CHAPTER V

SUMMARY AND CONCLUSION

Improper solid waste disposal practices and lack of awareness on waste management awareness are the major challenges across the world. Most of the countries face severe environmental hazards due to improper solid waste management. As a result, concern for effective solid waste management procedures is an important aspect of the country's long-term growth. The importance of solid waste management, as well as people's awareness levels, are explored in this study, which shows the outcomes before and after an educational intervention on solid waste management in Rameswaram households. In this study, there are four goals that must be met. The first goal is to evaluate women's socioeconomic factors. The researcher looked at the existing behaviors of women in the targeted area in terms of solid waste management and examined their knowledge, attitudes, and practices. With respect to the major findings, the last objective of the study is to assess the impact of educational intervention on solid waste management among women in the targeted area.

In this sociological study, Rameswaram town from Ramanathapuram district has been selected. The study was conducted in 8 wards with 400 Households using the stratified sampling. Interview schedule with structured questionnaire is used as the tool to collect the data from the selected households regarding solid waste management. Percentage analysis, chi square analysis and correlation are used in the analysis of the data.

SOCIO ECONOMIC CHARACTERISTICS OF WOMEN

Seventy-four percentage of the women in the study area were between the ages of 31 and 40, according to the findings. About eighty-five percentage of them had completed their school education, among them eighty-eight percentage belongs to Hindu religion. When analyzed the community wise fifty-three percentage comes from the most back ward caste, greater portion (66 per cent) of the women live in nuclear families. Analysis on occupation says that fifty-nine percentage of the women have income by fishing. Larger number (61 %) of the women come under the category of monthly income of Rs 20000- 30000. About 74 per cent of the women have 1 to 5 members in their family.

EXISTING CONDITIONS OF THE TARGET AREA ON SOLID WASTE MANAGEMENT.

According to the study, the biodegradable food debris is the major source of solid waste generation. Seventy eight percentage of the women response to tea and coffee dust followed by 71 per cent of paper waste and Food packets (74 %) of the waste generated at household level. Under the heading rejected or hazardous waste, seventy one percentage is occupied by the electronic items. The study on the existing practices on waste disposal methods conclude that forty eight percentage of the households choose the dumping method to dispose their food waste. The study on disposal of plastics says that sixty three percentage of the households throw them outside their houses. With reference to disposal of cardboards and paper, majority (59 %) of the households throw them in the open places or put in the dustbin. Sixty nine percentage of the households exchange the utensils to buy new things and glass waste materials are thrown outside by sixty-six percentage of the households.

Storage and disposal of solid waste

Solid waste is normally stored in plastic container, polythene bags, and old vessels and dumped in the back yards of the house. Thirty five percentage of the households use the buckets as the container to store waste. With reference to disposal of solid waste, forty eight percentage separate the waste before disposal and twenty nine percentage of them use the backyard of their house for keeping the dustbins. The study on the number of disposal bins used in the house revealed that fifty two percentage of the households have no dustbins.

Information on garbage collection

Information on garbage collection is a very important factor because improper waste management results in the environmental degradation. Among the methods adopted for garbage collection fifty four percentage of the households use community dustbins. Seventy five percentage of households transport the waste themselves from their houses. Regarding the frequency of disposal of waste, twenty nine percentage of the households dispose their waste once in a week. Half of the households do not use the waste collection service and the reason for not using collection service is understood as that forty four

percentage of households are not satisfied with the frequency of time. About fifty eight percentage of the households are dissatisfied with the collection service. Forty nine percentage of the households are not satisfied with the collection service because the frequency of collection service is poor.

Mode of operation on garbage collection service

Considering the authorities for collection of waste, forty one percent of the households employ choose to have private organisations. And 35 per cent prefer to have community organization for collection of waste in their area. About forty nine percentage of the households use tricycle for transportation of waste, while 22 per cent using lorry and it is weekly basis. About thirty one percentage of the households say clearance of waste is done once in two days. 18 per cent of the women got a facility very occasionally. Provisions of community large bins by authority is used by 50 per cent of the women. Forty nine percentage of the households prefer to have the community bins at the corner of the streets but 25 per cent of the women responses that community bin is in appropriate disposal site. About the distance between residence and location of community large bin, forty one percentage of the households have their bin within 20-30 mtrs. And 30 per cent of the women having bin above 30mtrs. Fifty nine percentage of the households are dis satisfied with the maintenance of large bins. The reason for not satisfied because twenty five percentage of the households have responded that odour and unhygienic appearance is the reason for the dissatisfaction in using large bins. And 12 per cent because of height of the bin and 16 per cent responses that due to spreading of wastes around bin.

Level of satisfaction on present solid waste management

On the level of satisfaction regarding the existing solid waste management fifty three percentage of the households have opined that frequency of collection of waste is well maintained.51 per cent of the women were satisfied in provisions of community bins presented in locality. And behavior of waste collecting workers was satisfied by forty nine percentage of the women.

Prevailing environmental condition of the study area

The study summarizes about seventy seven percentage of the households conclude that present environmental conditions has been polluted. Only 8 per cent of the women

response that surface water gets contaminated. About the reason for environmental degradation, twenty two percentage of the households have opined that lack of knowledge on waste disposal and lack of awareness on environmental protection are the reasons. 19 per cent of the women conclude the reasons for environmental degradation that due to lack of space and provisions for disposal. Only 14 per cent gave reason that improper collection of waste by collection service.

Problems faced by the people due to accumulation of household waste

The researcher findings have revealed that seventy one percentage of the households strongly agree that due to accumulation of solid waste the dumping places become the breeding places for insects, rodents and mosquitos. 44 per cent of the households strongly agree that over flow of waste is main problem faced by the people due to accumulation of household waste. While 49 per cent of the women strongly agree that street animal menace is the main problem. Only 10 per cent of the women disagree with the opinion of soil become infertile due to accumulation of waste in one place.

Health hazards due to improper waste management

Thirty two percentage of the households reveals that dysentery is the major health hazard faced by the people due to improper waste management. Very meagre percentage of the women responses malaria. Regarding the causes for diseases thirty seven percentage of the women opine that pollution is the main cause for disease infections. 16 per cent of the women gave reason that unaware of causative agents of diseases.

Opinion about safe disposal of waste

The study shows that fifty three percentage of the women have given their opinion about safe disposal of waste and they are concerned about the future environment. 29 per cent of the women more concerning about the people dumping the waste on road side and it creates the environmental degradation.

Factors responsible for environmental degradation in Rameswaram

Thirty two percentage of the women opine that improper solid waste management is the main factor responsible for environmental degradation in Rameswaram. 29 per cent gave response that floating population is the main factor since it is tourist place. Only 7

per cent of the women opine that pollution and lack in law enforcement is the factors responsible for environmental degradation in Rameswaram.

Causes for enormous solid waste generation

Sixty seven percentage of the women strongly agree that population growth is the main cause for enormous solid waste generation while 2 per cent of the women strongly disagree with this factor.About twenty six percentage agree attitude of the people is the main cause for more solid waste generation. 66 per cent of the women strongly agree that floating population is the main causes for enormous solid waste generation while 8 per cent of the women strongly disagree in this cause. And lack of knowledge on waste management is agreed by the forty three percentage of the women. Seventeen percentage of the women are neutral that the cause for more solid waste generation is due to poor municipal services.10 per cent of the women strongly disagree that poor municipal services is not be the cause for more solid waste generation.

Hiring charges for collection of garbage

Fifty six percentage of the women are willing to pay for garbage collection service. While twenty nine percentage of the women are not willing to pay and they response that they don't need collection service. Regarding the amount to be paid, seventy one percentage of the households are ready to pay 5-10 %. The suggested method of collecting fee for solid waste management that forty nine percentage opine that government can collect the fee as municipality service charges. About preference of collection service, forty seven percentage of the women prefer private companies.

The study attempts to analyses the association between the socio economic variables and the problem faced by the people due to accumulation of solid waste.

Among the selected socio economic characteristics of the households it is observed that based on chi square analysis, there is a significant association between income and the attitude towards the problems faced by the people due to accumulation of solid waste at 1 per cent significant level . Income plays an important role in increasing of purchase of materials that lead to more solid waste generation.

Knowledge, Attitude and Practices on solid waste management for the selected households is assessed before and after giving educational intervention their improvement level is assessed.

Knowledge on solid waste management

Regarding prior knowledge on storage of solid waste, majority (100%) of the households don't know how E waste should be stored. After educational intervention, ninety percent of the women have gained knowledge on E waste. The study concludes that after educational intervention on the process of disposal of solid waste, ninety six percentage of the women have gained knowledge on the concept of wealth from waste and that blue colour dustbin is meant for non-biodegradable waste. Ninety five percentage of the women have acquired knowledge that waste can be segregated as recyclable and non-recyclable materials. The study concludes that through educational intervention, policies and laws on solid waste management could be imparted to the people. As a result after educational intervention, ninety four percentage of the women have gained knowledge about the municipal solid waste management handling rules, 2000. Ninety four percentage of the women have gained knowledge on spot fine rule formulated under solid waste management Rule 2016. After the educational intervention among the households, majority of the women have come out with good results in acquiring knowledge on water borne diseases and their causes. Majority (100%) of the households conclude that unsanitary conditions due to improper solid waste management and clogging of drain result in health hazards.

Attitude on solid waste management

Regarding generation of waste, ninety nine percentage of the women agree after education intervention that reuse of the plastic bags is good for reduction of plastic waste. About ninety percent of the women agree that regular collection of solid waste is one of the important aspects in garbage management. After intervention ninety percent of the women agree that picking plastic waste and selling them helps to manage waste. On transport and transfer of waste ninety nine percentage of the women agree that they could use large bins to manage transfer of waste. About ninety five percentage of the women have understand that improper incineration and disposal of waste leads to many health hazards.

Practices on solid waste management

Regarding sorting of waste, majority (100%) of the women conclude that they could sort the recyclable and non-recyclable waste on their own compared to ninety nine percentage that never sort the waste before educational intervention. Educational intervention shows positive results in waste reduction as ninety eight percentage of the household respond that they buy what they need and avoid more solid waste generation. Regarding reuse of waste, majority (100%) of the women have started reusing the papers, old cloth, and plastic covers.

The study assess the difference between knowledge, attitude and practice score with socio economic variables of the households to analyse the educational intervention level. The findings show the impact level of educational intervention.

With regard to knowledge level after intervention among selected women, the socio economic variables are found significant at the level of 1%. The knowledge scores on the socio economic variable are found with the knowledge scores with the frequency of 25% and it has acquired as lower significant level as 1%. When the level of education is considered after intervention the illiterate, school level, and graduates acquired a frequency of about 41% and shown with lower significance at 1% level. With regard to income level of the selected women after intervention it is observed with F value of 47.443 and is found with the lower significance rate as 1%. Regarding the size of the women test value is observed as 3.643 and it is also found with the lower significant level as 1 per cent. There is a significant difference ($P<0.01$) on attitude score among age distribution after educational intervention. This implies change of attitudes among the age distribution and it is statistically significant.

After training, the attitude score measured in mean and S.D shows improvement among households belonging to Hindus, and Christians, 30.08, 2.93 and 35.95, 2.76, respectively with significant difference between the groups with t value as 8.112, which is higher than the attitude score before training. Regarding education, there is a visible significance between these three categories ($p < 0.01$) with F value of 40.277. After educational intervention, the measured attitude score of MBC category (35.50) is comparatively higher than SC (24.80) and BC (29.78) categories. The results show significant difference between the categories with F value of 88.894.

Under the heading, type of family there is visible and significant difference between the groups after the training. Their attitude has improved with t value of 10.341 which is lesser than the t value 11.714 which was observed before training. Regarding occupation, the attitude score of women after the intervention is higher among the category of business (37.75, 3.06), followed by private workers (34.75, 1.82), government workers (34.60, 0.52), and fishing people (29.43, 2.53). The f value (48.676) is found to be with greater significant difference after the educational intervention. The study shows the statistical difference between before and after the educational intervention. The mean and S. D value (37.23 and 2.65) have improved with scores of (31.25 and 3.73). The F value after the educational intervention (82.394) shows significant difference at 1 per cent level The mean and S. D of women grouped under 1-5 members is 38.00 and 2.54, whereas mean and S. D of above 5 members is 34.92 and 1.26. After education intervention, the mean and S.D of 1-5 members has increased with t value (9.115) and it to be the significant at 1% level.

The f-value (175.042) with regard to Practice Improvement Score for age distribution(Mean =25.60; S. D=5.87) also shows $P<0.01$, indicating a significant difference in the Practice score-after for age distribution. However, from the F- value it is clear that Practice scores after intervention are lesser than the Practice score- before under age distribution. The results of the study conclude that practice score has decreased after the educational intervention among the religions with t value (18.173) and it is significant at 1per cent level.

The mean and S.D of the joint family before and after the intervention is evenly distributed with t value (5.578 and 4.827). After the educational intervention practice score has not increased and it is statistically significant at 1 per cent level. The practice score of women after training is higher in category under fisheries (22.36, 1.16), followed by government workers (24.80, 1.55), private workers (19.00, 2.70), and business (9.88, 2.85). The f value is 403.017, with greater significance between the groups ($p < 0.001$). After intervention, the practice score has improved with the mean of 25.60 and S. D of 5.87. The F value is 202.737 with mean significant difference between the income and the practice score.

Comparison of knowledge score before and after the educational intervention

The average knowledge score before intervention has been 2.29 which has increased to 4.73 after intervention and that there is significant difference between before and after intervention in the mean knowledge scores. And significant at 1 per cent level

Comparison of Attitude score before and after the educational intervention

From the study, the t-value is found to be 83.860 which is significant at 1 per cent level. Hence it is concluded that there is 1 per cent level in before and after intervention in the mean attitude scores.

Comparison of Practice score before and after the educational intervention

It is concluded from the study, that the t-value is found to be 43.645 which is significant at 1 per cent level and it shows that there is significant difference between before and after intervention in the mean practice scores.

CONCLUSION

Waste is dumped indiscriminately and ends up in blocking and improper waste management which leads to environmental degradation and spread of infectious diseases. From the study it revealed that the awareness on solid waste management plays a vital role in waste management. The knowledge, attitude and practices on solid waste management in the community cover all the issues relates towards the proper waste management, the educational intervention programme among the women shows the positive feedback in solid waste management.

RECOMMENDATIONS

Based on the findings from the study the following recommendations are made:

To the Government

- Awareness programmes on solid waste management among the public should be encouraged by government and non-government organisations.
- Government should create more awareness on recyclable materials and adopt strict laws.
- Including environmental curriculum at school level itself.

To the Local bodies

- Provisioning separate dust bins for disposal of waste.
- Community large bins should be placed in all areas and it should be emptied within a week
- Encourage and engage self-help groups to create awareness among the women on waste disposal.
- Collection service should maintain the regular collection of waste from the units.
- Supply of safety equipment to waste collectors.
- Fine should be collected on the spot by volunteers from municipality from those who dispose waste in open place.
- Creation of awareness on present policies and rules regarding solid waste management.
- Gifts and cash awards can be announced to households for generating less waste.
- Creating awareness on the impact of improper waste management through local bodies and NGOs (Non-governmental organization), and CBOs (Community based organizations).
- Recovery parks can be constructed in all villages.
- Eco clubs can be implemented by local bodies and panchayat
- Imparting knowledge on solid waste management through local bodies.
- Open dumping of waste should be strictly restricted and managed by local bodies.
- Rewards should be announced for cleaner villages.
- Environment education by local panchayat to public should be encouraged.

To Self-help groups/ Non-governmental organizations

- Dumping the waste in open place, river side and nearby residential areas, must be avoided.
- Creating awareness and encouraging people to use Bio gas plants
- Encouraging the households to buy recyclable products.

- Exhibition can be conducted to explain the effects of improper solid waste management.
- Dramas, puppet shows, can be arranged to impart the education on solid waste management among college students.
- Creating awareness on types of wastes and their respective color of bins to be used to dispose the waste.

To the public

- People should take up responsibility in their village to keep the surroundings clean.
- Public should support waste pickers.
- Waste should be segregated at household level so that it can minimize the waste generation.
- Plastic bags uses can replaced by using cloth bags.
- Inculcating the habit of disposal of waste in waste bin among the children.