and women.

Table 4.8 Independent t-test of Practices for Gender

| | | Levene's Test for Equality of Variances | | t-test for Equality of means | |
|---|-----------------------------|---|-------|------------------------------|-----------------|
| | | F | Sig. | t | Sig. (2-tailed) |
| If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing. | Equal variances Assumed | 5.657 | 0.018 | -1.565 | 0.12 |
| | Equal variances not assumed | | | -1.593 | 0.11 |

4.4.4 One-way ANOVA for Comparing Knowledge on waste disposal method among different Level of Education

One-way ANOVA was used to test the knowledge on waste disposal method among different level of education of the respondents. The result of ANOVA was shown in Appendix D. Table 4.9 shows the comparison of different level of education on the knowledge of proper waste disposal method. The mean of knowledge of the proper waste

disposal is the highest is the respondents with the level of education of PHD/masters with 4.44 and the lowest is the respondents with the level of education of SPM with 3.76.

Table 4.9 Statistical mean of Knowledge in different level of Education

| | | N | Mean | Std. Deviation | Std. Error |
|---|--------------|-----|------|----------------|------------|
| I know the proper waste disposal practices. | UPSR/PMR | 53 | 4.02 | 0.747 | 0.103 |
| | SPM | 119 | 3.76 | 0.831 | 0.076 |
| | STPM/Diploma | 115 | 3.93 | 0.780 | 0.073 |
| | Degree | 67 | 4.18 | 0.777 | 0.095 |
| | PHD/master | 9 | 4.44 | 0.527 | 0.176 |
| | Others | 17 | 3.94 | 1.029 | 0.250 |
| | Total | 380 | 3.95 | 0.810 | 0.042 |

According to table 4.10, the knowledge on proper waste disposal for different level of education shows the p-value of 0.01, which means it is less than $\alpha=0.05$, at $F=3.162$. Thus, there are statistically significant difference for the knowledge on the proper waste disposal for different level of education. Since there are statistically significant difference for the knowledge, post hoc test using Tukey’s HSD test was done to compare each of level of education as shown in Table 4.11.

Table 4.10 ANOVA of Knowledge for different Level of Education

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|-------|------|
| Knowledge on the proper waste disposal practices. | Between Groups | 10.097 | 5 | 2.019 | 3.162 | 0.01 |
| | Within Groups | 238.851 | 374 | 0.639 | | |
| | Total | 248.947 | 379 | | | |

Based on Table 4.11, the knowledge of waste disposal between SPM and degree has significant difference $p=0.01$. It means that the knowledge of respondents between degree and SPM is different. This might be because degree qualification's respondent might had done several courses in universities on waste management rather than respondents with SPM qualification. Thus, the knowledge of degree respondent might be higher than the respondent with SPM qualification.

Table 4.11 Post Hoc tests of Knowledge for different Level of Education

| Dependent Variable | (I) Education | (J) Education | Mean Difference (I-J) | Std. Error | Sig. |
|---|---------------|---------------|-----------------------|------------|-------|
| I know the proper waste disposal practices. | UPSR/PMR | SPM | .254 | .132 | .388 |
| | | STPM/Diplo ma | .088 | .133 | .985 |
| | | Degree | -.160 | .147 | .885 |
| | | PHD/master | -.426 | .288 | .679 |
| | | Others | .078 | .223 | .999 |
| | | UPSR/PMR | -.254 | .132 | .388 |
| | SPM | STPM/Diplo ma | -.166 | .104 | .608 |
| | | Degree | -.414* | .122 | .010 |
| | | PHD/master | -.680 | .276 | .139 |
| | | Others | -.176 | .207 | .957 |
| | | UPSR/PMR | -.088 | .133 | .985 |
| | STPM/Diplo ma | SPM | .166 | .104 | .608 |
| | | Degree | -.249 | .123 | .330 |
| | | PHD/master | -.514 | .277 | .430 |
| | | Others | -.011 | .208 | 1.000 |
| | Degree | UPSR/PMR | .160 | .147 | .885 |
| | | SPM | .414* | .122 | .010 |
| | | STPM/Diplo ma | .249 | .123 | .330 |
| | | PHD/master | -.265 | .284 | .937 |
| | | Others | .238 | .217 | .883 |
| PHD/master | UPSR/PMR | .426 | .288 | .679 | |
| | SPM | .680 | .276 | .139 | |

| | | | | |
|--------|--------------|-------|------|-------|
| | STPM/Diploma | .514 | .277 | .430 |
| | Degree | .265 | .284 | .937 |
| | Others | .503 | .329 | .647 |
| Others | UPSR/PMR | -.078 | .223 | .999 |
| | SPM | .176 | .207 | .957 |
| | STPM/Diploma | .011 | .208 | 1.000 |
| | Degree | -.238 | .217 | .883 |
| | PHD/master | -.503 | .329 | .647 |

4.4.5 One-way ANOVA for Comparing Attitude on waste disposal method among different Level of Education

One-way ANOVA was used to test the attitude on waste disposal method among different level of education. Table 4.12 shows the descriptive mean of attitudes on waste disposal method for different level of education. The mean of attendance to campaigns or activities that are related to waste management for PHD/master respondent is the highest at 4.00 and the lowest mean is the respondents with degree at 3.49.

Table 4.12 Descriptive statistics of attitudes for different Level of Education

| | | N | Mean | Std. Deviation | Std. Error |
|---|--------------|-----|--------|----------------|------------|
| I attend any campaigns/activities that are related to waste management. | UPSR/PMR | 53 | 3.6226 | 1.09591 | .15053 |
| | SPM | 119 | 3.5798 | .90662 | .08311 |
| | STPM/Diploma | 115 | 3.5217 | 1.01175 | .09435 |
| | Degree | 67 | 3.4925 | 1.02059 | .12469 |
| | PHD/master | 9 | 4.0000 | .00000 | .00000 |
| | Others | 17 | 3.8824 | 1.16632 | .28287 |
| | Total | 380 | 3.5763 | .98911 | .05074 |

Table 4.13 shows the ANOVA of attitudes for the level of education. The ANOVA for the attendance to any campaigns/activities that are related to waste management had shown the p-value of 0.52 which is more than $\alpha=0.05$, at $F=0.844$ so there is no significant different among different level of educations.

Table 4.13 ANOVA of Attitudes for different Level of Education

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|------|------|
| I attend any campaigns/activities that are related to waste management. | Between Groups | 4.136 | 5 | .827 | .844 | .519 |
| | Within Groups | 366.651 | 374 | .980 | | |
| | Total | 370.787 | 379 | | | |

4.4.6 One-way ANOVA for Comparing Practice on waste disposal method among different Level of Education

One-way ANOVA was used to test the practices of waste disposal method between different level of education. Table 4.14 shows the mean of practices for different level of education. Respondents with PHD/master have the highest mean which is at 4.56 and respondents with other qualification have the lowest mean for reporting improper functioned bins.

Table 4.14 Descriptive statistics of Practices for different level of education

| | | N | Mean | Std. Deviation | Std. Error |
|---|--------------|-----|--------|----------------|------------|
| If the bins are improperly functioned, I will tell the authorities to replace the bins. | UPSR/PMR | 53 | 3.7736 | 1.08560 | .14912 |
| | SPM | 119 | 3.6639 | .83643 | .07668 |
| | STPM/Diploma | 115 | 3.5913 | .91666 | .08548 |
| | Degree | 67 | 3.5821 | 1.06101 | .12962 |
| | PHD/master | 9 | 4.5556 | .72648 | .24216 |
| | Others | 17 | 3.4118 | .87026 | .21107 |
| | Total | 380 | 3.6526 | .94736 | .04860 |

In Table 4.15, the p-value for reporting improper functioned bins is 0.05. So, there is no significant difference between different levels of education for reporting improper functioned bins.

Table 4.15 ANOVA of Practices for different Level of Education

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|-------|-------|
| If the bins are improperly functioned, I will tell the authorities to replace the bins. | Between Groups | 9.880 | 5 | 1.976 | 2.238 | 0.050 |
| | Within Groups | 330.267 | 374 | .883 | | |
| | Total | 340.147 | 379 | | | |

4.4.7 One-way ANOVA for Comparing Awareness on waste disposal method among different Level of Education

One-way ANOVA was used to test the awareness on waste disposal method for level of education. Table 4.16 shows the descriptive mean of the awareness on waste disposal method for level of education. The awareness on the importance of proper waste disposal of PHD/master is the highest at 4.67 while the lowest is the others at 4.24.

Table 4.16 Descriptive statistics of awareness for different level of education

| | | N | Mean | Std. Deviation | Std. Error |
|--|--------------|-----|--------|----------------|------------|
| I am aware about proper waste disposal is important. | UPSR/PMR | 53 | 4.5660 | .60477 | .08307 |
| | SPM | 119 | 4.3361 | .67995 | .06233 |
| | STPM/Diploma | 115 | 4.6348 | .59722 | .05569 |
| | Degree | 67 | 4.5522 | .89245 | .10903 |
| | PHD/master | 9 | 4.6667 | .50000 | .16667 |
| | Others | 17 | 4.2353 | .43724 | .10605 |
| | Total | 380 | 4.5000 | .68724 | .03525 |

In Table 4.17, the p- value is 0.009 which means it is less than $\alpha=0.05$ so there is significant difference between different level of educations for their awareness on the importance of proper waste disposal.

Table 4.17 ANOVA of Awareness of different Level of education

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--|----------------|----------------|-----|-------------|-------|-------|
| I am aware about proper waste disposal is important. | Between Groups | 7.140 | 5 | 1.428 | 3.107 | 0.009 |
| | Within Groups | 171.860 | 374 | .460 | | |
| | Total | 179.000 | 379 | | | |
| | | | | | | |

In conclusion, respondents with PHD or masters likely to have higher practices, knowledge and awareness towards proper waste disposal method. A previous study at Malaysian Universities from Aminrad, Sayed, and Hadi, (2011) stated that students with high level of education have higher chance to learn more. Thus, this explained why their practices, knowledge and awareness is higher than different level of education.

4.4.8 One-way ANOVA for Comparing Knowledge on waste disposal method among different age

One-way ANOVA was done to test the knowledge on waste disposal method between the ages of the respondents. Table 4.19 shows the comparison of the knowledge between the age of the respondents which are below 20, 21 to 30, 31 to 40, 41 to 50 and above 50.

Referring to table 4.19, the mean for the knowledge about the 3R concept is the highest for those with age 41-50 at 4.19 and the lowest is those with age 50 and above at 3.68. Table 4.20 shows the one-way ANOVA of the knowledge about the 3R concept. The ANOVA shows the p-value of 0.77 which means it is higher than $\alpha=0.05$, at $F= 2.126$ so there is no significant difference between the ages. In Aminrad et al., (2011) study, they found that younger ages might have less knowledge due to the less study levels and less experience thus they might receive less information about above subject than older ages.

Table 4.18 Statistical mean of Knowledge for Age

| | | N | Mean | Std. Deviation | Std. Error |
|---|--------------|-----|------|----------------|------------|
| I know about the 3R concept- “Reduce, Reuse and Recycle”. | Below 20 | 51 | 4.08 | .977 | .137 |
| | 21-30 | 168 | 4.17 | .916 | .071 |
| | 31-40 | 83 | 4.18 | .977 | .107 |
| | 41-50 | 47 | 4.19 | .576 | .084 |
| | 50 and above | 31 | 3.68 | 1.077 | .193 |
| | Total | 380 | 4.12 | .923 | .047 |

Table 4.19 ANOVA of Knowledge for Age

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|-------|------|
| I know about the 3R concept- “Reduce, Reuse and Recycle”. | Between Groups | 7.167 | 4 | 1.792 | 2.126 | .077 |
| | Within Groups | 316.020 | 375 | .843 | | |
| | Total | 323.187 | 379 | | | |

4.4.9 One-way ANOVA for Comparing Attitude on waste disposal method among different Age

One-way ANOVA was used to test the attitude on waste disposal method between different age group. Table below shows the comparison of the attitude between the ages of respondents in Jeli. Table 4.20 shows the statistical mean of attitude on waste disposal method for different respondent’s age. The mean of application of 3R concept in daily life

as an approach to reduce waste disposal is the highest for those with age below than 20 at 4.08 and the lowest for those with age 31-40 at 3.62. In Table 4.21, the ANOVA of application of 3R concept shows the p-value of 0.02 which means it is lower than $\alpha=0.05$ at $F=2.846$. Since the p-value is less than 0.05, there is a significant difference in application of 3R concept in daily life as an approach to reduce waste disposal between the ages.

Table 4.20 statistical mean of Attitude for age

| | N | Mean | Std. Deviation | Std. Error | |
|--|--------------|------|----------------|------------|--------|
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | Below 20 | 51 | 4.0784 | .65858 | .09222 |
| | 21-30 | 168 | 3.8452 | .83335 | .06429 |
| | 31-40 | 83 | 3.6145 | .93484 | .10261 |
| | 41-50 | 47 | 3.7021 | .85757 | .12509 |
| | 50 and above | 31 | 3.6452 | 1.01812 | .18286 |
| | Total | 380 | 3.7921 | .86347 | .04430 |

Table 4.21 ANOVA of Attitude for age

| | Sum of Squares | df | Mean Square | F | Sig. | |
|--|----------------|---------|-------------|-------|-------|------|
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | Between Groups | 8.325 | 4 | 2.081 | 2.846 | .024 |
| | Within Groups | 274.252 | 375 | .731 | | |
| | Total | 282.576 | 379 | | | |

4.4.10 One-way ANOVA for Comparing Practice on waste disposal method among different Level of Education

One-way ANOVA was used to test the practices on waste disposal method between the respondent's age. Table 4.22 shows the comparison of the practices on waste disposal method between all of the age listed.

Referring to table 4.22, the mean of the statement "I always recycle things that can be recycled before I disposed it into the collection bins." is highest for age 50 and above at 4.0323 meanwhile the lowest mean is the age of 31-40 at 3.20. In table 4.23, the ANOVA for the statement "I always recycle things that can be recycled before I disposed it into the collection bins" shows the p-value of 0.00 which means it is less than $\alpha=0.005$, at $F=7.059$ so there is significant difference between the age of the respondents. There are previous studies where older people has higher practice in the waste disposal method than younger people. This can be seen in the studies by Saphores et al (2006) and Scott et al., (1999) which stated younger people are more likely to not recycle things than older people.

Table 4.22 Statistical mean of Practices for Age

| | | N | Mean | Std. Deviation | Std. Error |
|---|-------|-----|--------|----------------|------------|
| | Below | | | | |
| I always recycle things that can be recycled before I disposed it into the collection bins. | 20 | 51 | 3.7451 | .91309 | .12786 |
| | 21-30 | 168 | 3.6905 | .88197 | .06805 |
| | 31-40 | 83 | 3.2048 | 1.00921 | .11078 |
| | 41-50 | 47 | 3.4468 | .65304 | .09526 |

| | | | | | |
|--|--------------|-----|--------|--------|--------|
| | 50 and above | 31 | 4.0323 | .83602 | .15015 |
| | Total | 380 | 3.5895 | .91594 | .04699 |

Table 4.23 ANOVA of practices for Age

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|-------|-------|
| I always recycle things that can be recycled before I disposed it into the collection bins. | Between Groups | 22.264 | 4 | 5.566 | 7.059 | 0.000 |
| | Within Groups | 295.694 | 375 | .789 | | |
| | Total | 317.958 | 379 | | | |

4.4.11 One-way ANOVA for Comparing Awareness on waste disposal method among different Age

One-way ANOVA was used to test the awareness on waste disposal method between the respondent’s ages. Table 4.24 shows the comparison of the awareness on waste disposal method between all of the age listed.

According to table 4.24, the mean of the statement “I am aware that the 3R concept is important to be practiced in the daily life.” Is the highest for the age of below 20 at 4.63 meanwhile the lowest mean is the age of 21-30 at 4.30. In table 4.25, the ANOVA for the statement “I am aware that the 3R concept is important to be practiced in the daily life.”

Shows the p-value of 0.002 which means it is less than $\alpha=0.005$, at $F=4.197$ so there is significant difference between the age of the respondents. A previous study by (Brown, 2000) found that the older generation tend to have less concern about the recycling than younger generations.

Table 4.24 Statistical mean of awareness for age

| | N | Mean | Std. Deviation | Std. Error | |
|--|--------------|------|----------------|------------|--------|
| I am aware that the 3R concept is important to be practiced in the daily life. | Below 20 | 51 | 4.6275 | .56430 | .07902 |
| | 21-30 | 168 | 4.3036 | .80238 | .06191 |
| | 31-40 | 83 | 4.5904 | .62540 | .06865 |
| | 41-50 | 47 | 4.6170 | .49137 | .07167 |
| | 50 and above | 31 | 4.3226 | .94471 | .16967 |
| | Total | 380 | 4.4500 | .73015 | .03746 |

Table 4.25 ANOVA of awareness for age

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--|----------------|----------------|-----|-------------|-------|------|
| I am aware that the 3R concept is important to be practiced in the daily life. | Between Groups | 8.658 | 4 | 2.164 | 4.197 | .002 |
| | Within Groups | 193.392 | 375 | .516 | | |
| | Total | 202.050 | 379 | | | |
| | | | | | | |

4.4.12 Correlation between Knowledge, Attitude, Practices and Awareness

In this section, the correlation between knowledge and awareness, attitude and awareness and practices and awareness were discussed. The results of the correlation were shown in Appendix E. Table 4.26 shows the data for the correlation between knowledge and awareness. The knowledge about the improper waste disposal will lead to environmental problem and the awareness of the importance of proper waste disposal is important shows a positive medium correlation because $r=0.424$. Since $p=0.000$ smaller than 0.05, thus there is significant differences between the knowledge about the improper waste disposal will lead to environmental problem and the awareness of importance of proper waste disposal. This shows that the respondents with good knowledge will have a good awareness on the waste disposal method.

Table 4.26 Correlation between knowledge and awareness

| | I know that improper waste disposal will lead to environmental problem. | I am aware about proper waste disposal is important. |
|--|---|--|
| | Pearson Correlation | .424** |
| | Sig. (2-tailed) | .000 |
| | N | 380 |
| | Pearson Correlation | .424** |
| | Sig. (2-tailed) | .000 |
| | N | 380 |

** . Correlation is significant at the 0.01 level (2-tailed).

The data for second correlation which was between attitude and awareness is shown in table 4.27. There are positive medium correlation between the application of 3R concept in daily life as an approach to reduce waste disposal and create awareness towards proper waste disposal among everyone else as $r=0.471$. Since the p-value is 0.00 which is smaller than 0.05, thus there is significant difference between the application of 3R concept in daily life as an approach to reduce waste disposal and create awareness towards proper waste disposal among everyone else. This can be concludes as the good level of attitude of proper waste disposal method will increase the awareness of the proper waste disposal method.

Table 4.27 Correlation between attitude and awareness

| | I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | I create awareness towards proper waste disposal among my family members, friends etc. |
|--|--|--|
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | Pearson Correlation 1 | .471** |
| | Sig. (2-tailed) | .000 |
| | N | 380 |
| | | 380 |

| | | | |
|--|---------------------|--------|-----|
| I create awareness towards proper waste disposal among my family members, friends etc. | Pearson Correlation | .471** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 380 | 380 |

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4.28 shows the data for the third correlation which was between the practices of the proper waste disposal and the awareness of the proper waste disposal. There are strong correlation between the statement of if I see any wastes that has been thrown outside of the bins by other people, I will pick up the wastes and throw it again into the bin and the awareness that proper waste disposal is important because $r=0.702$. Since $p=0.02$, there is significant differences between the practices and the awareness. From this result, it shows that the awareness will be higher if the practices towards proper waste disposal method is higher.

Table 4.28 Correlation between practices and awareness

| | I am aware about proper waste disposal is important. | If the waste throw is inside the bins, I will pick up and throw it inside the collection bin again. |
|--|--|---|
| I am aware about proper waste disposal is important. | Pearson Correlation | 1 |
| | Sig. (2-tailed) | .517** |
| | N | 380 |

| | | | |
|---|--|-----------------------|--------------|
| If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again. | Pearson Correlation Sig. (2-tailed) N | .517** .000 380 | 1 380 |
|---|--|-----------------------|--------------|

** . Correlation is significant at the 0.01 level (2-tailed).

These results can be supported by the previous studies from Aminrad et al., (2013) which also shows that there are positive correlations between the awareness and knowledge, and also the attitude and awareness. Thus, in enhancing the awareness of the proper waste disposal method, the knowledge, attitude and also the practice need to be enhanced first.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Proper manner of waste disposal has always been neglected by most of the people as they do not really care about the consequences that might arise from their behavior. Even though this problem can be seen at most of the collection bins, yet there are still no effort from any parties to do something that can raise the awareness to do the proper disposal method. Thus, this research is done to raise the awareness to the community in Jeli.

Based on the result, it can be seen that there is no significant difference between men and women attitude on waste disposal method. Even so, the knowledge and practices of the waste disposal method between men and women has significant difference. The result indicates that women has higher knowledge and practices of waste disposal method than men. Overall, women is likely to have higher awareness on proper waste disposal method than men because of the knowledge and practices.

In comparison of the different level of education, the respondent's with the level of education of PHD or master likely to have higher awareness compared to other level of education which are UPSR, PMR, SPM, STPM or Diploma, Degree and others. This result tells that the level of education affected the awareness of the community. Besides, there is significant difference for the attitude, practices and awareness between the ages of the respondents. The knowledge of the respondents has no significant difference between the ages. This tells that the age has nothing to do with the knowledge of the waste disposal method.

From the Pearson correlation, it can be seen that the knowledge, attitude and practices of the proper waste disposal method have strong relationship with the awareness on proper waste disposal method. The increasing in knowledge, attitude and practices of proper waste disposal method can lead to the higher awareness of the proper waste disposal method. In conclusion, the objective to determine community's awareness on waste disposal method was achieved throughout this study.

5.2 Recommendation

The government should find ways to enlighten and educate the community about proper waste disposal method. This action will indirectly raise the awareness of doing the proper waste disposal to the Jeli's community.

The government can enhance the awareness of the community by doing the campaign or events that involves all of the community. The government can organize a

campaign on the good waste management and stressed on the proper waste disposal method. Other than that, the government can provide more collection bins to the hotspot place so that the rubbish will not be overflowed especially on the special day such as Eid, Chinese New Year and others.

In terms of further studies, the questionnaire should be improved by conducting better illustration and more specific question to attract and to ensure that the community will have a better understanding on the questions. The statement of the questions need to be precise, easy and clear to give better results.

For future studies regarding waste disposal method, other researchers can extend the scope of this study by obtaining the data throughout the Kelantan state that covers villages, and small town. This study can also be done all over the Malaysia instead of Jeli only. Last but not least, this research can also be done by using open-ended questionnaire. Open-ended questionnaire is a subjective question and is created to encourage a comprehensive answer based on the respondent's own knowledge. In this way, the respondent can give an honest opinion without depend on the options. Thus, a more precise research result can be acquired.

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APPENDICES

APPENDIX A-Response rate and Reliability Statistics

Case Summary

| | Cases | | | | | |
|----------------------------|-------|---------|---------|---------|-------|---------|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| \$combinedatt ^a | 380 | 100.0% | 0 | 0.0% | 380 | 100.0% |

a. Dichotomy group tabulated at value 1.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .866 | 27 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| I know about the 3R concept- "Reduce, Reuse and Recycle". | 107.6667 | 73.747 | .088 | .875 |
| I know the proper waste disposal practices. | 107.2667 | 71.237 | .569 | .859 |
| I know that improper waste disposal will lead to environmental problem. | 107.1333 | 71.499 | .542 | .860 |
| I know to dispose the waste into the bin. | 107.1333 | 71.430 | .550 | .860 |

| | | | | |
|--|----------|--------|------|------|
| I know the type of wastes and how to manage them. | 107.4333 | 72.944 | .351 | .863 |
| I know about the good waste management | 107.4333 | 73.151 | .280 | .865 |
| I know how the wastes will be disposed of after the collection process. | 107.6000 | 71.490 | .307 | .865 |
| I can set an example for children by properly disposed waste into the collection bins. | 107.1667 | 71.316 | .500 | .860 |
| I attend any campaigns/activities that are related to waste management. | 107.6333 | 67.964 | .543 | .857 |
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | 107.4333 | 69.564 | .468 | .860 |
| I am well adapted with the proper waste disposal practices | 107.1333 | 71.982 | .480 | .861 |
| I would like to know more about the proper waste disposal manner. | 107.4000 | 70.593 | .372 | .863 |
| I will recommend proper waste disposal manner to other people. | 107.3667 | 71.275 | .568 | .859 |
| If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again. | 107.1667 | 71.316 | .442 | .861 |
| I always segregate the wastes according to their type before dispose the wastes into the collection bins. | 107.3333 | 69.471 | .502 | .859 |

| | | | | |
|--|----------|--------|------|------|
| I always recycle things that can be recycled before I disposed it into the collection bins. | 107.6333 | 70.171 | .334 | .865 |
| If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing. | 107.5333 | 70.395 | .495 | .860 |
| If I see any wastes that has been thrown outside of the bins by other people, I will pick up the wastes and throw it again into the bin. | 107.5000 | 66.741 | .623 | .855 |
| If the bins are improperly functioned, I will tell the authorities to replace the bins. | 107.5333 | 67.982 | .489 | .859 |
| If I see the rubbish are not collected according to the schedules, I will tell the authorities to pick up the rubbish. | 107.7000 | 66.631 | .564 | .857 |
| I am aware about proper waste disposal is important. | 107.0000 | 71.724 | .481 | .861 |
| There are adequate proper waste disposal awareness campaigns/activities in Jeli to educate people. | 107.4000 | 69.352 | .505 | .859 |
| I am aware that improper waste disposal may lead to diseases. | 107.0667 | 72.271 | .425 | .862 |
| I am aware that proper waste disposal will indirectly help the workers to ease their work. | 107.1333 | 74.533 | .101 | .870 |
| I create awareness towards proper waste disposal among my family members, friends etc. | 107.2333 | 71.840 | .411 | .862 |

| | | | | |
|---|----------|--------|------|------|
| I am aware that the 3R concept is important to be practiced in the daily life. | 107.0667 | 70.409 | .427 | .861 |
| I am aware that good waste management need to be practiced by everyone to ensure that the environment is clean. | 107.0333 | 74.585 | .123 | .868 |

APPENDIX B-Demographic profile for gender, race, level of education and age

Gender

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------|-----------|---------|---------------|--------------------|
| Valid Men | 226 | 59.5 | 59.5 | 59.5 |
| Women | 154 | 40.5 | 40.5 | 100.0 |
| Total | 380 | 100.0 | 100.0 | |

Race

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|-----------|---------|---------------|--------------------|
| Valid malay | 375 | 98.7 | 98.7 | 98.7 |
| Chinese | 1 | .3 | .3 | 98.9 |
| Indian | 2 | .5 | .5 | 99.5 |
| Others | 2 | .5 | .5 | 100.0 |
| Total | 380 | 100.0 | 100.0 | |

Education

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid UPSR/PMR | 53 | 13.9 | 13.9 | 13.9 |
| SPM | 119 | 31.3 | 31.3 | 45.3 |
| STPM/Diploma | 115 | 30.3 | 30.3 | 75.5 |

| | | | | |
|------------|-----|-------|-------|-------|
| Degree | 67 | 17.6 | 17.6 | 93.2 |
| PHD/master | 9 | 2.4 | 2.4 | 95.5 |
| Others | 17 | 4.5 | 4.5 | 100.0 |
| Total | 380 | 100.0 | 100.0 | |

Age

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------------|---------|---------------|--------------------|
| Valid | Below 20 | 51 | 13.4 | 13.4 |
| | 21-30 | 168 | 44.2 | 57.6 |
| | 31-40 | 83 | 21.8 | 79.5 |
| | 41-50 | 47 | 12.4 | 91.8 |
| | 50 and above | 31 | 8.2 | 100.0 |
| | Total | 380 | 100.0 | 100.0 |

APPENDIX C- Independent t-test for knowledge, attitude and practices

Independent Samples Test for Knowledge

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|-----------------------------|---|------|------------------------------|-----------------|
| | | F | Sig. | df | Sig. (2-tailed) |
| I know about the 3R concept- "Reduce, Reuse and Recycle". | Equal variances assumed | 2.776 | .097 | 378 | .007 |
| | Equal variances not assumed | | | 377.760 | .003 |
| I know the proper waste disposal practices. | Equal variances assumed | .677 | .411 | 378 | .786 |
| | Equal variances not assumed | | | 341.162 | .784 |
| I know that improper waste disposal will lead to environmental problem. | Equal variances assumed | 21.821 | .000 | 378 | .007 |

| | | | | | |
|---|-----------------------------|-------|------|---------|------|
| | Equal variances not assumed | | | 375.135 | .004 |
| I know to dispose the waste into the bin. | Equal variances assumed | 2.040 | .154 | 378 | .247 |
| | Equal variances not assumed | | | 365.041 | .230 |
| I know the type of wastes and how to manage them. | Equal variances assumed | 1.124 | .290 | 378 | .947 |
| | Equal variances not assumed | | | 358.116 | .946 |
| I know about the good waste management | Equal variances assumed | 1.083 | .299 | 378 | .597 |
| | Equal variances not assumed | | | 318.351 | .600 |
| I know how the wastes will be disposed of after the collection process. | Equal variances assumed | .430 | .512 | 378 | .984 |
| | Equal variances not assumed | | | 340.793 | .984 |

Independent Samples Test for Attitude

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|--|-----------------------------|---|------|------------------------------|-----------------|
| | | F | Sig. | df | Sig. (2-tailed) |
| I can set an example for children by properly disposed waste into the collection bins. | Equal variances assumed | 8.010 | .005 | 378 | .200 |
| | Equal variances not assumed | | | 262.352 | .226 |
| I attend any campaigns/activities that are related to waste management. | Equal variances assumed | .754 | .386 | 378 | .510 |
| | Equal variances not assumed | | | 344.766 | .504 |

| | | | | | |
|--|-----------------------------|-------|------|---------|------|
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | Equal variances assumed | .282 | .596 | 378 | .808 |
| | Equal variances not assumed | | | 335.406 | .807 |
| I am well adapted with the proper waste disposal practices | Equal variances assumed | .963 | .327 | 378 | .085 |
| | Equal variances not assumed | | | 331.132 | .084 |
| I would like to know more about the proper waste disposal manner. | Equal variances assumed | 2.505 | .114 | 378 | .797 |
| | Equal variances not assumed | | | 357.422 | .791 |
| I will recommend proper waste disposal manner to other people. | Equal variances assumed | 1.925 | .166 | 378 | .011 |
| | Equal variances not assumed | | | 351.650 | .009 |
| If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again. | Equal variances assumed | 3.329 | .069 | 378 | .412 |
| | Equal variances not assumed | | | 349.798 | .403 |

Independent Samples T-Test for practices

| Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|------|------------------------------|-----------------|
| F | Sig. | df | Sig. (2-tailed) |
| | | | |

| | | | | | |
|---|-----------------------------------|--------|------|---------|------|
| | Equal variances assumed | 1.955 | .163 | 378 | .448 |
| I am aware about proper waste disposal is important. | Equal variances not assumed | | | 348.224 | .440 |
| | Equal variances assumed | 5.676 | .018 | 378 | .314 |
| There are adequate proper waste disposal awareness campaigns/activities in Jeli to educate people. | Equal variances not assumed | | | 301.456 | .326 |
| | Equal variances assumed | .739 | .391 | 378 | .527 |
| I am aware that improper waste disposal may lead to diseases. | Equal variances not assumed | | | 344.638 | .521 |
| | Equal variances assumed | 10.461 | .001 | 378 | .081 |
| I am aware that proper waste disposal will indirectly help the workers to ease their work. | Equal variances not assumed | | | 286.374 | .093 |
| | Equal variances assumed | 6.553 | .011 | 378 | .022 |
| I create awareness towards proper waste disposal among my family members, friends etc. | Equal variances not assumed | | | 346.112 | .020 |
| | Equal variances assumed | 3.175 | .076 | 378 | .743 |
| I am aware that the 3R concept is important to be practiced in the daily life. | Equal variances not assumed | | | 370.184 | .731 |
| | Equal variances assumed | .618 | .432 | 378 | .435 |
| I am aware that good waste management need to be practiced by everyone to ensure that the environment is clean. | | | | | |

| | | | | |
|-----------------------------|--|--|---------|------|
| Equal variances not assumed | | | 321.757 | .438 |
|-----------------------------|--|--|---------|------|

APPENDIX D-One way ANOVA

ANOVA test for Knowledge (Level of education)

| ANOVA | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|-------|------|
| I know about the 3R concept- "Reduce, Reuse and Recycle". | Between Groups | 6.214 | 5 | 1.243 | 1.466 | .200 |
| | Within Groups | 316.973 | 374 | .848 | | |
| | Total | 323.187 | 379 | | | |
| I know the proper waste disposal practices. | Between Groups | 10.097 | 5 | 2.019 | 3.162 | .008 |
| | Within Groups | 238.851 | 374 | .639 | | |
| | Total | 248.947 | 379 | | | |
| I know that improper waste disposal will lead to environmental problem. | Between Groups | 14.139 | 5 | 2.828 | 9.176 | .000 |
| | Within Groups | 115.258 | 374 | .308 | | |
| | Total | 129.397 | 379 | | | |
| I know to dispose the waste into the bin. | Between Groups | 6.890 | 5 | 1.378 | 2.045 | .072 |
| | Within Groups | 251.981 | 374 | .674 | | |
| | Total | 258.871 | 379 | | | |
| I know the type of wastes and how to manage them. | Between Groups | 12.005 | 5 | 2.401 | 3.873 | .002 |
| | Within Groups | 231.834 | 374 | .620 | | |
| | Total | 243.839 | 379 | | | |

| | | | | | | |
|---|----------------|---------|-----|-------|-------|------|
| I know about the good waste management | Between Groups | 19.165 | 5 | 3.833 | 5.138 | .000 |
| | Within Groups | 278.983 | 374 | .746 | | |
| | Total | 298.147 | 379 | | | |
| I know how the wastes will be disposed of after the collection process. | Between Groups | 3.138 | 5 | .628 | .786 | .560 |
| | Within Groups | 298.596 | 374 | .798 | | |
| | Total | 301.734 | 379 | | | |

ANOVA test for attitude (level of education)

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--|----------------|----------------|-----|-------------|-------|------|
| I can set an example for children by properly disposed waste into the collection bins. | Between Groups | 4.374 | 5 | .875 | 2.240 | .050 |
| | Within Groups | 146.047 | 374 | .391 | | |
| | Total | 150.421 | 379 | | | |
| I attend any campaigns/activities that are related to waste management. | Between Groups | 4.136 | 5 | .827 | .844 | .519 |
| | Within Groups | 366.651 | 374 | .980 | | |
| | Total | 370.787 | 379 | | | |
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | Between Groups | 7.619 | 5 | 1.524 | 2.073 | .068 |
| | Within Groups | 274.957 | 374 | .735 | | |
| | Total | 282.576 | 379 | | | |
| I am well adapted with the proper waste disposal practices | Between Groups | 5.924 | 5 | 1.185 | 2.142 | .060 |
| | Within Groups | 206.863 | 374 | .553 | | |
| | Total | 212.787 | 379 | | | |

| | | | | | | |
|---|----------------|---------|-----|-------|-------|------|
| I would like to know more about the proper waste disposal manner. | Between Groups | 18.508 | 5 | 3.702 | 8.116 | .000 |
| | Within Groups | 170.573 | 374 | .456 | | |
| | Total | 189.082 | 379 | | | |
| I will recommend proper waste disposal manner to other people. | Between Groups | 4.391 | 5 | .878 | 1.621 | .154 |
| | Within Groups | 202.690 | 374 | .542 | | |
| | Total | 207.082 | 379 | | | |

ANOVA test for practices (level of education)

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|-------|------|
| If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again. | Between Groups | 8.433 | 5 | 1.687 | 3.839 | .002 |
| | Within Groups | 164.314 | 374 | .439 | | |
| | Total | 172.747 | 379 | | | |
| I always segregate the wastes according to their type before dispose the wastes into the collection bins. | Between Groups | 10.080 | 5 | 2.016 | 1.951 | .085 |
| | Within Groups | 386.476 | 374 | 1.033 | | |
| | Total | 396.555 | 379 | | | |
| I always recycle things that can be recycled before I disposed it into the collection bins. | Between Groups | 10.824 | 5 | 2.165 | 2.636 | .023 |
| | Within Groups | 307.134 | 374 | .821 | | |
| | Total | 317.958 | 379 | | | |
| If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing. | Between Groups | 2.928 | 5 | .586 | .776 | .568 |
| | Within Groups | 282.377 | 374 | .755 | | |
| | Total | 285.305 | 379 | | | |
| If I see any wastes that has been thrown outside | Between Groups | 12.039 | 5 | 2.408 | 2.442 | .034 |
| | Within Groups | 368.750 | 374 | .986 | | |

| | | | | | | |
|--|----------------|---------|-----|-------|-------|------|
| of the bins by other people, I will pick up the wastes and throw it again into the bin. | Total | 380.789 | 379 | | | |
| If the bins are improperly functioned, I will tell the authorities to replace the bins. | Between Groups | 9.880 | 5 | 1.976 | 2.238 | .050 |
| | Within Groups | 330.267 | 374 | .883 | | |
| If I see the rubbish are not collected according to the schedules, I will tell the authorities to pick up the rubbish. | Total | 340.147 | 379 | | | |
| | Between Groups | 3.734 | 5 | .747 | .853 | .513 |
| | Within Groups | 327.203 | 374 | .875 | | |
| | Total | 330.937 | 379 | | | |

ANOVA test for awareness (level of education)

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--|----------------|----------------|-----|-------------|-------|------|
| I am aware about proper waste disposal is important. | Between Groups | 7.140 | 5 | 1.428 | 3.107 | .009 |
| | Within Groups | 171.860 | 374 | .460 | | |
| | Total | 179.000 | 379 | | | |
| There are adequate proper waste disposal awareness campaigns/activities in Jeli to educate people. | Between Groups | 19.166 | 5 | 3.833 | 3.167 | .008 |
| | Within Groups | 452.666 | 374 | 1.210 | | |
| | Total | 471.832 | 379 | | | |
| I am aware that improper waste disposal may lead to diseases. | Between Groups | 5.986 | 5 | 1.197 | 3.351 | .006 |
| | Within Groups | 133.621 | 374 | .357 | | |
| | Total | 139.608 | 379 | | | |
| I am aware that proper waste disposal will indirectly help the workers to ease their work. | Between Groups | 13.740 | 5 | 2.748 | 7.552 | .000 |
| | Within Groups | 136.099 | 374 | .364 | | |
| | Total | 149.839 | 379 | | | |

| | | | | | | |
|---|----------------|---------|-----|-------|-------|------|
| I create awareness towards proper waste disposal among my family members, friends etc. | Between Groups | 5.967 | 5 | 1.193 | 2.119 | .062 |
| | Within Groups | 210.623 | 374 | .563 | | |
| | Total | 216.589 | 379 | | | |
| I am aware that the 3R concept is important to be practiced in the daily life. | Between Groups | 18.992 | 5 | 3.798 | 7.760 | .000 |
| | Within Groups | 183.058 | 374 | .489 | | |
| | Total | 202.050 | 379 | | | |
| I am aware that good waste management need to be practiced by everyone to ensure that the environment is clean. | Between Groups | 1.722 | 5 | .344 | .969 | .437 |
| | Within Groups | 132.960 | 374 | .356 | | |
| | Total | 134.682 | 379 | | | |

ANOVA test for knowledge (Age)

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|----------------|----------------|-----|-------------|--------|------|
| I know about the 3R concept- "Reduce, Reuse and Recycle". | Between Groups | 7.167 | 4 | 1.792 | 2.126 | .077 |
| | Within Groups | 316.020 | 375 | .843 | | |
| | Total | 323.187 | 379 | | | |
| I know the proper waste disposal practices. | Between Groups | 8.817 | 4 | 2.204 | 3.442 | .009 |
| | Within Groups | 240.130 | 375 | .640 | | |
| | Total | 248.947 | 379 | | | |
| I know that improper waste disposal will lead to environmental problem. | Between Groups | 17.437 | 4 | 4.359 | 14.601 | .000 |
| | Within Groups | 111.960 | 375 | .299 | | |
| | Total | 129.397 | 379 | | | |
| I know to dispose the waste into the bin. | Between Groups | 23.434 | 4 | 5.858 | 9.331 | .000 |

| | | | | | | |
|---|----------------|---------|-----|-------|-------|------|
| | Within Groups | 235.438 | 375 | .628 | | |
| | Total | 258.871 | 379 | | | |
| | Between Groups | 12.828 | 4 | 3.207 | 5.206 | .000 |
| I know the type of wastes and how to manage them. | Within Groups | 231.012 | 375 | .616 | | |
| | Total | 243.839 | 379 | | | |
| | Between Groups | 13.076 | 4 | 3.269 | 4.300 | .002 |
| I know about the good waste management | Within Groups | 285.072 | 375 | .760 | | |
| | Total | 298.147 | 379 | | | |
| | Between Groups | 12.280 | 4 | 3.070 | 3.977 | .004 |
| I know how the wastes will be disposed of after the collection process. | Within Groups | 289.454 | 375 | .772 | | |
| | Total | 301.734 | 379 | | | |

ANOVA test for attitude (Age)

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--|----------------|----------------|-----|-------------|-------|------|
| I can set an example for children by properly disposed waste into the collection bins. | Between Groups | 7.999 | 4 | 2.000 | 5.265 | .000 |
| | Within Groups | 142.422 | 375 | .380 | | |
| | Total | 150.421 | 379 | | | |
| I attend any campaigns/activities that are related to waste management. | Between Groups | 19.521 | 4 | 4.880 | 5.210 | .000 |
| | Within Groups | 351.266 | 375 | .937 | | |
| | Total | 370.787 | 379 | | | |
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | Between Groups | 8.325 | 4 | 2.081 | 2.846 | .024 |
| | Within Groups | 274.252 | 375 | .731 | | |
| | Total | 282.576 | 379 | | | |
| I am well adapted with the proper waste disposal practices | Between Groups | 13.875 | 4 | 3.469 | 6.540 | .000 |

| | | | | | | |
|---|----------------|---------|-----|-------|-------|------|
| | Within Groups | 198.912 | 375 | .530 | | |
| | Total | 212.787 | 379 | | | |
| | Between Groups | 7.754 | 4 | 1.938 | 3.647 | .006 |
| I will recommend proper waste disposal manner to other people. | Within Groups | 199.328 | 375 | .532 | | |
| | Total | 207.082 | 379 | | | |
| | Between Groups | 12.785 | 4 | 3.196 | 6.799 | .000 |
| I would like to know more about the proper waste disposal manner. | Within Groups | 176.297 | 375 | .470 | | |
| | Total | 189.082 | 379 | | | |

ANOVA test for practices (Age)

| | | ANOVA | | | | |
|---|----------------|----------------|-----|-------------|-------|------|
| | | Sum of Squares | df | Mean Square | F | Sig. |
| If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again. | Between Groups | 2.529 | 4 | .632 | 1.393 | .236 |
| | Within Groups | 170.218 | 375 | .454 | | |
| | Total | 172.747 | 379 | | | |
| I always segregate the wastes according to their type before dispose the wastes into the collection bins. | Between Groups | 22.628 | 4 | 5.657 | 5.673 | .000 |
| | Within Groups | 373.928 | 375 | .997 | | |
| | Total | 396.555 | 379 | | | |
| I always recycle things that can be recycled before I disposed it into the collection bins. | Between Groups | 22.264 | 4 | 5.566 | 7.059 | .000 |
| | Within Groups | 295.694 | 375 | .789 | | |
| | Total | 317.958 | 379 | | | |
| If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing. | Between Groups | 8.384 | 4 | 2.096 | 2.838 | .024 |
| | Within Groups | 276.921 | 375 | .738 | | |
| | Total | 285.305 | 379 | | | |

| | | | | | | |
|--|----------------|---------|-----|-------|-------|------|
| If I see any wastes that has been thrown outside of the bins by other people, I will pick up the wastes and throw it again into the bin. | Between Groups | 35.948 | 4 | 8.987 | 9.773 | .000 |
| | Within Groups | 344.841 | 375 | .920 | | |
| | Total | 380.789 | 379 | | | |
| If the bins are improperly functioned, I will tell the authorities to replace the bins. | Between Groups | 21.343 | 4 | 5.336 | 6.276 | .000 |
| | Within Groups | 318.804 | 375 | .850 | | |
| | Total | 340.147 | 379 | | | |
| If I see the rubbish are not collected according to the schedules, I will tell the authorities to pick up the rubbish. | Between Groups | 18.728 | 4 | 4.682 | 5.624 | .000 |
| | Within Groups | 312.209 | 375 | .833 | | |
| | Total | 330.937 | 379 | | | |

ANOVA test for awareness (Age)

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--|----------------|----------------|-----|-------------|-------|------|
| I am aware about proper waste disposal is important. | Between Groups | 10.203 | 4 | 2.551 | 5.667 | .000 |
| | Within Groups | 168.797 | 375 | .450 | | |
| | Total | 179.000 | 379 | | | |
| There are adequate proper waste disposal awareness campaigns/activities in Jeli to educate people. | Between Groups | 8.410 | 4 | 2.103 | 1.701 | .149 |
| | Within Groups | 463.421 | 375 | 1.236 | | |
| | Total | 471.832 | 379 | | | |
| I am aware that improper waste disposal may lead to diseases. | Between Groups | 11.300 | 4 | 2.825 | 8.256 | .000 |
| | Within Groups | 128.308 | 375 | .342 | | |
| | Total | 139.608 | 379 | | | |
| I am aware that proper waste disposal will indirectly help the workers to ease their work. | Between Groups | 3.674 | 4 | .919 | 2.357 | .053 |
| | Within Groups | 146.165 | 375 | .390 | | |

| | | | | | | |
|---|----------------|---------|-----|-------|-------|------|
| I create awareness towards proper waste disposal among my family members, friends etc. | Total | 149.839 | 379 | | | |
| | Between Groups | 8.817 | 4 | 2.204 | 3.978 | .004 |
| | Within Groups | 207.772 | 375 | .554 | | |
| I am aware that the 3R concept is important to be practiced in the daily life. | Total | 216.589 | 379 | | | |
| | Between Groups | 8.658 | 4 | 2.164 | 4.197 | .002 |
| | Within Groups | 193.392 | 375 | .516 | | |
| I am aware that good waste management need to be practiced by everyone to ensure that the environment is clean. | Total | 202.050 | 379 | | | |
| | Between Groups | 6.093 | 4 | 1.523 | 4.442 | .002 |
| | Within Groups | 128.589 | 375 | .343 | | |
| | Total | 134.682 | 379 | | | |

APPENDIX E-Pearson Correlation Coefficient

Correlations between knowledge and awareness

| | | I know that improper waste disposal will lead to environmental problem. | I am aware about proper waste disposal is important. |
|---|---------------------|---|--|
| I know that improper waste disposal will lead to environmental problem. | Pearson Correlation | 1 | .424** |
| | Sig. (2-tailed) | | .000 |
| | N | 380 | 380 |
| I am aware about proper waste disposal is important. | Pearson Correlation | .424** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 380 | 380 |

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations between attitude and awareness

| | | | |
|--|---|--|--|
| | | I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | I create awareness towards proper waste disposal among my family members, friends etc. |
| I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal. | Pearson Correlation Sig. (2-tailed) N | 1 380 | .471** .000 380 |
| I create awareness towards proper waste disposal among my family members, friends etc. | Pearson Correlation Sig. (2-tailed) N | .471** .000 380 | 1 380 |

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations between practices and awareness

| | | | |
|--|--|--|--|
| | | I am aware about proper waste disposal is important. | If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again. |
| I am aware about proper waste disposal is important. | Pearson Correlation Sig. (2-tailed) | 1 | .517** .000 |

| | | | |
|--|---------------------|--------|-----|
| | N | 380 | 380 |
| If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again. | Pearson Correlation | .517** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 380 | 380 |

** . Correlation is significant at the 0.01 level (2-tailed).

APPENDIX F-Set of Questionnaire



KAJIAN KESEDARAN MENGENAI CARA PELUPUSAN SAMPAH YANG BETUL DI KALANGAN KOMUNITI DI JELI, KELANTAN

STUDY ON AWARENESS OF PROPER WASTE DISPOSAL METHOD AMONG PEOPLE IN JELI, KELANTAN

Saya adalah pelajar tahun akhir dari Universiti Malaysia Kelantan yang melakukan beberapa kajian mengenai kaedah pelupusan sisa yang betul di Jeli. Saya benar-benar menghargai jika anda boleh meluangkan masa untuk menjawab semua soalan. Terima kasih.

I am final year student from University Malaysia Kelantan who are doing some research about the proper waste disposal method in Jeli. I truly appreciate if you can spend some time to answer all the questions. Thank you.

FACULTY OF EARTH SCIENCES
BACHELOR OF APPLIED SCIENCE
(SUSTAINABLE SCIENCE)

Bahagian A: Profil Demografi

Section A: Demographic Profile

1. Jantina

Gender

() Lelaki

Male

() Perempuan

Female

2. Bangsa

Race

() Melayu

Malay

() India

Indian

() Cina

Chinese

() Lain-lain : _____

Others : _____

3. Apakah tahap pendidikan tertinggi yang telah anda selesaikan?

What is the highest level of education that you have completed?

() UPSR

UPSR

() IJAZAH

DEGREE

() SPM

SPM

() PHD/Master

PHD/Master

() STPM/Diploma

STPM/Diploma

() Lain-lain: _____

Other: _____

4. Umur

Age:

() Bawah 20 () 31 - 40

Below 20

() 21 – 30 () 41 – 50

() 50 ke atas

50 and above

Bahagian B: Ilmu Pengetahuan tentang cara pelupusan sampah

Section B: Knowledge about the waste disposal method

Deskripsi Penilaian:

Assessment Description:

1 = Sangat tidak setuju 2 = Tidak setuju;

1 = Strongly disagree 2 = Disagree

3 = Neutral 4 = Setuju;

3 = Neutral 4 = Agree

5 = Sangat setuju

5 = Strongly agree

| No. | | 1 | 2 | 3 | 4 | 5 |
|-----|---|---|---|---|---|---|
| 1. | Saya tahu mengenai konsep 3R – “Mengurangkan, Mengguna Semula dan Mengitar semula”. <i>I know about the 3R concept- “Reduce, Reuse and Recycle”.</i> | | | | | |
| 2. | Saya tahu amalan pelupusan sampah yang betul. <i>I know the proper waste disposal practices.</i> | | | | | |
| 3. | Saya tahu bahawa pembuangan sampah yang tidak betul akan membawa masalah kepada alam sekitar. | | | | | |

| | | | | | | |
|----|---|--|--|--|--|--|
| | <i>I know that improper waste disposal will lead to environmental problem.</i> | | | | | |
| 4. | Saya tahu mengenai jenis jenis sampah dan cara cara menguruskannya. <i>I know the type of wastes and how to manage them.</i> | | | | | |
| 5. | Saya tahu mengenai pengurusan sampah yang betul. <i>I know about the good waste management</i> | | | | | |
| 6. | Saya tahu bagaimana sampah akan dilupuskan setelah proses pengumpulan. <i>I know how the wastes will be disposed of after the collection process.</i> | | | | | |
| 7. | Saya tahu mengenai sampah yang boleh dikompos untuk mengurangkan pembuangan sampah. <i>I know about the wastes that can be composted to reduce the disposal of wastes.</i> | | | | | |

Bahagian C: Sikap mengenai cara pembuangan sampah

Section C: Attitude about the waste disposal method

Deskripsi Penilaian:

Assessment Description:

1 = Sangat tidak setuju

2 = Tidak setuju;

1 = Strongly disagree

2 = Disagree

3 = Neutral

4 = Setuju;

3 = Neutral

4 = Agree

5 = Sangat setuju

5 = Strongly agree

| | | | | | |
|----|---|--|--|--|--|
| 1. | <p>Saya boleh menjadi contoh kepada kanak-kanak dengan membuang sampah dengan betul ke dalam tong sampah.</p> <p><i>I can set an example for children by properly disposed waste into the collection bins.</i></p> | | | | |
| 2. | <p>Saya menghadiri sebarang kempen/ aktiviti yang berkaitan dengan pengurusan sampah.</p> <p><i>I attend any campaigns/activities that are related to waste management.</i></p> | | | | |
| 3. | <p>Saya menggunakan konsep 3R – “Mengurangkan, Mengguna Semula dan Mengitar semula” dalam kehidupan seharian saya sebagai pendekatan untuk mengurangkan pembuangan sampah.</p> <p><i>I am applying 3R concept – Reduce, Reuse and Recycle in my daily life as an approach to reduce waste disposal.</i></p> | | | | |
| 4. | <p>Saya menyesuaikan diri dengan amalan pembuangan sampah yang betul.</p> <p><i>I am well adapted with the proper waste disposal practices.</i></p> | | | | |
| 5. | <p>Saya ingin mengetahui lebih lanjut mengenai cara pembuangan sampah yang betul.</p> <p><i>I would like to know more about the proper waste disposal manner.</i></p> | | | | |
| 6. | <p>Saya akan mencadangkan cara pembuangan sampah yang betul kepada orang lain.</p> <p><i>I will recommend proper waste disposal manner to other people.</i></p> | | | | |

Bahagian D: Amalan mengenai kaedah pembuangan sampah

Section D: Practices on the waste disposal method

Deskripsi Penilaian:

Assessment Description:

1 = Sangat tidak setuju 2 = Tidak setuju;

1 = Strongly disagree 2 = Disagree

3 = Neutral 4 = Setuju;

3 = Neutral 4= Agree

5 = Sangat setuju

5 = Strongly agree

| | | | | | |
|----|---|--|--|--|--|
| 1. | <p>Jika sampah yang saya buang tidak masuk ke tong sampah, saya akan mengambil dan membuangnya ke dalam tong pengumpulan semula.</p> <p><i>If the waste that I throw does not go inside the collection bins, I will pick up and throw it inside the collection bin again.</i></p> | | | | |
| 2. | <p>Saya selalu mengasingkan sampah mengikut jenis-jenis sampah sebelum membuangnya ke dalam tong sampah.</p> <p><i>I always segregate the wastes according to their type before dispose the wastes into the collection bins.</i></p> | | | | |
| 3. | <p>Saya selalu mengitar semula barang yang boleh dikitar semula sebelum membuangnya ke dalam tong sampah.</p> <p><i>I always recycle things that can be recycled before I disposed it into the collection bins.</i></p> | | | | |

| | | | | | |
|----|--|--|--|--|--|
| 4. | <p>Jika tong sampah penuh, saya akan pergi ke tong sampah yang lain bukannya memenuhkan sampah sehingga ia melimpah.</p> <p><i>If the collection bin is full, I will always go to another collection bin instead of fill up the rubbish until it is overflowing.</i></p> | | | | |
| 5. | <p>Jika saya melihat orang lain membuang sampah di luar tong sampah, saya akan mengambil sampah itu dan membuangnya semula ke dalam tong.</p> <p><i>If I see any wastes that has been thrown outside of the bins by other people, I will pick up the wastes and throw it again into the bin.</i></p> | | | | |
| 6. | <p>Jika tong sampah tidak berfungsi dengan betul, saya akan memberitahu pihak berkuasa untuk menggantikan tong sampah.</p> <p><i>If the bins are improperly functioned, I will tell the authorities to replace the bins.</i></p> | | | | |
| 7. | <p>Jika saya melihat sampah yang tidak dikutip mengikut jadualnya, saya akan memberitahu pihak berkuasa untuk mengutip sampah.</p> <p><i>If I see the rubbish are not collected according to the schedules, I will tell the authorities to pick up the rubbish.</i></p> | | | | |

Bahagian E: Kesedaran mengenai cara pelupusan sampah yang betul

Section E: Awareness on proper waste disposal Method

Deskripsi Penilaian:

Assessment Description:

1 = Sangat tidak setuju 2 = Tidak setuju;

1 = Strongly disagree 2 = Disagree

3 = Neutral

4 = Setuju;

3 = Neutral

4 = Agree

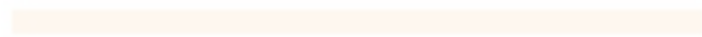
5 = Sangat setuju

5 = Strongly agree

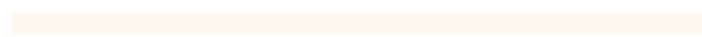
| | | | | | |
|---|---|--|--|--|--|
| 1 | Saya sedar bahawa pembuangan sampah dengan cara yang betul adalah penting. <i>I am aware about proper waste disposal is important.</i> | | | | |
| 2 | Terdapat kempen / aktiviti kesedaran pembuangan sampah yang betul di Jeli untuk mendidik masyarakat. <i>There are adequate proper waste disposal awareness campaigns/activities in Jeli to educate people.</i> | | | | |
| 3 | Saya sedar bahawa pelupusan sampah yang tidak betul boleh membawa kepada penyakit. <i>I am aware that improper waste disposal may lead to diseases.</i> | | | | |
| 4 | Saya sedar bahawa pelupusan sampah yang betul secara tidak langsung membantu pekerja memudahkan kerja mereka. <i>I am aware that proper waste disposal will indirectly help the workers to ease their work.</i> | | | | |
| 5 | Saya mewujudkan kesedaran mengenai pembuangan sampah yang betul di kalangan ahli keluarga saya, rakan-rakan dan lain-lain. <i>I create awareness towards proper waste disposal among my family members, friends etc.</i> | | | | |
| 6 | Saya sedar bahawa konsep 3R sangat penting untuk diamalkan dalam kehidupan seharian. <i>I am aware that the 3R concept is important to be practiced in the daily life.</i> | | | | |
| 7 | Saya sedar bahawa pengurusan sampah yang betul perlu diamalkan oleh semua orang untuk memastikan persekitaran yang bersih. | | | | |



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