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PUBLIC OPINION ON HEALTH IMPACT OF DUMPING URBAN SOLID WASTE IN TONDIARPET

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ABSTRACT:

The extreme growth of population combined with an increased appetite for consumer goods,has led to an explosion in the amount of garbage we produce.This gave rise to dumpsites were garbage are collected in a pile as it is one of the easiest way to dispose dry refuse.This research aims to identify the public opinion on health impacts of dumping urban solid waste in Tondiarpet . Secondary data from review of literature and primary data from 200 samples collected through questionnaires has been utilized to conduct this research. The study has found that dumping of urban solid waste has a great impact on health and environment and people living near the dumpsites are affected more than far away residents.

KEYWORDS: dumping, urban solid waste, health, dumpsite, pollution

INTRODUCTION :

Garbage forms through the disposal of waste materials, including household trash, industrial byproducts, and discarded items. Some is recycled and re-introduced into the production cycle. The remaining waste winds up in a dumpsite. This basic method has been relatively unchanged. Later it has been found that it contaminates groundwater and affects health. As a result,a number of features were added. Despite all improvements made, the real problem is just their large numbers and the expenses. Public involvement is essential to tackle the issue. The government has taken several policy measures and introduced initiatives to curb these issues. Some of those include Swachh Bharat Mission-Urban (SBM-U), City Solid Waste Action Plans (CSWAP),Waste to Wealth Mission, The Environmental Protection Act,1986. The factors affecting the urban solid waste management include institutional factors,social factors (involve local and cultural/religious practices),population density and composition (high population density results in increased waste generation),financial factors (the source of funds must be identified and/or created to help finance the urban solid waste management plan),economic factors (rapid urbanization and economic development contribute to increased waste generation due to increased consumption and industrial activities). The world generates 2.01 billion tonnes of municipal solid waste annually,with at least 33 percent of that is extremely conservative and not managed in an environmentally safe manner. Worldwide,waste generated per person per day averages 0.74 kg but ranges widely from 0.11 to 4.54 kilograms. Though they account for 16% of the world's population, high income countries generate about 34% or 683 million tonnes of the world's waste. When looking forward, global waste is expected to grow up to 3.40 billion tonnes by 2050 ,more than double population growth over the same period. The persistent issue of garbage dumping in Tondiarpet poses significant health risks, with conservancy workers allegedly resorting to roadside dumping due to the absence of bins after door-to-door collection. Residents argue that the

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Greater Chennai Corporation's plan to phase out bins in favor of promoting door-to-door collection is contributing to this problem. Despite Solid Waste Management Rules mandating proper disposal, open dumping is on the rise, leading to foul odors, rodent infestations, and concerns about disease outbreaks among residents. Cows and dogs further worsen the situation by scattering waste onto roads, causing widespread environmental degradation in the area.Choosing Tondiarpet as a research area for collecting public opinions on dumping of urban solid waste is because focusing on a specific locality allows for a more targeted and in-depth analysis, providing insights that can be valuable for addressing local issues. Urban Solid Waste is classified into various kinds such as industrial waste, agricultural waste, hazardous waste, plastic waste, ceramics and glass waste, organic waste and recyclable waste. Some of the waste management methods include landfilling, incineration, recycling, composting, waste to energy and source reduction.Urban solid waste poses several health hazards, including air and water pollution, the spread of diseases through vectors like rodents and flies, and direct contact with hazardous materials during disposal. These vectors can carry and transmit various diseases such as malaria, dengue, cholera, and other gastrointestinal infections. It can also lead to respiratory issues due to the release of harmful gases from decomposing waste. Contaminated water sources near waste dumps can further facilitate the transmission of waterborne diseases. These dumpsites are damaging the environment and lead to a loss of biodiversity, with its accumulation in natural habitats causing harm or death to wildlife and also contribute to climatic change.

OBJECTIVES :

This research aims to:

- to analyze the health impact of dumping urban solid waste in Tondiarpet.
- to analyze the legal frameworks for urban solid waste management

LITERATURE REVIEW :

N Raman and D Sathiya Narayanan(2008) studied the impact of solid waste on groundwater and soil quality. The survey was conducted in January 2008. The water and soil samples were collected along with three draft samples during the first week of the month between 7.00 to 10.00 am. It has been found that most parameters of water or not an acceptable limit in accordance with IS 10 500 drinking water quality standards. It is concluded that the contamination is due to the solid waste materials that are dumped in the area.

Anchal Sharma, Ashok Kumar Gupta and Rajiv Ganguly(2018) studied the effects of open dumping of municipal solid waste and soil properties in mountainous region. This study includes geotechnical investigation of soil characters. The samples were subjected to specific gravity tests , Atterbeg's limit test, direct shear test,grain size analysis and compact test. The results showed that the geotechnical properties of the soil have been severely hampered due to contamination induced by open dumping of waste.

Banchok Norsa'adah,Omar Salinah,Nyi Nyi Naing and Abdulla Sarimah(2020) studied the health impact of dumping solid waste in open areas. A comparative cross-sectional study was conducted in which sampling was stratified into exposed and non-exposed areas. Systematic sampling method was used to select homes in each village. The study was carried out according to rules of the 1975 declaration of Helsinki, this study showed that unsanitary solid waste disposal is hazardous to the health of residents in the surrounding 1 km.

Salam Abdul(2010) studied the environmental and health impact of solid waste dumping.The study implemented a case study research design. The questionnaire contained both close ended and open ended questions.A stratified simple random sampling method was used. Descriptive statistics were used to analyze the data and narratives were also used to further represent data. The research showed that

nearby residents and faraway residents were affected by the location of the dumpsite closer to the settlements.

B.C.Sarker,S.K.Sarker,M.S.Islam and S.Sharmin(2012) investigated public awareness about the disposal of solid waste and its impact. 100 people were selected through simple random sample technique.Data were collected through structured and semi structured questionnaire and interview methods.Data are coded, tabulated and analyzed by using statistical method of SPSS. The study showed that the service holders and student respondents have a better idea about the effects of dumping solid waste at open sites than other respondents.

Ayesha Siddiqua,John N Hahladakis and Wadha Ahmed KA AL-Attiya(2022) studied the population and health effects associated with waste landfilling and open dumping. This study adopted this review methodology(collecting information from available sources). Various scientific databases like research gate, scopus, enature and and etc have been searched. The results were narrowed down to include the last 10 year publication. The delivered information will be organized under teams and sections. The study revealed that landfilling is associated with various environmental pollution problems.

Felicia Babs-Shomoye and Russell Kabir(2016) evaluated the health impact of the dumpsite on the residents living around the site. In this descriptive cross-sectional study using nonprobability sampling, data was collected from hundred households within 250 m radius and hundred houses within 250 to 500 meters from the dump site. The study showed that not properly managed waste has been known to have a negative impact on health, environment and aesthetic values.

Charles Kihampa(2013) studied the problems of dumpsites with the aim to improve the environment, health and socio-economic status of the inhabitants. Data were collected by questionnaire, interview, field observations and laboratory analysis. The water samples collected from four boreholes surrounding the Dump were analyzed for physical, chemical and microbial parameters. The study revealed that groundwater was slightly acidic,High COD range and iron range beyond WHO limits. Health problems include injuries, diarrhea, skin and respiratory diseases and malaria.

Foday Pinka Sankon,Xiangbin Yan and Quangyen Tran(2013) studied the environmental and health impacts of solid waste disposal. Data was collected through questionnaires,interviews and personal observations. Descriptive statistics involving tables,graphs,figures were used to present and analyze the data. The results showed that both nearby and far away residents suffered from related diseases such as malaria,chest pain,diarrhea and cholera.

Ndukwe,va ; Uzdegbu,mu ; Ndukwe,os and Agibe,an(2019) studied the environmental and health impacts of solid waste disposal. Datas were collected from nearby dumpsite household residents through interviews and personal observations. Descriptive statistics involving tables,graphs and figures were used to present and analyze the data. Results showed that both nearby and far away residents suffered from various diseases due to the location of the dumpsite closer to their settlements.

Daniel Porta,Simona Milani,Antonio Hazzarino,Carlo A Perucci and Francesco Forastiere(2009) aimed to systematically review the available epidemiological literature on the health effects in the vicinity of landfills and incinerators and among workers at work processing plants. They examined the published,peer-reviewed literature addressing health effects of waste management between 1983 and 2008. It is clear that future research into the health risks of waste management needs to overcome current limitations.

Amalia Mattiello, Paola Chiodini, Elvira Bianco, Nunzia Forgione, Incoronata Flammia, Ciro Corallo, Renato Pizzuti and Salvatore Panicoh(2013) studied the health effects

associated with the disposal of solid waste in landfills and incinerators. The study design and potential biases of paper retrieved in this comprehensive literature search were analyzed. The study revealed that the risks of congenital anomalies and hospitalization due to respiratory disease are likely to be real nearby special waste landfills.

Yasmin Suleman,Eva Tagoe Darko and Williams Agyemang-Duah(2015) studied the solid waste disposal and health issues among residents. Questionnaires,observation and unstructured interview guide were the methods used for data collection using a sample size of 150 respondents. SPSS methods were used to analyze the data. The result showed that issues of improper solid waste disposal have posed a threat to the health of the residents.

I.B.Addo,D.Adei and E.O.Acheampong(2008) studied solid waste management and its impact on health. Both case study and survey research designs were adopted for the research. Both primary and secondary data were used for the research. Simple random sampling procedure was applied to select the required number of households.The result showed that stench and poor management of waste causes numerous diseases such as cough,chest pains,cancer, etc.

Wardah Sabir, Syed Noman Waheed, Adil Afzal, Syed Muhammad Umer and Saad Rehman(2016) studied how the solid waste management process is implemented in Karachi and the challenges faced by the responsible authorities.This study was conducted using qualitative research techniques. Data were collected through observations and interviews. This study found that illegal dumping is one of the largest issues faced by the society and this can lead to widespread diseases and epidemics and environmental degradation.

Avinash Puri, Nanoj Kumar and Eonkar Johal(2008) studied the solid waste management practices in order to find out its link with occurrence of vector-borne diseases. Strategies for solid waste management were employed as a practical model to solve the problems regarding pollution which originated by solid waste. It has been concluded that many were suffering from malaria and loose motions due to solid waste being dumped in their vicinity.

Gina Kanhai,Julius N.Fobil,Betty A.Nartey,Joseph V.Spadaro and Pierpaolo Mudu(2021) investigated the relationship between municipal solid waste management and air pollution. The methodology was to collect data on the waste sector,modeling the emissions,transforming them to concentration values and estimating the burden on health. Assessment has been conducted through CCAC SWEET tool and WHO AirQt. The results indicated that a change to more sustainable options would reduce air pollutants emissions and avert 120 premature deaths in 2023.

Ogunniran Blessing Ifeoluwa(2018) studied the harmful effects and management of indiscriminate solid waste disposal on humans and the environment. The data were collected through literature search and questions have been asked from dwellers living around dump sites. This study showed that environments close to dumpsites are exposed to significant and rapid environmental degradation which affects urban life and agriculture.

Giovanni Vinti, Valerie Bauzza,Thomas Clasen,Kate Medlicott,Terry Tudor, Christian Zurbrugg and Mentore Vaccari(2021) conducted a systematic review of recently published literature to update the association between solid waste management and population's health risks. The methods were based on the PRISMA statement. The search was conducted using relevant search engines.It is clear that there is an increased risk of mortality,respiratory diseases and mental health effects associated with residing near landfills.

Tanzila Akmal and Faisal Jamil(2021) assessed the health damages from improper disposal of solid waste. A cross-sectional quantitative dataset obtained from the residents through a

structural questionnaire. The questionnaire was based on a literary review. The results indicate that irregular disposal in the vicinity of residents causes illness. The findings highlight that households lack knowledge of waste hazards.

METHODOLOGY:

The research method used here is descriptive in nature. The research sampling has been conducted using convenient sampling and the total number of samples used for analysis is 200. The research collected information from relevant samples through a structured questionnaire. The Independent variables utilized in this study are age, gender, occupation, place of living and educational qualifications of the respondent. The dependent variables in this study are awareness about dumping of urban solid waste in Tondiarpet, area affected by dumping of urban solid waste, effectiveness of measures taken by government to reduce dumping of urban solid waste, health impact of dumping urban solid waste,best way to prevent dumping of urban solid waste. The tools used for analysis are pie charts, bar graphs and clustered bar graphs through SPSS.

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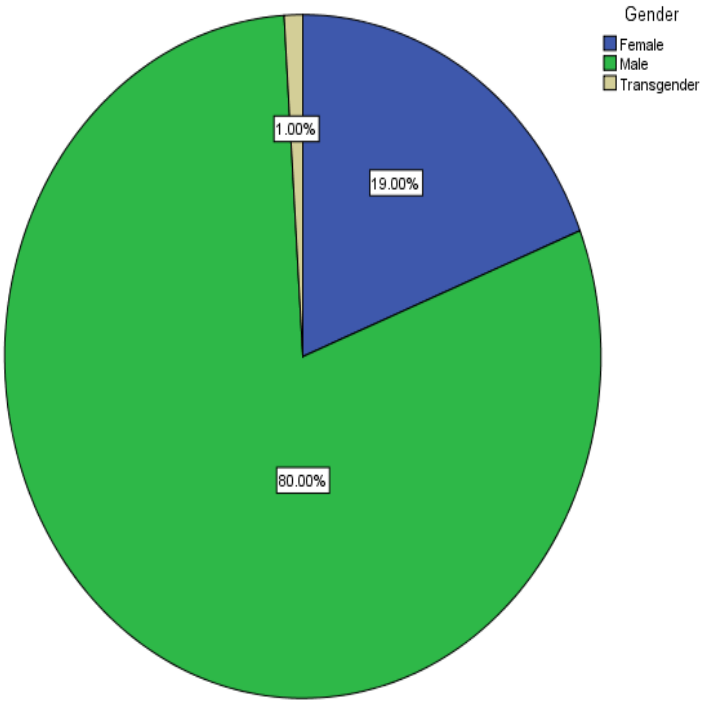
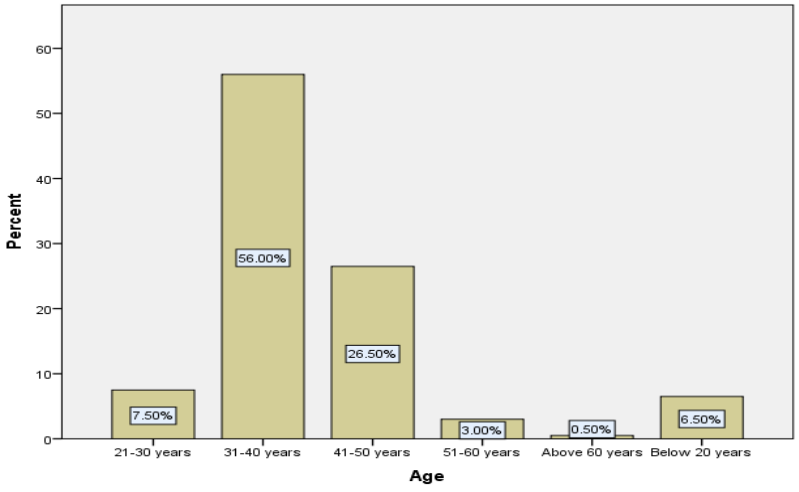
ANALYSIS:

Figure: 1



Legend : Fig 1 shows the gender distribution of the respondents

Figure:2



Legend: Fig 2 shows the distribution of age groups of respondents

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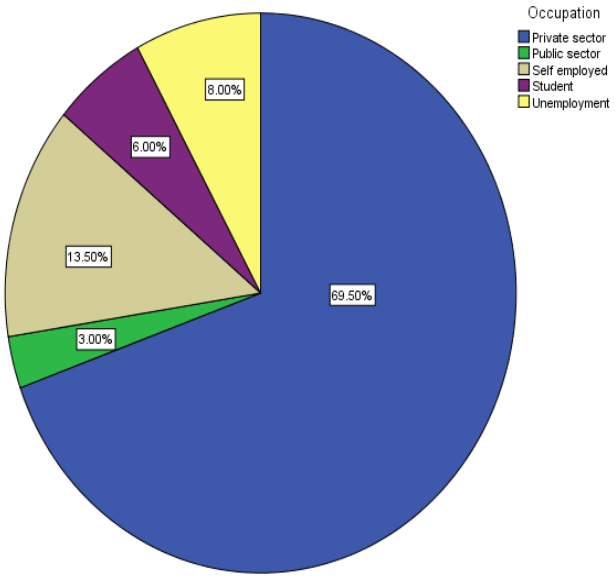
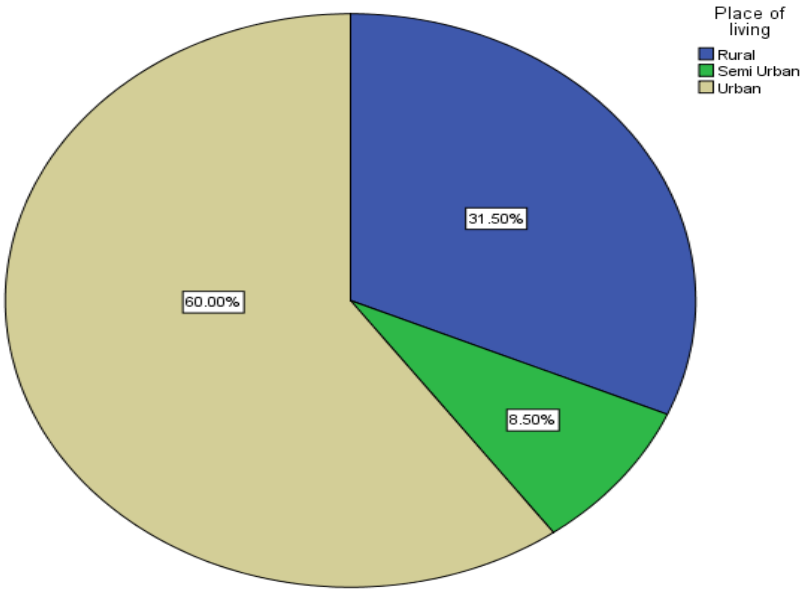
Figure:3



Legend: Fig 3 shows the occupation of the respondents

Figure:4



Legend: Fig 4 shows the place of living of the respondents

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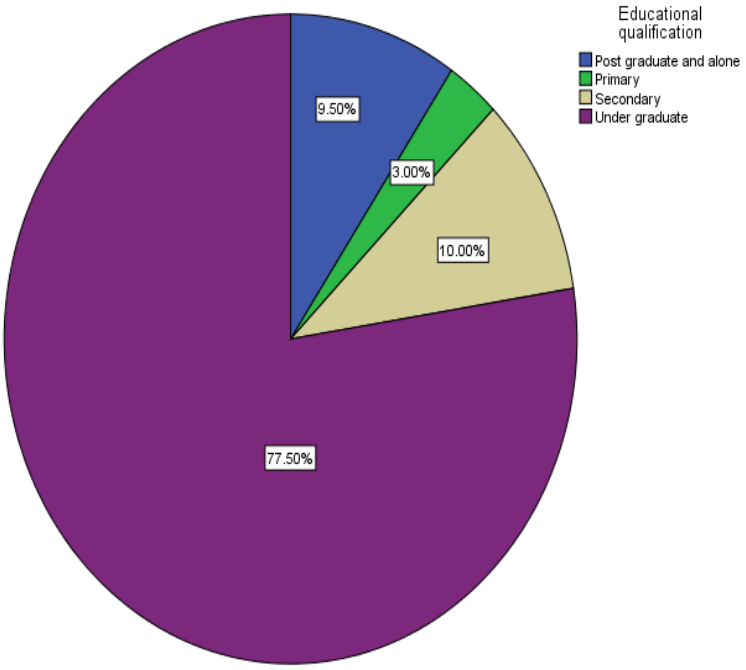
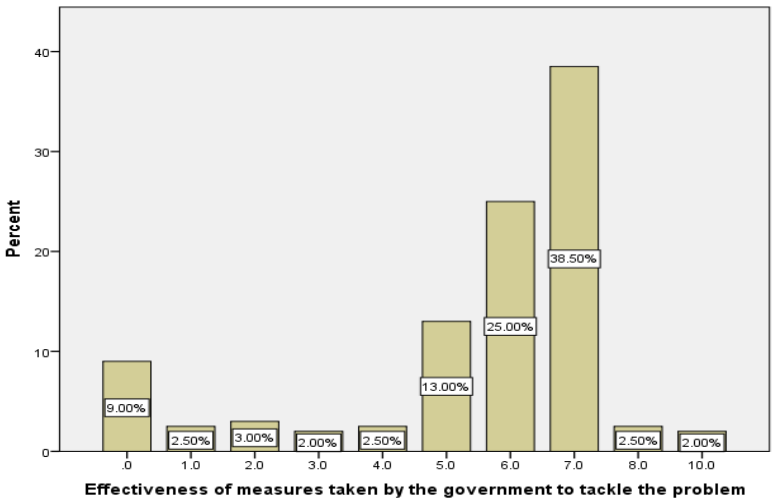
Figure: 5



Legend: Fig 5 shows the educational qualification of the respondents

Figure: 6



Legend: Fig 6 shows the response distribution for "Effectiveness of measures taken by the government to tackle the problem"

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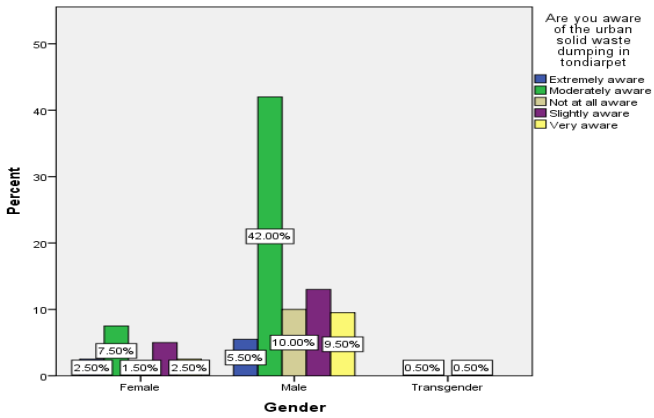
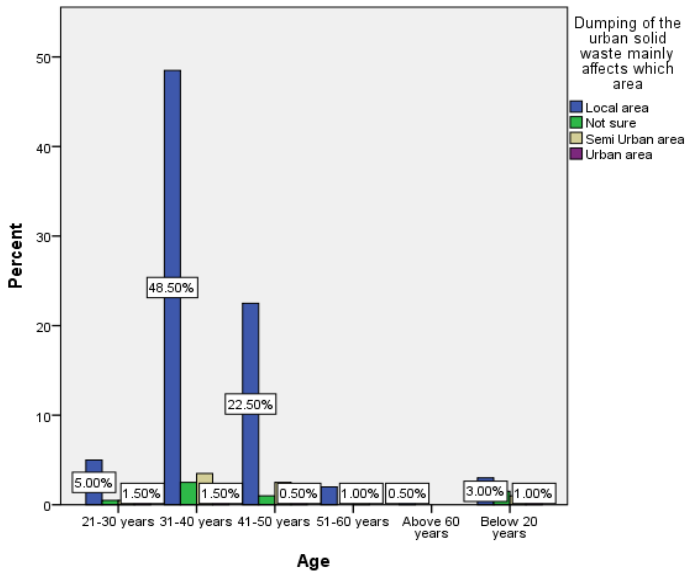
Figure: 7



Legend : Fig 7 shows the gender of the respondents and their awareness about dumping of urban solid waste in Tondiarpet

Figure :8



Legend: Fig 8 shows the age of the respondents and their opinion on the area mainly affected by dumping of urban solid waste

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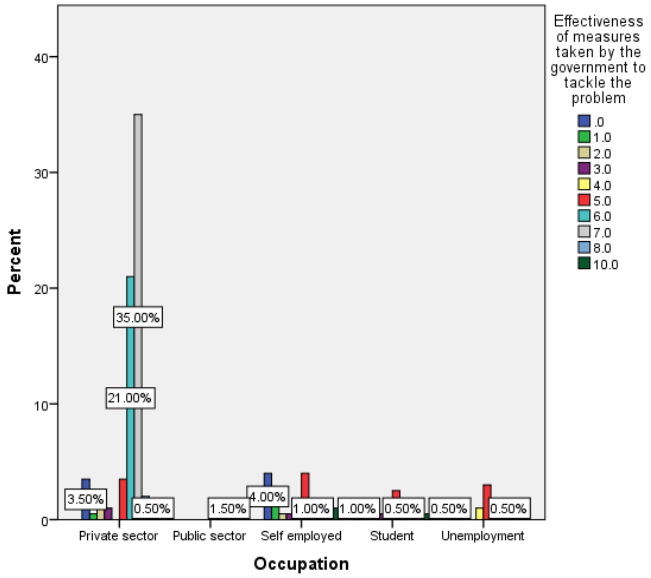
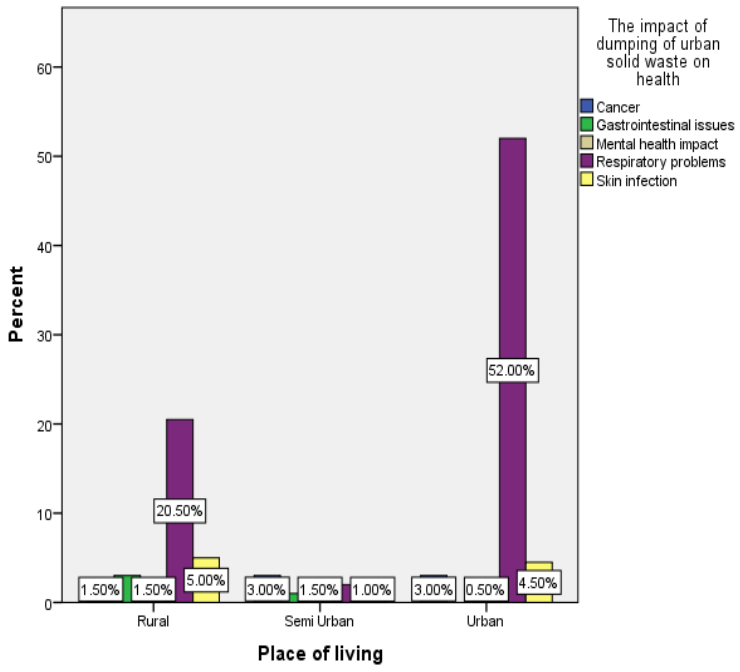
Figure:9



Legend: Fig 9 shows the occupation of the respondents and their opinion on the effectiveness of measures taken by the government to reduce dumping of urban solid waste

Figure: 10



Legend: Fig 10 shows the place of living of the respondents and their opinion on the impact of dumping urban solid waste on health

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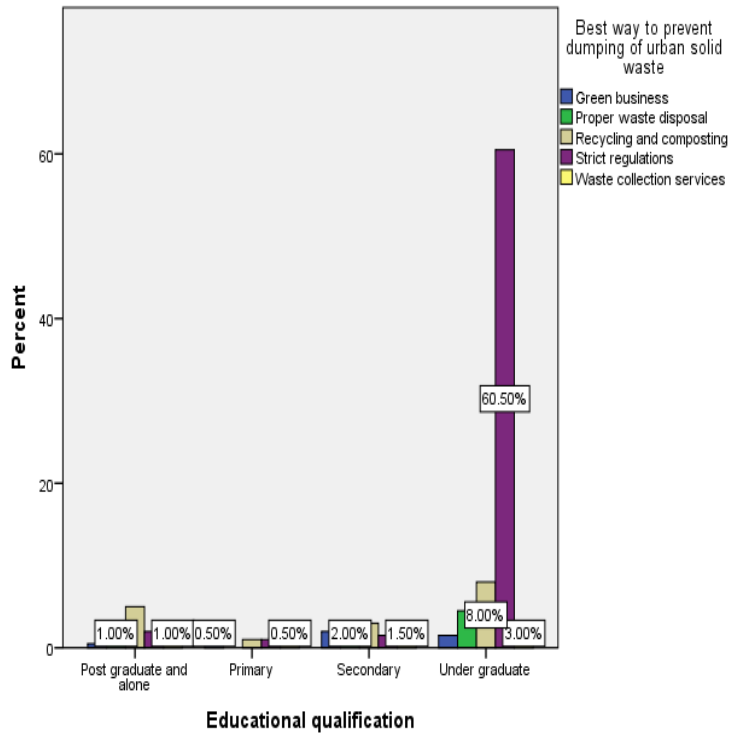
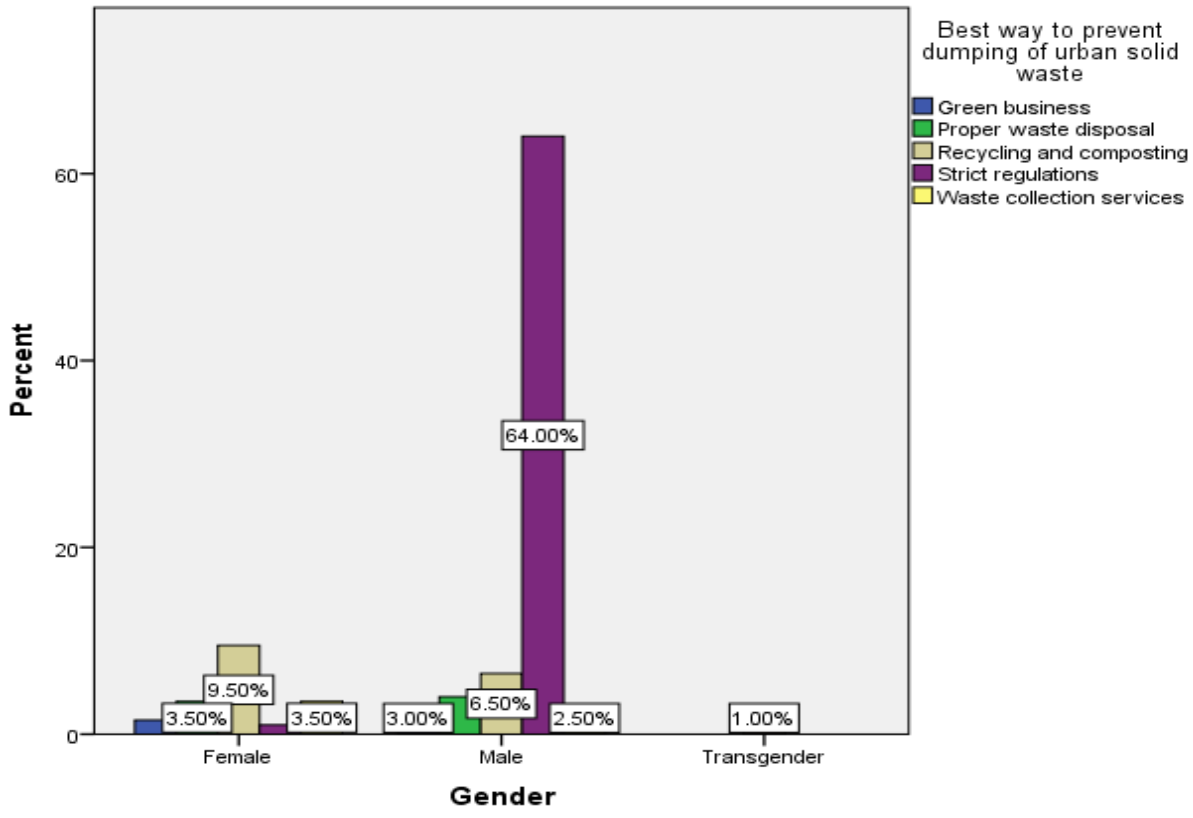
Figure:11



Legend: Fig 11 shows the educational qualification of the respondents and their opinion on best way to prevent dumping of urban solid waste

Figure: 12



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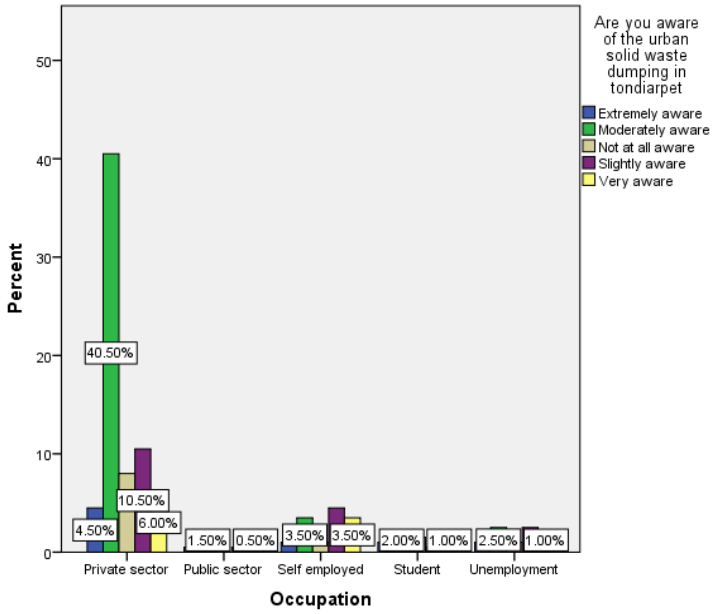
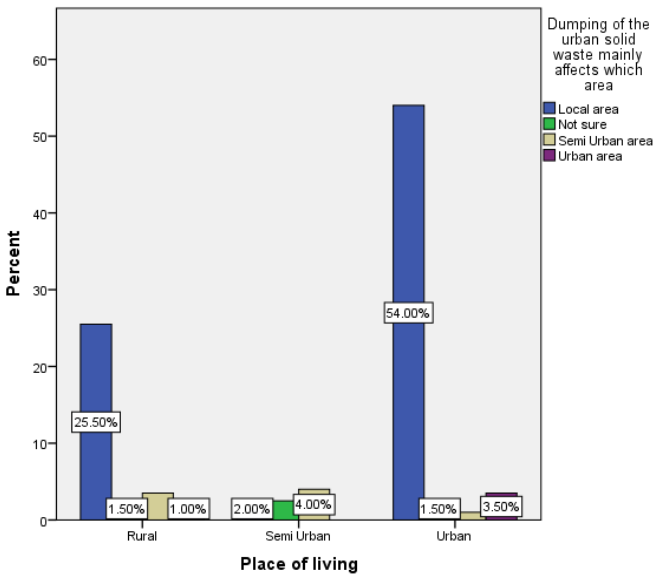
Legend: Fig 12 shows the gender of the respondents and their opinion on best way to prevent dumping of urban solid waste

Figure:13



Legend: Fig 13 shows the occupation of the respondents and their awareness about dumping of urban solid waste in Tondiarpet

Figure:14



Legend : Fig 14 shows the place of living of the respondents and their opinion on the area mainly affected by dumping of urban solid waste

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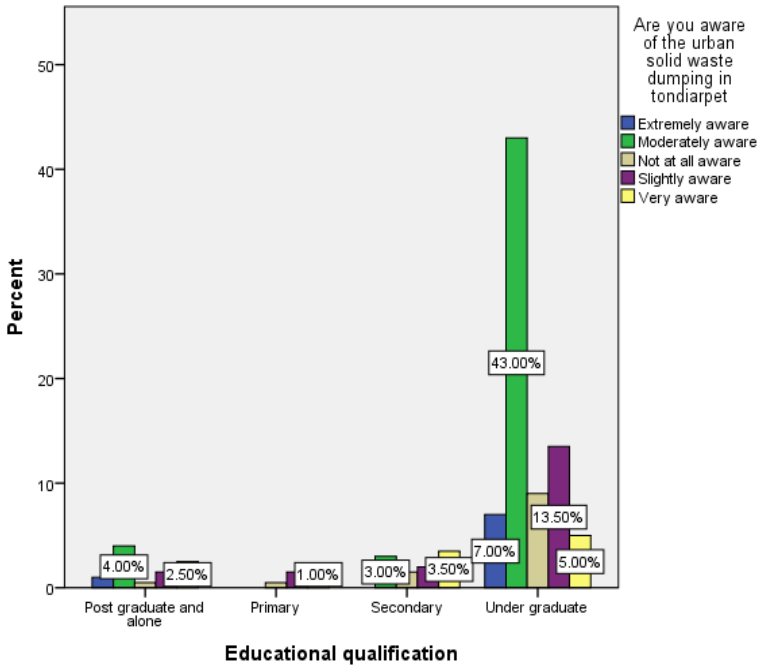
Figure:15



Legend: Fig 15 shows the educational qualification of the respondents and their awareness about dumping of urban solid waste in Tondiarpet

RESULTS:

It is revealed that the percentage of male respondents are 80.00 % , the percentage of female respondents are 19.00 % and the percentage of transgender respondents are 1.00%(Fig:1)

It is revealed that 7.50% of the respondents were between the ages of 21 to 30 ,56.00 % of the respondents were between the age of 31 to 40, 26.50% of the respondents were between the age group of 41 to 50 , 3.00 % of the respondents are between the age group 51 to 60 ,0.50% of the respondents are above 60 years and 6.50% of the respondents are below 20 years (Fig: 2)

It is revealed that 69.50 % of the total respondents were working in a private sector, 3.00% of the respondents were working in public sector, 13.50% of the respondents were self employed, 8.00% of the respondents were unemployed and 6.00 % of the respondents were students (Fig: 3)

It's is revealed that 60.00% of the respondents were living in urban areas and 31.50% of the respondents were living in semi urban areas and 8.50% of the respondents were living in rural areas (Fig :4)

It is revealed that 9.50% of the respondents were post graduates, 77.50% of the respondents were under graduates, 3.00 % of the respondents were primary school students, 10.00% of the respondents were secondary students (Fig:5)

It is revealed that 9% of the respondents rated 0 for the effectiveness of measures taken by the government to tackle the problem, 2.50 % of respondents rated 1 and 3% of the respondents rated 2 , 2 % of the respondents rated 3 ,2.50 % of the respondents rated 4, 13.00% of the respondents rated 5 , 25.00% of the respondents rated 6 ,38.50% of the respondents rated 7 ,2.50 % of the respondents rated 8 and 2.00% of the respondents rated 10 (Fig:6)

It is revealed that 2.50% of the female respondents are extremely aware of the urban solid waste dumping in Tondiarpet, 7.50% of

female respondents are moderately aware, 1.50% of the female respondents or not at all aware, 2.50% of female respondents are very aware and 5.50% of male respondents are extremely aware, 42.00% of male respondents are moderately aware, 10.00% of male respondents are not at all aware, 9.50% of male respondents were very aware and 0.50% of transgender respondents are moderately aware and 0.50% of transgender respondents are slightly aware.(Fig:7)

It is revealed that of the total respondents who belongs to the age group of 21 to 30 years 5.00% of respondents said that local area is mainly affected by the dumping of urban solid waste, 1.50% of the respondents are not sure about the area mainly affected due to dumping of urban solid waste and of the total respondents who belong to the age group of 31 to 40 years 48.50% of respondents answered local area, 1.50% of respondents answered urban area, in the age bracket of 41 to 50 years 22.50% of respondents answered local area and 0.50% of respondents answer semi urban area. In the age bracket of 51 to 60 years 1% of respondents answered semi urban area and 0.50% of respondents answered urban area. In the below 20 years category 3% of the respondents answer local area and 1% of the respondents answered urban area.(Fig:8)

It is revealed that of the total respondents who were working in the private sector 3.50% of the respondents rated 0 for the effectiveness of measures taken by the government to tackle the problem, 21.00% of the respondents rated 6, 35.00% of the respondents rated 7, 0.50% of the respondents rated 8. In the public sector 1.50% of the respondents rated 7. In the self employed category 4.00% of the respondents rated 0, 1.00% of the respondents rated 5, 1.00% of the respondents rated 8. In the student category 0.50% of the respondents rated 5. In the unemployment category 0.50% of the respondents rated 8.(Fig:9)

It is revealed that of the total respondents who live in rural areas 1.50% of the respondents answered that dumping of urban solid waste causes cancer, 1.50% of the respondents answered mental health impact, 20.50% of the respondents answered respiratory problems, 5.00% of the respondents answered skin infection. Of the total respondents who live in a semi urban area 3.00% of the respondents answered cancer, 1.50% of the respondents answered gastrointestinal issues, 1.00% of the respondents answered respiratory problems. Of the total respondents who live in urban areas 3.00% of the respondents answered cancer, 0.50% of the respondents answered Gastro intestinal issues, 52.00% of the respondents answered respiratory problems, 4.50% of the respondents answered skin infection.(Fig:10)

It is revealed that of the total respondents who belong to the postgraduate category 1.00% of the respondents answered proper waste disposal is the best way to control dumping of urban solid waste, 1.00% of the respondents answered strict regulations, 0.50% of the respondents answered waste collection services. In the primary category 0.50% of the respondents answered waste collection services. In the secondary category, 2.00% of the respondents answered proper waste disposal, 1.50% of the respondents answered waste collection services. In the undergraduate category 8.00% of the respondents answered recycling and composting, 60.50% of the respondents answered strict regulations, 3.00% of the respondents answered waste collection services.(Fig:11)

It is revealed that in the female category 3.50% of the respondents answered proper waste disposal is the best way to prevent dumping of urban solid waste, 9.50% of the respondents answered recycling and composting, 3.50% of the respondents answered waste collection services. In the male category 3.00% of the respondents answered Green business, 6.50% of the respondents answered recycling and composting, 64.00% of the respondents answered strict regulations, 2.50% of the respondents answered waste collection services. In the transgender category, 1% of the

respondents answered recycling and composting.(Fig:12)

It is revealed that in the private sector category 4.50% of the respondents are extremely aware about the urban solid waste dumping in Tondiarpet, 40.50% of the respondents are moderately aware, 10.50% of the respondents or not at all aware, 6.00% of the respondents are slightly aware. In the public sector category 1. 50% of the respondents are extremely aware, 0.50% of the respondents are slightly aware. In the self employment category, 3.50% of the respondents are moderately aware, 3.50% of the respondents are slightly aware. In the student category 2.00% of the respondents are moderately aware ,1.00% of the respondents are slightly aware. In the unemployment category 2.50% of the respondents are moderately aware and 1.00% of the respondents are slightly aware. (Fig:13)

It is revealed that in the rural category, 25.50% of the respondents answered that the local area is mainly affected due to the dumping of urban solid waste, 1.50% of the respondents answered not sure, and 1.00% of the respondents answered urban area. In the semi urban category, 2.00% of the respondents answered local area, 4.00% of the respondents answered semi urban area. In the urban category 54.00% of the respondents answered local area, 1.50% of the respondents answered not sure, 3.50% of the respondents answered urban area.(Fig:14)

It is revealed that in the post graduate category 4.00% of the respondents are moderately aware about the urban solid waste dumping in Tondiarpet, 2.50% of the respondents were very aware. In the primary category, 11.00% of the respondents are slightly aware about the statement. In the secondary category, 3.00% of the respondents are moderately aware, 3.50% of the respondents are very aware. In the undergraduate category 7.00% of the respondents are extremely aware, 43.00% of the respondents were moderately aware, 13.50% of the respondents were not slightly aware, and 5.00% of the respondents are very aware about the given statement. (Fig:15)

DISCUSSION:

Fig:7 shows that the majority of the male respondents (42.00%) are moderately aware about the dumping of urban solid waste . This is due to the greater involvement in outdoor activities and social networks that discuss social issues but it varies by location and culture. Awareness can also be influenced by individual interest and community engagement.

Fig:10 reveals that the majority of respondents(52.00%) who live in urban areas think that dumping of urban solid waste causes respiratory problems.The reason for this could be due to their highest population, density and pollution levels and greater exposure to dump sites, which leads to perceive the health risks. Media coverage and local anecdotes can also contribute to this perception.

Fig:12 shows that the majority of the respondents (64.00%) who were male think that strict regulations are the best way to prevent dumping of urban solid waste. This might be due to a perception that enforcement and penalties are effective measures of eyelining. It's a preference for law and order solutions. Additionally, they believe that such regulations protect the local environment and community.

Fig:14 clearly states that the majority of the respondents(54.00%) from urban areas said that dumping of urban solid waste mainly affects local areas. This might be because the urban residents often believe that urban solid waste dumping mainly affects their local area, which can be clearly visible as it has an impact on their immediate surroundings, such as litter and orders, which create a strong perception of localised harm. Moreover, the limited hours of the broader environmental consequences may also lead to this perception.

LIMITATIONS OF THE STUDY:

Convenience sampling method has been used in this study.

CONCLUSION:

The extreme growth of the population combined with an increased appetite for consumer goods, has led to an explosion in the amount of garbage we produce. The main objective of the study was to analyze the health impact of dumping urban solid waste in Tondiarpet. It was found that dumping of urban solid waste has a great impact on health and environment and people living near the dumpsites are affected more than far away residents. The study concludes that opinion on the health impact of dumping urban solid waste shows a growing concern about the negative effects it can have on our health. It's crucial for communities to come together and prioritize sustainable waste management solutions for a healthier environment. It's Important for us to work towards a cleaner and safer future.

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