

KAP Study on Solid Waste Disposal Practices among Households in an Urban Area of Chengalpattu Municipality in South India

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Abstract

Introduction: Improper solid waste disposal is identified as a major public health threat throughout the world. The key to control the hazards and diseases caused by improper waste disposal rests not only on the efforts taken by the health officials and local body administrators, but also on the community's knowledge, Attitude and Practice regarding safe waste disposal methods.

Objective: To assess the knowledge, Attitude and Practice of solid waste disposal practices among the households in an urban area of Chengalpattu municipality in southern India and also to determine the factors influencing the solid waste disposal practices among the study population.

Methodology: A community based cross-sectional study was done among 150 households selected through multistage random sampling from Chengalpattu Municipality of Tamil Nadu in Southern India, from July to August 2023. Participants who were 18-60 years and willing to participate were included. Semi structured questionnaire was used to collect data regarding the socio demographic details & knowledge, Awareness and Practice of the participants. Data was entered in Microsoft Excel and analysed using SPSS version 25.

Results: In this study, mean age of participants was observed to be 45.91 (\pm S.D. 8.63). 85.3% of the participants had adequate knowledge, 48% had positive attitude and 36% had good practice. Statistically significant association was found between Age($p=0.035$), Education ($p=0.047$) and knowledge regarding solid waste disposal. Statistically significant association was found between gender($p=0.009$), education($p=0.051$), type of house (0.001) and practice regarding waste disposal.

Conclusion: The study found adequate knowledge in majority of the participants, however the attitude level and practice regarding proper waste disposal could be improved. Measures to encourage people towards adopting a committed attitude and good practice, regarding proper solid waste disposal can help achieve the goal of 'Clean India'.

Keywords: Attitude, Knowledge, Practice, Solid Waste Disposal.

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Introduction

Solid waste refers to any type of unwanted or useless solid materials like garbage, trash, refuse or other discarded materials generated from combined residential, industrial and commercial activities in a given area. It can be categorized according to the site of waste generation, for example as municipal solid waste, health care waste and e-waste. Globally over 2 billion tons of municipal solid waste are produced annually[1].

Municipal Solid Waste typically includes food waste, packaging materials, disposable covers,

polythene bags, household items, clothes, shoes, and personal hygiene products[2], Management of household solid waste disposal is a major problem in both rural & urban households.

Improper waste disposal can lead to adverse health outcomes especially in children & sanitary workers, Favours spread of vector-borne diseases like malaria and dengue and also harms environment through water, soil and air contamination[1]. With a total output of nearly 3.5 million metric tons annually, plastic waste

generation in India has grown as a significant environmental concern in recent years[3].

According to Global Waste Management Outlook 2024, Municipal solid waste generation is predicted to grow from 2.1 billion tonnes in 2023 to 3.8 billion tonnes worldwide by 2050(2). North America and South East Asia contributed to majority of the municipal solid wastes generated worldwide. India generated about 62 million tonnes of solid waste during the year 2015, and this was projected to go up to 165 million tonnes by the year 2031[4]. Maharashtra, was by far the largest Municipal Solid Waste producing state in India, with volumes surpassing 22,500 metric tons per day as of 2021[5]. The South Indian State of Tamil Nadu, consisting of 649 urban local bodies, produces approximately 16,066 Tonnes of solid waste per day[5]. In the state's capital city of Chennai alone, about 5,000 metric tonnes of solid waste is collected and removed from the city every day, of which 68% comes from houses and 14% from schools, colleges and institutions[6].

On October 2nd 2014, Government of India launched Swachh Bharat Abhiyaan, the country's biggest-ever cleanliness drive costing over 10,600 million USD for 5 years in 4,041 towns in which Solid Waste Management was considered as one of the six components. One of the objectives of Swachh Bharat Abhiyaan is to ensure door-to-door garbage collection and proper disposal of municipal solid waste in all the 83,000 wards in urban areas by 2019[7].

Recently, The Government of Tamil Nadu, as a part of its commitment towards ensuring proper solid waste management, has deployed silver coloured metal bins, 3000 battery operated vehicles for primary garbage collection, and 300 Heavy Motor Vehicle (HMV)/ Light Motor Vehicle (LMV) for secondary garbage transportation with focus on improving Solid waste segregation, waste exchange platforms and eco-friendly garbage collection.[8]

In spite of all the efforts taken, improper solid waste disposal continues to be a major public health problem in cities of India, causing severe health hazards to people and also environmental contamination. Proper solid waste management can be achieved only by the combined and co-operative efforts of both people and Government bodies acting together with a strong will.

It is now well known that efficient solid waste management actually starts at every individual's household, from proper waste segregation, storage and disposal practices, to adopting measures to encourage waste minimisation and waste recycling. Thus, assessment of the Knowledge, Attitude and Practice of the community would play a very important role in guiding public health and Local body administrators to plan, design and implement

initiatives for more efficient solid waste management.

Hence, the present study was conducted to assess the knowledge, Attitude and Practice of solid waste disposal practices among the households in an urban area of Chengalpattu municipality in southern India and also to determine the factors influencing the solid waste disposal practices among the study population.

Methodology

Study Settings, Design and Period

A community based cross-sectional Study was done among the households residing in Chengalpattu Municipality of Tamil Nadu in Southern India, to assess their Knowledge, Attitude & Practice regarding solid waste disposal practices and also to determine the factors influencing their solid waste disposal practices, from July to August 2023 (n= 150).

Inclusion and Exclusion Criteria

All households that have been dwelling in the study area for at least 1 year prior to the start of the study were included. Persons of both the sexes aged 18-60 years who were available in the selected households at the time of the visit and willing to participate in the study were included. Those who were residing in the area for a period of less than one year before the start of the study, people who were not willing to participate in the study and those households which were locked even after two visits were excluded.

Sample Size Calculation and Sampling Method

Based on study done by Dr. Abhay s et al, in an urban slum area of Nalgonda town, knowledge about waste segregation and disposal was 56.7%, considering a confidence interval of 95%, relative precision of 15%, and with 10% excess sampling to account for non-response, the sample size was calculated and rounded at 150. Multistage sampling was done. Chengalpattu Municipality had a total population of 70056 people residing in 17514 households, belonging to 33 wards. Out of this, 3 wards were selected by simple random sampling technique using lottery method. Population of the 3 selected wards included 8,294 people living in 2,086 households.

The study was undertaken among 50 households from each of the three selected wards by simple random sampling, to reach the desired sample size(n=150).

Data Collection Procedure

Data was collected by face-to-face interview method using a semi structured questionnaire. The interview was conducted privately and participants

were assured of the confidentiality of the interview. Informed written consent was obtained from each of the study participants. A copy of participant information sheet was provided to each of the participants.

Data Collection Tool

The study tool was a Semi Structured Questionnaire with two sections

Section A

This section collected sociodemographic details such as age, sex, education, occupation, type of family, number of family members, and type of house of the study participants. The socio-economic status was classified based on Modified BG Prasad scale.

Section B

- This section contained questions which assessed people's knowledge, Attitude and Practice regarding waste segregation, disposal, minimization, and recycling. Knowledge,

Attitude and Practice were scored with 1 mark for every correct answer and 0 mark for every incorrect answer and the median was taken as cut off point.

- Inadequate Knowledge was considered for those who scored ≤ 3 , Negative Attitude for those who scored ≤ 1.5 and Poor practice for those who scored ≤ 3 .

Data Analysis

The data was entered in MS Excel and was analysed using SPSS Version 25. Appropriate descriptive and inferential statistics like Chi square test, Fischer's Exact test was done and p value of <0.05 was taken as significant.

IEC Approval

Ethical approval for the study was obtained from the Institutional Ethical Committee of Govt Chengalpattu Medical College.

Results

Table 1: Socio demographic details of study participants (n=150)

Variables		Frequency	Percent
Age	< 30 years	10	6.7
	30-50 years	80	53.3
	>50 years	60	40.0
Gender	Male	38	25.3
	Female	112	74.7
Education	Illiterate	13	8.7
	Up to middle	48	32.0
	Up to higher sec	56	37.3
	Graduate	33	22.0
Occupation	Unemployed	92	61.4
	Employed	58	38.6
Socio economic status	I (Upper Class)	24	16.0
	II (Upper Middle Class)	98	65.3
	III (Middle Class)	23	15.3
	IV (Lower Middle Class)	5	3.3
	V (Lower Class)	0	0
Type of Family	Nuclear	105	70.0
	Joint	45	30.0
Type of House	Pucca	112	74.7
	Semi pucca	4	2.7
	kutchha	34	22.7

The Study participants included 38 males and 112 females. Mean age of the study participants was observed to be 45.91 (\pm S.D. 8.63). Average family size was 3.89 (\pm SD1.64) and 105 (70%) participants belonged to nuclear family. Out of 150 participants, 56 (37.3%) were educated up to higher

secondary level and 98 (65.3%) belonged to social class II according to Modified BG prasad scale of socioeconomic status classification for the year 2023. About 92 (61.4%) participants were unemployed and 112 participants (74.7%) lived in a pucca house.

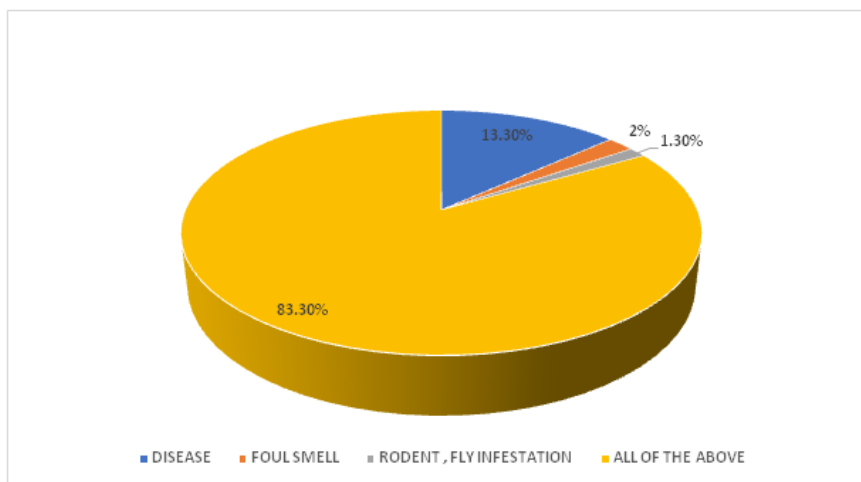


Figure 1: Knowledge regarding problems of improper waste disposal

Among the study participants, 83.30% replied that improper waste disposal causes all type of problems like diseases, foul smell, rodent and fly infestation, followed by 13.3% of the participants reporting disease alone as the main problem caused by improper waste disposal.

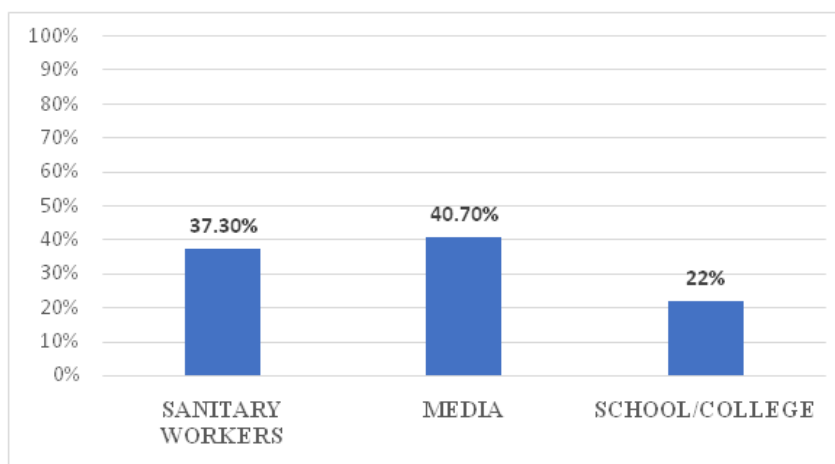


Figure 2: Source of information about solid waste disposal

Awareness by Municipal sanitary workers 56(37.3%), media 61(40.7%), newspapers 33 (22%) were the major source of information regarding their knowledge on household solid waste disposal methods.

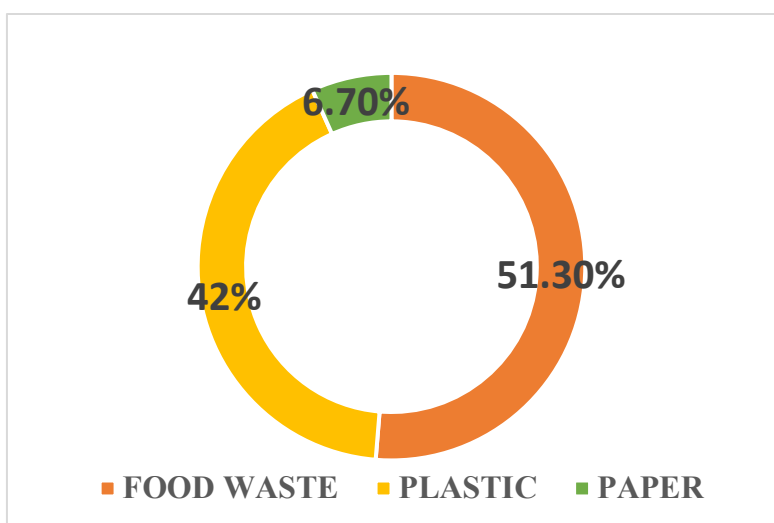


Figure 3: Waste generated at home

Regarding the type of waste that is most generated at home, 77(51.3%) participants replied food waste as the most generated waste, followed by plastic 63(42%) and paper waste 10(6.7%).

Table 2: Knowledge of the participants regarding disposal of solid wastes

Question	Answer	Number (%)
Does improper solid waste removal & disposal affect human health?	Yes	148 (98.7%)
Do you know about the idea of waste segregation?	Yes	139 (92.7%)
Do you know about recycling of waste?	Yes	76 (50.7%)
Do you know about waste minimisation?	Yes	97 (64.7%)
Does production of more waste harm the environment?	Yes	141 (94%)
What are all the problems caused by improper waste disposal?	Disease, Foul smell, rodent fly infestation	125(3.3%)

Table 3: Attitude of the participants regarding disposal of solid wastes

Question	Answer	Number (%)
Do you wish to have a clean street and environment?	Yes	146(97.3%)
Do you think you are also responsible to keep your environment clean?	Yes	63(42%)
Do you think waste disposal is the responsibility of the municipal sanitary worker alone?	Yes	77(51.3%)

Table 4: Practice of the participants regarding disposal of solid wastes

Question	Answer	Number (%)
Do you use dustbin to collect waste at home?	Yes	82(54.6%)
Do you use a dustbin covered with lid for waste collection?	Yes	56(37.3%)
Do you use two separate containers for waste segregation?	Yes	53(35.3%)
Do you recycle kitchen waste to compost at home?	Yes	35(23.3%)
Do you carry jute bag while going for shopping?	Yes	58(38.7%)
How do you dispose your household waste?	Municipal workers	116(77.3%)

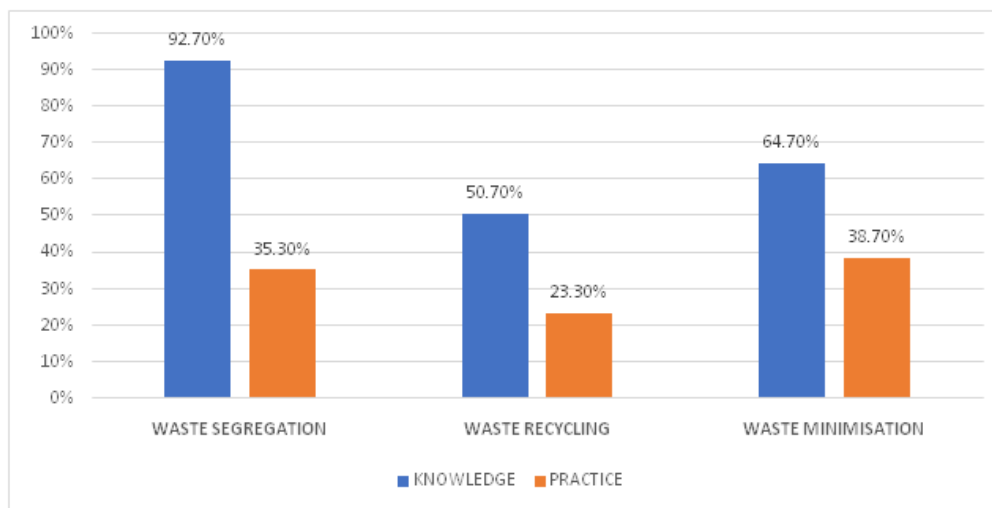


Figure 4: Comparison of Knowledge and practice regarding waste segregation, recycling, minimisation

About 92.70% of the participants responded that they know about waste segregation, whereas only 35.30% actually practised it at their home. In terms of waste recycling, about 50.70% of the participants knew about waste recycling, however

only 23.30% actually practised it. Knowledge regarding waste minimisation was seen in 64.70% of the participants and only about 38.70% of the participants practised it in reality.

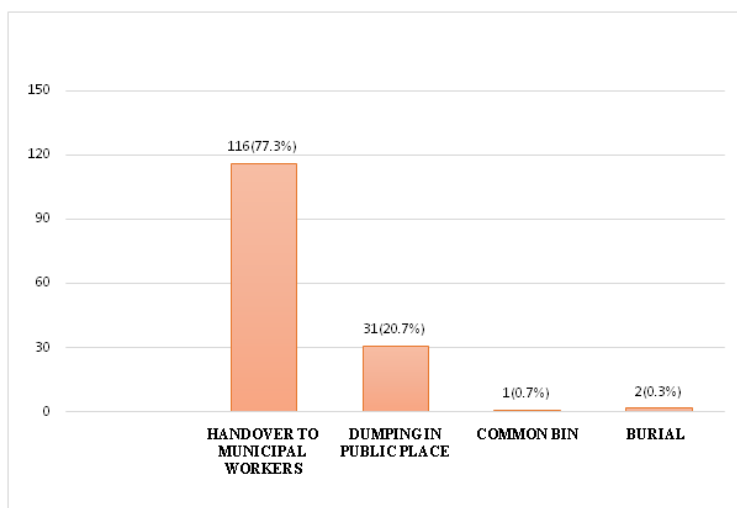


Figure 5: Methods of waste disposal of participants

Majority of the participants i.e. 116 (77.3%) reported disposing their household solid wastes by handing it over to municipal sanitary worker, whereas about 31(20.7%) participants dumped their household waste in public places and 1 (0.7%) participant replied dumping wastes into the common bin present in their street, followed by

burial at their backyard by 2(0.3%). Regarding the frequency of visit of waste collection by municipal sanitary workers, about 85(56.7%) participants replied that municipal sanitary workers visited their home daily to collect waste, whereas 24 (16%) participants replied that workers visited their home only twice weekly to collect waste.

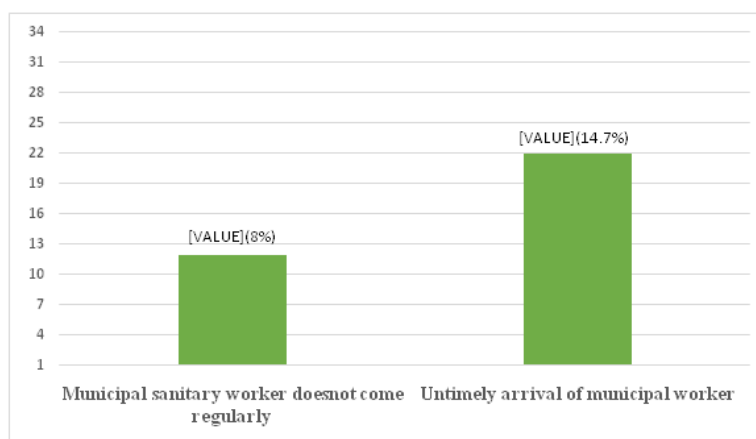


Figure 6: Reason for Dumping, Burial (n=34)

Among the 34 (22.7%) participants who practised dumping and burial, about 12(8%) of the participants quoted irregular visits of municipal sanitary workers, and 22(14.7%) of the participants reported untimely arrival of municipal sanitary workers, as the reason for dumping and burial of

their household solid wastes. About 114 (76%) participants replied that they do not have a common bin in their street whereas 35(23.3%) participants replied that they do not know about the availability of common bin in their street.

Table 5: Knowledge, Attitude, Practice of solid waste disposal among participants(n=150)

Variable		Frequency	Percent
Knowledge	Adequate	128	85.3%
	Inadequate	22	14.7%
Attitude	Positive	72	48%
	Negative	78	52%
Practice	Good practice	54	36%
	Poor practice	96	64%

Above table shows that 85.3% of the study participants had adequate knowledge and 14.7% of the study participants had inadequate knowledge regarding solid waste disposal practices. In this study 48% of the study participants had positive

attitude towards solid waste disposal and 52% of the study participants had negative attitude towards solid waste disposal. The study also showed that only 36% of the study participants had good practice regarding solid waste disposal.

Table 6: Factors affecting Knowledge regarding solid waste disposal

Variables		Adequate Knowledge	Inadequate knowledge	Test and value	P value
Age	< 30 years	10	0	Chi - square test 6.712	0.035*
	30-50 years	72	8		
	>50 years	46	14		
Gender	Male	32	6	Chi - square test 0.051	0.821
	Female	96	16		
Education	Illiterate	10	3	Chi-square test 7.953	0.047*
	Up to middle	38	10		
	Up to higher sec	47	9		
	Graduate	33	0		
Occupation	Unemployed	78	14	Chi-square test 0.058	0.810
	Employed	50	8		
Socio economic status	I (Upper Class)	22	2	Chi square test 5.852	0.119
	II (Upper Middle Class)	81	17		
	III (Middle Class)	22	1		
	IV (Lower Middle Class)	3	2		
	V (Lower Class)				
Type of Family	Nuclear	92	13	Chi square test 1.461	0.227
	Joint	36	9		
Type of House	Pucca	100	12	Chi square test 5.524	0.063
	Semi pucca	3	1		
	kutchha	25	9		

The study showed statistically significant association between age and knowledge regarding solid waste disposal measures with participants of age group 30-50years having adequate knowledge (p=0.035). There was no association between gender and knowledge regarding waste disposal(p=0.821). Among participants, graduates

had adequate knowledge about proper solid waste disposal(p=0.047). The study found no statistically significant association between occupation and knowledge regarding waste disposal(p=0.810). No statistically significant association was found between knowledge and socio-economic status, type of family and type of house in this study.

Table 7: Factors affecting Attitude regarding solid waste disposal

Variables		Positive attitude	Negative attitude	Test and value	P value
Age	< 30 years	5	5	Chi -square test 3.833	0.147
	30-50 years	44	36		
	>50 years	23	37		
Gender	Male	14	24	Chi -square test 2.538	0.111
	Female	58	54		
Education	Illiterate	5	8	Chi-square test	0.467
	Up to middle	20	28		

	Up to higher sec	28	28	2.547	
	Graduate	19	14		
Occupation	Unemployed	48	44	Chi-square test 1.661	0.198
	Employed	24	34		
Socio economic status	I (Upper Class)	14	10	Chi square test 2.786	0.426
	II (Upper Middle Class)	47	51		
	III (Middle Class)	10	13		
	IV (Lower Middle Class)	1	4		
	V (Lower Class)				
Type of Family	Nuclear	54	51	Chi square test 1.648	0.199
	Joint	18	27		
Type of House	Pucca	57	55	Chi square test 3.743	0.154
	Semi pucca	3	1		
	kutchra	12	22		

The study did not find statistically significant association between any of the socio demographic factors and attitude regarding solid waste disposal practices (p value= 0.147).

Table 8: Factors affecting practice regarding solid waste disposal

Variables		Good practice	Poor practice	Test and value	P value
Age	< 30 years	2	8	Chi -square test 1.201	0.549
	30-50 years	30	50		
	>50 years	22	38		
Gender	Male	7	31	Chi -square test 6.826	0.009*
	Female	47	65		
Education	Illiterate	2	11	Chi-square test 7.765	0.051*
	Up to middle	13	35		
	Up to higher sec	22	34		
	Graduate	17	16		
Occupation	Unemployed	37	55	Chi-square test 1.837	0.175
	Employed	17	41		
Socio economic status	I (Upper Class)	7	17	Chi square test 5.729	0.126
	II (Upper Middle Class)	41	57		
	III (Middle Class)	6	17		
	IV (Lower Middle Class)	0	5		
	V (Lower Class)				
Type of Family	Nuclear	37	68	Chi square test 0.088	0.766
	Joint	17	28		
Type of House	Pucca	49	63	Chi square test 18.946	0.0001*
	Semi pucca	3	1		
	kutchra	2	32		

Regarding practice of solid waste disposal, the study found statistically significant association between gender and practice (p value=0.009) with

females having good solid waste disposal practices than males. Participants who were college graduates had good waste disposal practices (p

value=0.051). No statistically significant association was found between occupation and practice of solid waste disposal practices in this study (p value=0.175).

The study found significant association between type of house and practice (p value=0.001), with kutcha households having poor practice regarding solid waste disposal.

Table 9: Knowledge of waste disposal versus Attitude regarding waste disposal

	Positive attitude	Negative attitude	Test and value	P value
Adequate knowledge	63(87.5%)	65(83.3%)	Chi square test	0.471
Inadequate knowledge	9(12.5%)	13(16.7%)	0.519	

Approximately both participants with positive and negative attitude towards solid waste disposal had adequate knowledge about solid waste disposal measures.

Table 10: Knowledge of waste disposal versus practice regarding waste disposal

	Good practice	Poor practice	Test and value	P value
Adequate knowledge	51(94.4%)	77(80%)	Chi square test	0.018*
Inadequate knowledge	3(5.6%)	19(20%)	5.596	

Among the study participants with good practice, 94.4 % had adequate knowledge regarding solid waste disposal (p value= 0.018).

Table 11: Attitude regarding waste disposal versus practice regarding waste disposal

	Good practice	Poor practice	Test and value	P value
Positive attitude	25(46.2%)	47(48.9%)	Chi square test	0.754
Negative attitude	29(53.8%)	49(51.1%)	0.098	

The study did not find any statistically significant association between attitude and practice regarding solid waste disposal practices.

Discussion

This study was done to find out the Knowledge, Attitude and Practice of solid waste disposal among the households residing in an urban area of Chengalpattu Municipality in southern India. Mean age of the study participants in this study was 45.91 (\pm S.D. 8.63). Majority of the participants were Females. Average family size was 3.89 (\pm SD1.64) and 105 (70%) participants belonged to nuclear family. These findings were similar to the results obtained by studies conducted by Dr. Abhay S et al (2014) [9]. Similar study done by Siti Yasmin Badrum et al (2020) in Malaysia had equal number of male and female participants[10].

In this study, 56 (37.3%) were educated up to higher secondary level and 98 (65.3%) belonged to social class II according to Modified BG Prasad scale of socioeconomic status classification for the year 2023. Study conducted by Dr. Abhay S et al (2014) [9] at Nalgonda, had 58 % of the study participants educated up to higher secondary level. In a study conducted by Dr.K.G.Kiran et al [11] at Mangalore, about 107 (89.2%) families belonged to class V socio-economic strata according to modified BG Prasad classification. In this study, about 93 (62%) participants were unemployed and 112 participants (74.7%) lived in a pucca house. Study done by Kumar M et al [12] in Bangalore had 76.8% of the participants

employed. Similar findings were seen in the study conducted by Dr.K.G.Kiran et al [11] at Mangalore, in which 82(65.3%) households had a pucca house.

In this study, 83.30% replied that improper waste disposal causes all type of problems like diseases, foul smell, rodent and fly infestation which is similar to the findings seen in study done by Dr.K.G.Kiran et al [11] at Mangalore, where 82.5% said collectively that unsafe waste disposal causes disease, unpleasant odour, unpleasant site and rodent nuisance. In this study, the major source of knowledge regarding waste disposal was through Municipal sanitary workers 56(37.3%), followed by media 61(40.7%), newspapers 33 (22%). Study by Kumar M et al [12] showed that municipality (3.2%), friends and neighbours (1.0%), media (4.5%) and NGO's (5.8%) were the major source of information regarding waste disposal.

Regarding the type of waste that is most generated at home, 77(51.3%) participants replied food waste as the most generated waste, followed by plastic 63(42%) and paper waste 10(6.7%) in this study. Study done by Dr.K.G.Kiran et al [11] at Mangalore, regarding the content of household waste 95% said that their household wastes contain mostly vegetable matter, 100% said that it contains plastic, 95% said it contains polythene and 75% said it contains paper.

In this study, 116 (77.3%) participants reported disposing their household solid wastes by handing it over to municipal sanitary worker, whereas about 31(20.7%) participants dumped their household

waste in public places and 1 (0.7%) participant replied dumping wastes into the common bin present in their street, followed by burial at their backyard by 2(0.3%). In the study by Dr. Ambat B [13] at Thiruvananthapuram, it was found that above 60% of the households simply throw away solid wastes outside the house. Kamath et al [14] in their study in Udipi taluk of Karnataka observed that families in urban areas were disposing solid waste through municipal waste collection vehicles (88%). In the study conducted by Dr. K. G. Kiran et al [11] at Mangalore, 65% replied throwing away wastes in public places, followed by 30% replying burning as their method of solid waste disposal. A study conducted by Mwaura et al [15] in Somalia showed that burying (27%), burning (34%) and dumping (27%) were the major methods of solid waste disposal.

In this study, 92.70% of the participants responded that they know about waste segregation, whereas only 35.30% actually practised it at their home. In terms of waste recycling, about 50.70% of the participants knew about waste recycling, however only 23.30% actually practised it. Knowledge regarding waste minimisation was seen in 64.70% of the participants and only about 38.70% of the participants practised it in reality. A study done by Dr. Abhay S et al (2014) [9] at Nalgonda, 57.7% were having knowledge regarding segregation of solid waste. And Only 22% of the respondents had knowledge about recycle and reuse of household waste whereas only 18% actually practicing it. It was found that in the study by Kumar M et al [12] only 14.2% were aware about solid waste generation and 5.5% had knowledge of recycling of wastes. Among the 34 (22.7%) participants who practised dumping and burial, about 12(8%) of the participants quoted irregular visits of municipal sanitary workers, and 22(14.7%) of the participants reported untimely arrival of municipal sanitary workers, as the reason for dumping and burial of their household solid wastes. In a study conducted by Dr. Abhay S et al (2014) [9] at Nalgonda, the most common reasons for improper waste disposal reported were non availability of dust bin (84.5%) and municipal van (22.6%) for regular collection of solid waste. This study found statistically significant association between age and knowledge regarding solid waste disposal measures with participants of age group 30-50 years having adequate knowledge ($p=0.035$). Participants who were college graduates, had adequate knowledge about proper solid waste disposal ($p=0.047$). In a study conducted by Siti Yasmin Badrum [10] et al (2020) in Malaysia, gender, age, employment and educational level did not have significant relationship with knowledge; gender ($p = .069, > 0.05$), age ($p = .174, > 0.05$), employment ($p = .367, > 0.05$) and educational level ($p = .339, > 0.05$).

The study did not find statistically significant association between any of the socio demographic factors and attitude regarding solid waste disposal practices (p value= 0.147), which is similar to the study conducted by Siti Yasmin Badrum [10] et al (2020) in Malaysia, which also did not find significant relationship between gender, age, employment, and education with the attitude towards solid waste management.

Regarding practice of solid waste disposal, the study found statistically significant association between gender and practice (p value=0.009) with females having good solid waste disposal practices than males. Participants who were college graduates had good waste disposal practices (p value=0.051).

In the study conducted by Siti Yasmin Badrum [10] et al (2020) in Malaysia, the educational level was found significant with practice level ($p < 0.05$), $p = 0.020$. In this study, among the study participants with good practice, 94.4% had adequate knowledge regarding solid waste disposal (p value= 0.018).

In the study conducted by Siti Yasmin Badrum (10) et al (2020) in Malaysia, only knowledge-attitude (KA) and attitude-knowledge (AK) have a positive correlation with each other which was statistically significant ($r_s = .276, p = .004$).

Conclusion

From this study, we conclude that the Knowledge, Attitude and Practice regarding solid waste disposal practices were 85.3%, 48% and 36% respectively.

It is clear that in spite of majority of participants having knowledge, the lack of positive attitude has resulted in poor practices related to solid waste disposal. Regular reinforcement of knowledge along with measures to encourage people towards adopting a committed attitude and good practice regarding proper solid waste disposal can benefit both the environment and mankind.

Limitation

This study was conducted among the urban households of a single municipal town in the state of Tamil Nadu in southern India. An extensive study involving a larger sample size over a wide geographical area including both urban and rural population would give even more insights about the Knowledge, Attitude and Practice regarding solid waste disposal practices of the people.

Recommendation

To achieve the goal of proper solid waste disposal practices in households, Awareness, Education and importance of safe solid waste disposal should be initiated for the public at a younger age itself, by including proper solid waste disposal methods in school and college curriculum.

Strict supervision and surveillance of solid waste management activities by local bodies.

Promotion and advertising of Laws related to safe solid waste disposal method among the public by the local bodies.

Strict implementation of waste disposal laws either by local government or Ministry of Environment should be done to ensure no waste is to be discarded in to the rivers, gutters, drains, open space or public locations like parks, buildings or streets.

Positive Reinforcement can be done by identifying households who practice proper solid waste disposal consistently and rewarding them for their commitment towards cleanliness, which can further motivate other households.

Streets can be fitted with CCTV surveillance cameras to record acts of dumping, burning or other unsafe waste disposal practices and violators can be punished by fine or other means on the basis of this evidence.

Recognition of the work of Municipal Sanitary Workers by conducting felicitation events, which further motivates them to work more efficiently.

Streamlining the process of waste collection from households, like ensuring strict adherence to date and timing of visit of sanitary workers involved in waste collection and timely collection of waste form common bins.

Involve local communities to understand their concerns and preferences in waste management decisions, and arranging clean up drives, workshops and events to foster a sense of responsibility and ownership. Involvement of public/private partnership in solid waste management is to be encouraged.

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