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Analyzing Relationship between Attitude and Knowledge of People on Solid Waste Management -An Experimental Study

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Abstract

This study is to find the relationship between attitude and knowledge with regards to solid waste management and also to find effect of aeration-is- intervention with regards to practice. A questionnaire was prepared and was given to selected set of people. The data obtained was analyzed for statistical results and inferences. A correlation was do to find relationship between the variables attitude and knowledge and also regression analysis was done to find out the model fit and there was paired sample t-test conducted to find the before and after intervention of education on the practice related to solid waste management. The Pearson correlation showed with attitude as dependent variable and survey question related to knowledge as independent variable, the results showed few low negative relations and some low positive relations but there was no significant evidence to show that attitude is affected the knowledge. Based on the regression analysis the r squared value was .057 that is 5.7% influence on the dependent value stating that knowledge doesn't have a strong relationship with attitude. Also the practice before and after educational interventionwas studied using paired sample t-test and findings showed a sig values were less than 0.05 indicating that there was difference in the practice before and after the imparting education.

1. Introduction

The insufficient knowledge and attitude on solid waste management is few among the major issues in the growing nations. McAllister (2015). It is true that people who know about solid waste management aren't sure of participating in the process and activities related to the solid waste management.Stating that knowledge and attitude are not related. 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.

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According to McAllister (2015), lack of interest in the environment brings about a culture of non-participation of communities in decision-making processes which enhances lack of responsibility for waste and pollution issues. 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.

Also the practice in the solid waste management is also similar issue people may know about the fact but they are not well trained or notified about the effects of the solid waste management. Thus it has become an important for people to be educated about the practice on the solid waste management thus making them realise that practice is a necessary part that deals with daily routine .of the people. So if the people are educated about the necessity: and importance of the solid waste management practice then there will improvement and changes in the way people will see the things.

In this study researcher has focused on two factors that relationship between attitude and knowledge and also the effect of education intervention on the practice of the solid waste management. And analysed what the effects of these things on the solid waste management.

2. Literature review

Attitude and knowledge

MalgorzataGrodzitiska-Jurczak (2003) studied about the relation between education, knowledge and action for better waste management in Poland and found that action of the knowledge of the people and action doesn't relate to each other but the information when provided that when education is imparted to the people, they show some change in their knowledge and pattern towards the waste management.

Educational intervention on practices

Ali Akbar Babaei, NadaliAlavi, GholamrezaGoudarzi, PariTeymouri, Kambiz Ahmad, Mohammad Rafiee (2015), studied household recycling knowledge, attitudes and practices towards solid waste management and stated that the people had positive intent on attitude and willingness to take part in the waste management recycling behaviour but the thing is they has only very less knowledge on the entire waste management system. Thus when they were given training and education they showed increased intent and knowledge towards the activities thus stating that education is important base for practices, knowledge and action on recycling behaviour.

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3. **Research objective, conceptual framework and hypothesis**

In this study we have apparently used 2 objectives and hypothesis where we will relate knowledge - attitude and also study changes on practice before and after intervention of education. Now let's see the specific objectives of the study,

1. To find relationship type between attitude and knowledge with reference to solid waste management
2. To find the intervention effect of education inter on the practices related to solid waste management.

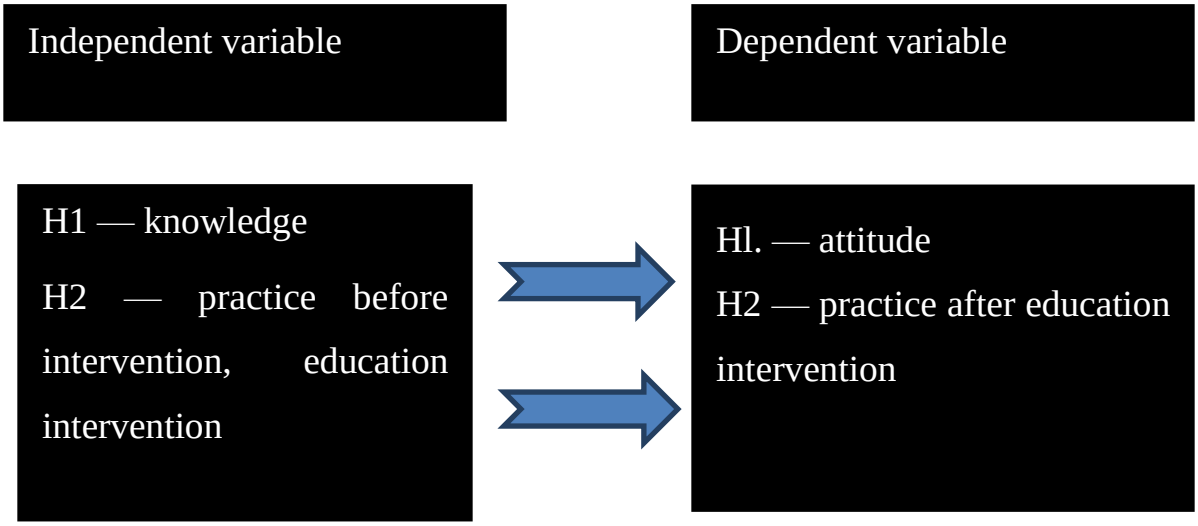

Figure 1 gives the conceptual framework for the study

The researchers used two different hypotheses to determine the relationship between attitude and knowledge on solid waste management and also to find the effect education as intervention to the practice of solid waste management. The following hypothesis were formed to study this

H1: The attitude and knowledge on regarding solid waste management amongst selected Participant.

The researchers MalgorzataGrodziriska-Jurczak (2003), studied the knowledge and actions of people regards to solid waste management and found that the people had satisfactory knowledge about the solid waste management, and they showed some actions related to solidwaste management but there was no significance between knowledge and action carried out showing that people with knowledge may not show attitude similar to their knowledge.

H2: The practices followed or adapted by selected respondents, before and after imparting education

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According to **Ali akbarbabaei (2015)**, the participants were tested for their knowledge, attitude and practice towards recycling behaviour. The traits found were stating that the education had a huge effect on the behaviour of the people thus giving us a strong statement that the education has an effect of change on the people behaviours like knowledge, attitude and practice.

4. Research methodology

In this research survey was conducted to collect the data from people. A total of 400 questionnaires was distributed among the selected individual and the 400 answers were recorded for the study. The questionnaire contained various sections of study starting from descriptive study (name, age, sex, etc.), next there were information's with regards to knowledge, attitude, practice, data before and after intervention etc. thus for this study the data sets knowledge, attitude and study of practice before and after education were taken. Were H1 has 5 scale starting from SDA TO SA and the H2 had there scales (all the time, sometime, never).

The study of data was done and the analysis work was carried out using the analysis tool SPSS (statistical package for social sciences) and the various interpretations were made with the help of the results.

As for the study is concerned there were three type analysis conducted to determine the hypothesis state. For H1 correlation and regression was done to analyse the relationship between knowledge and attitude. For H2 paired sample t-test was carried out to find the effect of education as intervention on practices related to solid waste management. The study had various dependent variables and also independent variables which are mentioned clearly in table1.

5. Research findings

H1: The attitude and knowledge on regarding solid waste management among selected Participant.

From table 1 we can interpret the following finding related to Hl. From the total of 400 sample data, a test of correlation was done between the knowledge and attitude to find the relationship between the two variables. There 8 low positive (.150, .037, .109, .079, .101, .079, .022, .012) values and 2 low negative (-.030, -.041) values. Giving an overall impression that there is no significance in the

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data and this can be concluded by saying that there is no strong positive or negative relationship between attitude and knowledge in other words attitude and knowledge has no relationship.

From table2 we can see that the r-squared value as .057 stating that the term knowledge has a 5.7% effect on the variable -attitude stating that there is no strong relationship between the two variables. From table 3 we can see that the significance is .01 1 it shows that the model is high so that this model gives the correct result and exact fit to the problem statement taken.

From table 4 we can find effect of each and every knowledge aspect with respect to attitude, we can conclude the following statement from the table5 results on regression.

There will be increase of 0.406 per unit in attitude with respect to the knowledge variable what is waste recycling.

Next is there will be decrease of -0.175 per unit in attitude with respect to the knowledge variable Do you think plastic is biodegradable.

There will be increase of 0.224 per unit in attitude with respect to the knowledge variable Do you think paper is biodegradable.

There will be decrease of -0.413 per unit in attitude with respect to the knowledge variable Do you think daily food waste is biodegradable.

There will be increase of 0.095 per unit in attitude with respect to the knowledge variable Do you think improper waste management leads to serious environmental problem.

There will be increase 0.126 per unit in attitude with respect to knowledge variable Do you think that use and throw products and use of plastic carry bags and bottles degrade environment. There will be increase of 0.154 per unit in attitude with respect to knowledge variable Do you think that improper management of solid waste is responsible for epidemic like chickengunya, Dengue etc. There will be decrease in -0.049 per unit in attitude with respect to knowledge variable Do you think throwing waste leads to Unsanitary Conditions and Clogging of drain results in health hazards. There will be decrease of -0.383 per unit in attitude with respect to knowledge variable Do you have an idea about 3 R's, (Reduction Reuse and Recycling). There will be decrease of -0.062 per unit in attitude with respect to-knowledge variable- Do you think that public education programmes leads to successful solidwastemanagement.

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Table-1 Correlation for relationship between knowledge and attitude.

		Public attitude	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Public attitude	Pearson Correlation	1	.150	.037	.109	.041	.079	.101	.079	.022	.030	.012
	Sig. (2- tailed)		.003	.462	.029	.415	.114	.043	.113	.667	.551	.818
	N	400	400	400	400	400	400	400	400	400	400	400

Q1-Do you know what is waste recycling.

Q2- Do you think plastic is biodegradable.

Q3- Do you think paper is biodegradable.

Q4- Do you think food waste is biodegradable.

Q5- Do you think improper waste management leads to environmental pollution.

Q6- Do you think use of plastics and carry bags degrade the environment.

Q7-Do you think improper solid waste management is responsible for epidemic diseases.

Q8- Do you think throwing of waste in open place leads to unsanitary condition and clogging of drains.

Q9- Do you have an idea about 3R's.

Q10- Do you think public education programmes leads to successful solid waste management.

Table 2- r-square value for the relationship between knowledge and attitude Model Summary

Model	**R**	**R Square**	**Adjusted R Square**	**Std Error of the Estimate**
1	**.239[a]**	**.057**	**.033**	**1.19051**

a. Predictors: (Constant), Do you think that public education programmes leads to Successful solid waste Management, Do you think that use and throw products and use of plastic carry bags and bottles degrade environment, Do you have an idea about 3 R's , Do you think plastic is bio —degradable, ,D9 you think daily food waste is biodegradable, Do you think that improper management of solid waste is responsible for epidemic like chickengunya, dengue etc, Do you think throwing waste leads to Unsanitary Conditions and Clogging of drain , Do

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you think improper waste management leads to Serious environmental problem,' Do you know what is waste recycling, 'Do you think paper is biodegradable.

Table 3 - Regression anova for relationship between knowledge and attitude ANOVA

Model Sum of Squares df Mean Square F Sig.

Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig**
Regression	33.266	10	3.327	2.347	.011[b]
Residual	551.332	389	1.417		
Total	584.598	399			

a. Dependent Variable: Public attitude

b. Predictors: (Constant), Do you think that public education programmes leads to Successful waste Management, Do you think that use and throw products and use of plastic carry bags bottles degrade environment, Do you have an idea about 3 R's Do you think plastic is bio degradable, Do you think daily food waste is biodegradable, Do you think that improper management of solid waste is responsible for epidemic like chickengunya, dengue etc, Do you think thro: waste leads to Unsanitary Conditions and Clogging of drain , Do you think improper management leads to Serious environmental problem, Do you know what is waste recycling, think paper is bio - degradable .

Content	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig**
	B	**Std.Error**	**Beta**		
Constant	**4.417**	**.663**		**6.662**	**.000**
Q1	**.406**	**.153**	**.165**	**2.655**	**.008**
Q2	**.175**	**.143**	**-.071**	**-1.228**	**.220**
Q3	**.224**	**.164**	**.093**	**1.363**	**1.74**
Q4	**-.413**	**.153**	**-1.62**	**-2.696**	**.007**
Q5	**.095**	**.150**	**.039**	**.634**	**.526**
Q6	**.126**	**.074**	**.087**	**1.695**	**.091**

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Q7	**.154**	**.141**	**.058**	**1.086**	**.278**
Q8	**-0.49**	**.136**	**-.019**	**-.358**	**.720**
Q9	**-.383**	**.272**	**-.072**	**-1.410**	**.159**
Q10	**-.062**	**.183**	**-.017**	**-.339**	**.735**

Table 4 - regression analysis for relationship between knowledge and attitude Coefficients[a]

a. Dependent Variable: Public attitude

H_2: The practices followed or adapted by selected respondents, before and after imparting education

Now we will see the results and findings for the H2. From table 5 we see that most of the variables before intervention was around 2.5 (1- all the time, 2- sometime, 3- never) which states that practices were around never mostly and few in sometime area, which clearly show that they were not aware of good practices before the intervention of education. Now after the education intervention the mean is around 1.2 which states that the 'variables changes to all the time and very few sometime, here the people started to take positive step towards the practice stating that the education has change in the practice in a positive manner.

From figure 2 it can be seen that all the variables have a significant value of .000 which state that the two variable within the group has the good and positive impact with each other. Thus we can say that the education has an impact on the practice with help of before and after intervention study.

Table 5 — Paired sample statistics for education intervention on practice

Paired Samples Statistics

	Mean	**N**	**Std.Deviation**	**Std.Error mean**
Pair 1 Before Intervention-Q1	**2.64**	**50**	**.485**	**.069**
After Intervention-Q1	**1.22**	**50**	**.418**	**.059**
Pair 2 Before Intervention -Q2	**2.60**	**50**	**.495**	**.070**

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After Intervention-Q2	**1.22**	**50**	**.418**	**.059**
Pair 3 Before Intervention-Q3	**2.62**	**50**	**.490**	**.069**
After Intervention –Q3	**1.14**	**50**	**.351**	**.050**
Pair 4 Before intervention-Q4	**2.58**	**50**	**.538**	**.076**
After Intervention-Q4	**1.16**	**50**	**.370**	**.052**
Pair 5 Before Intervention-Q5	**2.84**	**50**	**.370**	**.052**
After Intervention-Q5	**1.14**	**50**	**.351**	**.050**
Pair 6 Before Intervention-Q6	**2.82**	**50**	**.388**	**.055**
After Intervention-Q6	**1.12**	**50**	**.328**	**.046**
Pair 7 Before Intervention-Q7	**2.76**	**50**	**.431**	**.061**
After Intervention-Q7	**1.12**	**50**	**.328**	**.046**

Figure 2 - Paired sample t-test for education as intervention on practice

Paired Samples Test

	Paired Differences						
	Mean	**Std Deviation**	**Std Error Mean**	**95% Confidence Interval of the Difference**	**t**	**dt**	**Sig (2-tailed)**

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Pair 1 Before Intervention-Q1 After Intervention-Q1	1.420	.609	.086	1.247	1.593	16.484	49	.000
Pair 2 Before Intervention -Q2 After Intervention-Q2	1.380	.697	.099	1.182	1.578	14.007	49	.000
Pair 3 Before Intervention-Q3 After Intervention – Q3	1.480	.646	.091	1.296	1.664	16.188	49	.000
Pair 4 Before intervention-Q4 After Intervention-Q4	1.420	.673	.095	1.229	1.611	14.924	49	.000
Pair 5 Before Intervention-Q5 After Intervention-Q5	1.700	.505	.071	1.556	1.844	23.800	49	.000
Pair 6 Before Intervention-Q6 After Intervention-Q6	1.700	.505	.071	1.556	1.844	23.800	49	.000
Pair 7 Before Intervention-Q7 After Intervention-Q7	1.640	.563	.080	1.480	1.800	26.605	49	.000

6. Conclusions and recommendations

The following recommendations can be made with the help of the study, the attitude of the people may not change with the respect to knowledge but there shall always be point like campaign, information's and live demonstrations that will help people to get more awareness and they will automatically change their approach and attitude towards the solid waste management. This is clearly evident from the second hypothesis where when people are educated about the good and bad

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of the solid waste management their practise changes towards positive side making it clear that a good education or information change the way the people behave.

From the above study the conclusions we can derive is that the knowledge of the people has nothing to do with the attitude stating that though people has a knowledge they may not follow or show positive attitude towards the goodness of the solid waste and also the education when done the good mind-set and behaviour changes towards the solid waste management. Thus it is clearly indicating that the when people are needed to be stuffed with information and awareness regardless they have knowledge or not. Making it clear that the imparting education, information and awareness will make change in people behaviour,

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