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Research Article

ATTITUDE AND PRACTICE OF SOLID WASTE MANAGEMENT AMONG THE PEOPLE OF CLARKA ABAD VILLAGE RAIWIND ROAD LAHORE

¹Ms: Shazia Eshaq, ²Ms: Nighat Firdaus, ³Ms: Ayesha Ramzan

¹Nursing Instructor: (Post RN BS Nursing (2 year)

College of Nursing & Midwifery Fatima Jinnah University, Punjab Lahore, Pakistan

²Student: (Post RN BS Nursing (2 year)

Charge Nurse: Sir Ganga Ram Hospital Lahore, Pakistan

³Student: (Post RN BS Nursing (2 year)

Charge Nurse: Mayo Hospital Lahore, Pakistan

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Abstract:

Introduction: Solid waste management is defined as the discipline associated with control of generation, storage, collection, transport or transfer, processing and disposal of solid waste materials in a way that best addresses the range of public health, conservation, economic, aesthetic, engineering, and other environmental considerations.

Materials and Methods: A Quantitative descriptive study and Questionnaires based study. The study was carried out in village Clarka Abad at Raiwind Road, Lahore. Sample size was determined by using a stratified random sampling method. The village was consisting of 100 houses for study. The data for this survey by home visiting through interview and questionnaires to present findings on attitude of people towards house hold waste management.

Results: 10% people collected household solid waste in drums and 50% people collected solid waste in baskets 40% people collected household solid waste (HSW) plastic bags. As there were no community drums 0% people dispose the solid waste in community drums. 5% people throw the solid waste into drainage channels. 1% people dispose solid waste into bushes. 10% people dispose (HSW) to fill the land. 75% people dispose household solid waste in an open land spaces outside the village. 6% people dispose solid waste by open burning and 3% people dispose solid waste by giving to domestic animals (fruits and vegetable peels). 50% people transport (HSW) daily. 40% people transport (HSW) after a day and 10% people transport (HSW) every 2 or 3 days

KEY WORDS: Attitude, Practice, Solid Waste Management, Clarka Abad.

Corresponding author:

Ms: Shazia Eshaq,

Nursing Instructor: (Post RN BS Nursing (2 year)

College of Nursing & Midwifery Fatima Jinnah University,

Punjab Lahore, Pakistan

QR code



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INTRODUCTION:

Solid waste management is defined as the discipline associated with control of generation, storage, collection, transport or transfer, processing and disposal of solid waste materials in a way that best addresses the range of public health, conservation, economic, aesthetic, engineering, and other environmental considerations.

In its scope, solid waste management includes planning, administrative, financial, engineering, and legal functions. Solutions might include complex inter-disciplinary relations among fields such as public health, city and regional planning, political science, geography, sociology, economics, communication and conservation, demography, engineering, and material sciences. (Alam and Ahmade, 2013)

Solid waste management practices can differ for residential and industrial producers, for urban and rural areas, and for developed and developing nations. The administration of non-hazardous waste in metropolitan areas is the job of local government authorities. On the other hand, the management of hazardous waste materials is typically the responsibility of those who generate it, as subject to local, national, and even international authorities.

The primary goal of solid waste management is reducing and eliminating adverse impacts of waste materials on human health and the environment to support economic development and superior quality of life. This is to be done in the most efficient manner possible, to keep costs low and prevent waste buildup. (SAIAN, 2009)

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The factors leading to inappropriate waste management includes:

- Lack of public awareness
- Lack of education and lack of knowledge about its impact on human health
- Insufficient legal and regulatory establishment
- Manpower shortage (SWM experts and municipal collectors)
- Lack of research in the solid waste sector
- High waste generation

Waste Management

The primary goal of solid waste management is reducing and eliminating adverse impacts of waste materials on human health and the environment to support economic development and superior quality of life. This is to be done in the most efficient manner possible, to keep costs low and prevent waste buildup. (Qasim . M ,et al 2019)

Solid waste in Pakistan

Pakistan generates 48 tons of solid waste per year, which has been increasing 2% annually. Pakistan lacks waste management infrastructure creating serious problems. Most of the waste is dumped or buried on vacant lots, threatening health and welfare of general population. Government of Pakistan estimates that 77,000 tons of solid waste is generated per day and mostly from major metropolitan areas.

Karachi is major contributor producing 13,000 tons of municipal waste daily. About 60-70% of solid waste in the cities of Pakistan is collected. Karachi is the largest city of Pakistan, use three sanitary landfill sites while Lahore the country's second largest city has two landfills. Other major cities plan to build proper landfill sites. In many areas, solid waste is simply dumped outside the city limits.

Solid waste management situation in Pakistan is matter of concern as more than 5 million people to die each year due to waste related disease. Being 6th most populated country in world there is lot of consumerisms and with it a great deal of waste being produced.

Like other developing countries, waste management sector in Pakistan is plagued by wide variety of social, cultural, legislative and economic issues. In the country, more waste is being produced than the number of facilities available to manage it.

In Punjab Lahore is only city with proper solid waste management, treatment and disposal system, which was outsourced to Turkish companies Albayrak and Oz Pak. Similar system is also planned for other big cities of Punjab. In Sindh Asian Development Bank's (ADB) infrastructure and service delivery program has provided to the Sindh Cities Development Program (SCIP).

SCIP which aims to improve solid waste management services in 20 secondary sites. In Khyber Pakhtunkhwa Water and Sanitation Service Peshawar (WSSP) is planning to build a sanitary landfill. Baluchistan with a population of 6.9 million

has no significant infrastructure for waste management system. (Qasim . M ,et al 2019)

LITERATURE REVIEW

Municipal solid waste management (MSWM) in the United States is a system comprised of regulatory, administrative, market, technology, and social subcomponents, and can only be understood in the context of its historical evolution. American cities lacked organized public works for street cleaning, refuse collection, water treatment, and human waste

removal until the early 1800s. Recurrent epidemics forced efforts to improve public health and the environment. The belief in anticontagionism led to the construction of water treatment and sewerage works during the nineteenth century, by sanitary engineers working for regional public health authorities. This infrastructure was capital intensive and required regional institutions to finance and administer it. By the time attention turned to solid waste management in the 1880s, funding was not available for a regional infrastructure.

Solid Waste Generation in Major Cities of Pakistan

City	Population	Solid waste Generation per day in Tons
Karachi	20,500,000	9,440
Lahore	10,000,000	6,510
Faisalabad	7,500,000	4,883
Rawalpindi	5,900,000	3,841
Hyderabad	5,500,000	3,581
Multan	5,200,000	3,385
Gujranwala	4,800,000	3,125
Sargodha	4,500,000	2,930
Peshawar	2,900,000	1,888

(Qasim . M ,et al 2019)

Major types of solid waste

The most common types of solid waste are:

- Municipal solid waste
- Industrial waste
- Agricultural waste
- Hazardous waste

Sources of Solid Waste

Every day, tonnes of solid waste are disposed off at various landfill sites. This waste comes from homes, offices, industries and various other agricultural related activities. These landfill sites produce foul smell if waste is not stored and treated properly. It can pollute the surrounding air and can seriously affect the health of humans, wildlife and our environment. The following are major sources of solid waste:

i. Residential

Residences and homes where people live are some of the major sources of solid waste. Garbage from these places include food wastes, plastics, paper, glass, leather, cardboard, metals, yard wastes, ashes and

special wastes like bulky household items like electronics, tires, batteries, old mattresses and used oil. Most homes have garbage bins where they can throw away their solid wastes in and later the bin is emptied by a garbage collecting firm or person for treatment.

ii. Industrial

Industries are known to be one of the biggest contributors of solid waste. They include light and heavy manufacturing industries, construction sites, fabrication plants, canning plants, power and chemical plants. These industries produce solid waste in form of housekeeping wastes, food wastes, packaging wastes, ashes, construction and demolition materials, special wastes, medical wastes as well as other hazardous wastes.

iii. Commercial

Commercial facilities and buildings are yet another source of solid waste today. Commercial buildings and facilities in this case refer to hotels, markets, restaurants, go downs, stores and office buildings.

Some of the solid wastes generated from these places include plastics, food wastes, metals, paper, glass, wood, cardboard materials, special wastes and other hazardous wastes.

iv. Institutional

The institutional centers like schools, colleges, prisons, military barracks and other government centers also produce solid waste. Some of the common solid wastes obtained from these places include glass, rubber waste, plastics, food wastes, wood, paper, metals, cardboard materials, electronics as well as various hazardous wastes.

v. Construction and Demolition Areas

Construction sites and demolition sites also contribute to the solid waste problem. Construction

sites include new construction sites for buildings and roads, road repair sites, building renovation sites and building demolition sites. Some of the solid wastes produced in these places include steel materials, concrete, wood, plastics, rubber, copper wires, dirt and glass.

vi. Municipal services

The urban centers also contribute immensely to the solid waste crisis in most countries today. Some of the solid waste brought about by the municipal services include, street cleaning, wastes from parks and beaches, wastewater treatment plants, landscaping wastes and wastes from recreational areas including sludge.

Physical Composition of Municipal Solid Waste by Percent in Pakistan

Ash, Bricks and Dirt	18%
Glass	6%
Textile	2%
Cardboard	7%
Food Waste	30%
Leather	1%
Paper	6%
Plastic	9%
Rubber	1%
Metal	14%

vii.

Treatment Plants and Sites

Heavy and light manufacturing plants also produce solid waste. They include refineries, power plants, processing plants, mineral extraction plants and chemicals plants. Among the wastes produced by these plants include, industrial process wastes, unwanted specification products, plastics, metal parts just to mention but a few.

viii. Agriculture

Crop farms, orchards, dairies, vineyards and feedlots are also sources of solid wastes. Among the wastes they produce include agricultural wastes, spoiled food, pesticide containers and other hazardous materials.

ix. Biomedical

This refers to hospitals and biomedical equipment and chemical manufacturing firms. In hospitals there are different types of solid wastes produced. Some of

these solid wastes include syringes, bandages, used gloves, drugs, paper, plastics, food wastes and chemicals. All these require proper disposal or else they will cause a huge problem to the environment and the people in these facilities.

Methods of Solid Waste Management

There are different methods of solid waste management. The following are some of the recognized methods:

a. Sanitary Landfill

This is the most popular solid waste disposal method used today. Garbage is basically spread out in thin layers, compressed and covered with soil or plastic foam. Modern landfills are designed in such a way that the bottom of the landfill is covered with an impervious liner which is usually made of several layers of thick plastic and sand. This liner protects the ground water from being contaminated because of

leaching or percolation. When the landfill is full, it is covered with layers of sand, clay, top soil and gravel to prevent seepage of water.

b. Incineration

This method involves burning of solid wastes at high temperatures until the wastes are turned into ashes. Incinerators are made in such a way that they do not give off extreme amounts of heat when burning solid wastes. This method of solid waste management can be done by individuals, municipalities and even institutions. The good thing about this method is the fact that it reduces the volume of waste up to 20 or 30% of the original volume.

c. Recovery and Recycling

Recycling or recovery of resources is the process of taking useful but discarded items for next use. Traditionally, these items are processed and cleaned before they are recycled. The process aims at reducing energy loss, consumption of new material and reduction of landfills.

d. Composting

Due to lack of adequate space for landfills, biodegradable yard waste is allowed to decompose in a medium designed for the purpose. Only biodegradable waste materials are used in composting. Good quality environmentally friendly manure is formed from the compost and can be used for agricultural purposes.

e. Pyrolysis

This is method of solid waste management whereby solid wastes are chemically decomposed by heat without presence of oxygen. This usually occurs under pressure and at temperatures of up to 430 degrees Celsius. The solid wastes are changed into gasses, solid residue and small quantities of liquid.

In summary, proper solid waste management is an integral part of environmental conservation that should be observed by individuals and companies globally. This will keep the environment clean and reduce health and settlement problems.

Problems

Solid waste generation in Pakistan ranges between 0.283 to 0.612 kg/capita/day and the waste generation growth rate is 2.4% per year. Solid domestic waste is typically dumped on low-lying land. This land could be used for more productive purposes and potentially valuable recyclable materials are lost.

The following are the main problems regarding solid waste management in Pakistan:

- There is no proper waste collection system
- Waste is dumped on the streets
- Different types of waste are not collected separately

- There are no controlled sanitary landfill sites
- Citizens are not aware of the relationship between ways of disposing off waste and the resulting environmental and public health problems

Strategies of Government Pakistan

The unavailability of proper disposal methods and resources for solid waste managing results in various environmental and human health hazard effects. Problems can spread over a wide area.

- Health Hazards
- Ground Water Pollution
- Air Pollution
- The Most Reliable Solution of Solid Waste Management
- Legislation
- Install Waste Disposal Facilities
- Reduce
- Re-use
- Recycle

Objectives:

The objectives of this study are:

- To Awareness regarding balance diet among Nurses
-

METHODOLOGY:

Study Design:

- i. Quantitative descriptive study
- ii. Questionnaires based study

Place of Study:

The study was carried out in village Clarka Abad at Raiwind Road, Lahore

Sample Size:

Sample size was determined by using a stratified random sampling method. The village was consisting of 100 houses for study.

Data Collection:

The data for this survey by home visiting through interview and questionnaires to present findings on attitude of people towards house hold waste management.

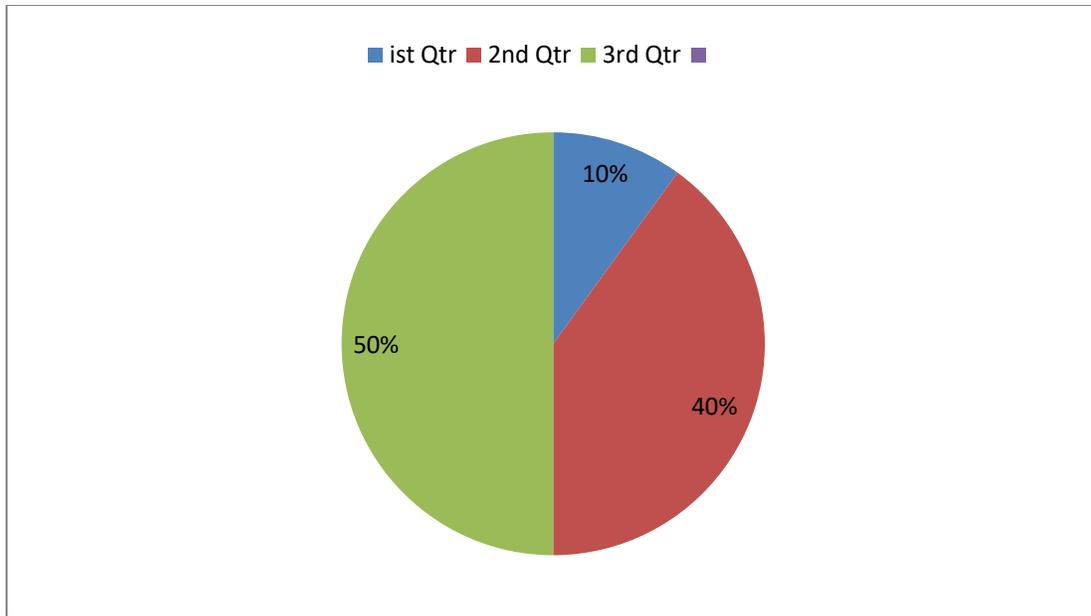
RESULTS:

We studied the attitude of Clarkaabad people towards household waste management. One hundred questionnaires were distributed and all were returned representing 100 percent rate. All the return copies were filled correctly and therefore used for study

S/NO	Attitudinal statement	Yes	No
Collection			
1	Do you store collected solid waste in drums	10	90
2	Do you store collected solid waste in baskets	50	50
3	DO you store collected solid waste in garbage bags	40	60
Disposal			
4	Do you dispose solid waste in community drums	0	0
5	Do you dispose solid waste by throwing into drainage channels	5	95
6	Do you dispose solid waste into bushes	1	99
7	Do you dispose solid waste by using it to fill the land	10	90
8	Do you dispose solid waste in an open land spaces	75	25
9	Do you dispose solid waste by open burning	6	94
10	Do you dispose solid waste by giving to domestic animals	3	97
Transport			
11	Do you transport solid waste daily	50	50
12	Do you transport solid waste after a days	40	60
13	Do you transport solid waste every 2 or 3 days	10	90

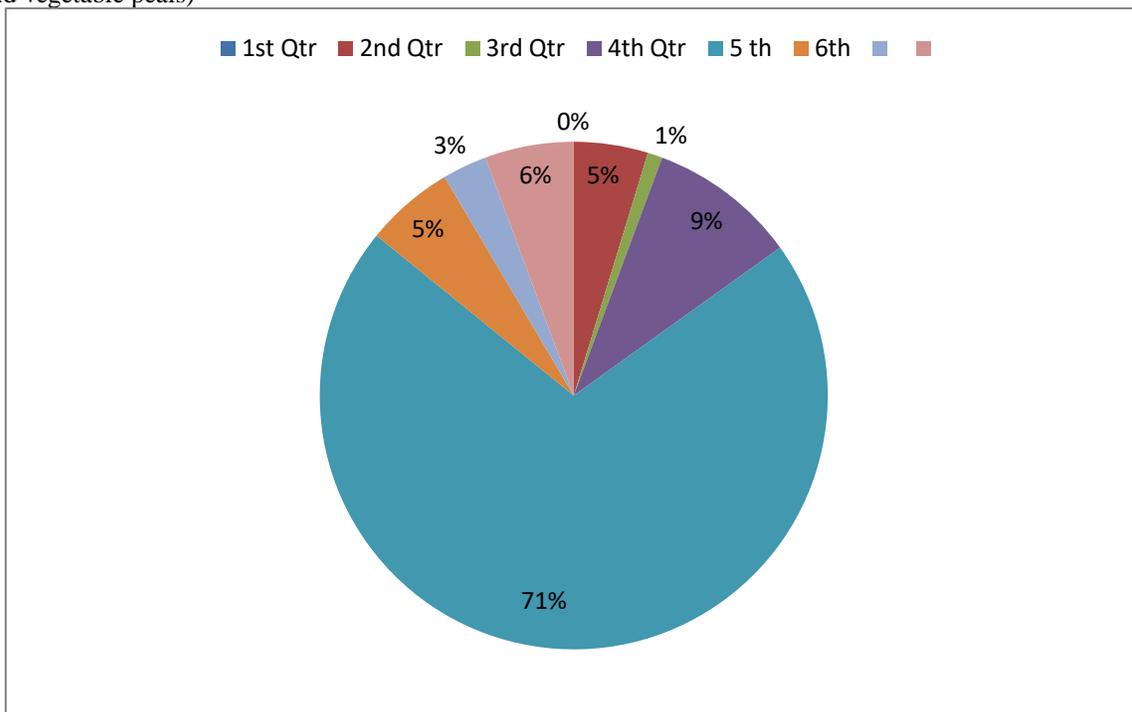
1: Attitude of the people towards collection of solid waste is:-

10% people collected household solid waste in drums and 50% people collected solid waste in baskets 40% people collected household solid waste (HSW) plastic bags.



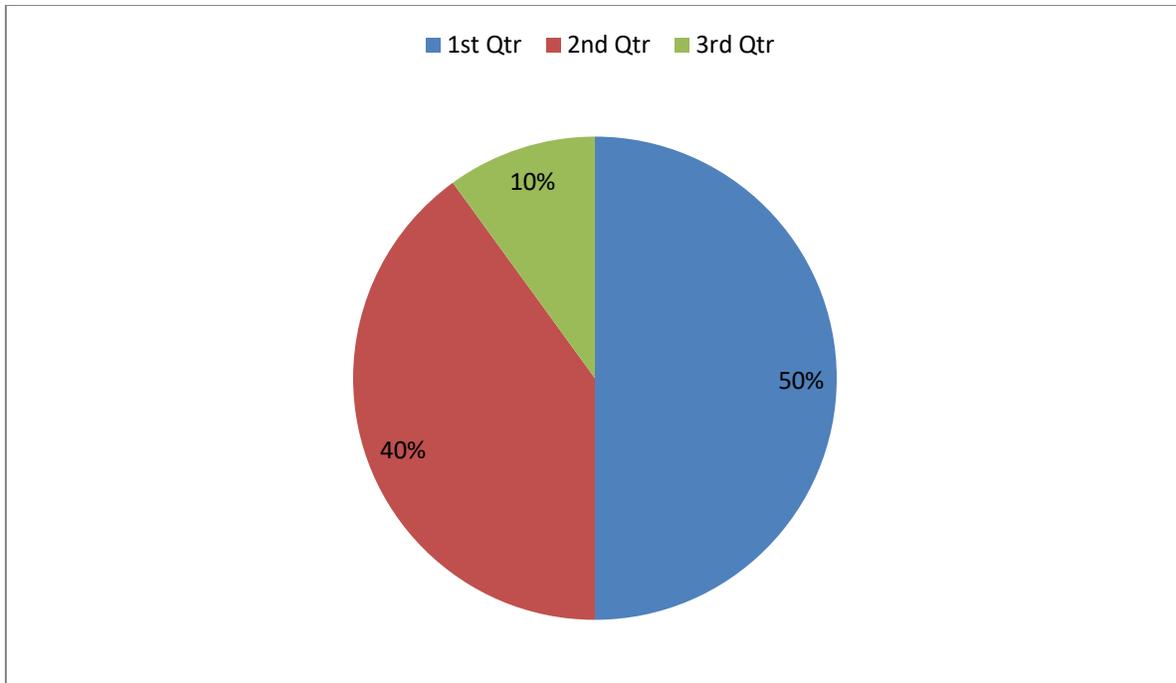
2: Attitude of the people towards disposes of solid waste:-

As there were no community drums 0% people dispose the solid waste in community drums.5% people throws the solid waste into drainage channels.1% people dispose solid waste into bushes. 10% people dispose (HSW) to fill the land.75% people dispose household solid waste in an open land spaces outside the village.6% people dispose solid waste by open burning and 3% people dispose solid waste by giving to domestic animals(fruits and vegetable peals)



3: Attitude of the people towards transportation of solid waste:-

50% people transport (HSW) daily.40% people transport (HSW) after a day and 10% people transport (HSW) every 2or 3 days



DISCUSSION:

At the end all house hold solid waste thrown by village people in an open land spaces, outside the village are openly burn. Dhokhikah and Trihadiing (2012) also discuss the current problem of collection, transportation and disposal process in Asian developing countries. The residents, especially those who are closer to the area of open land spaces, where people dispose off their household waste were not happy due to bad location, foul smell and the smoke produces when burning this solid waste material causing different respiratory, gastrointestinal and skin diseases. Alam and Ahmade (2013) Solid waste management has been a challenging area of community health management. The insufficient collection and inappropriate disposal of solid waste represents a source of water and air pollution, and pose risk of human health. The study results show that people of Clarka Abad not aware of about collection, dispose and transportation of solid household waste so the diseases ratio can be high in that area.

CONCLUSION:

The disposal methods of household solid waste used by residents were very unsatisfactory. A majority of nearby residents and far away residents either throw their waste on land or drains are not educated and also unavailability of community drums and proper transport system. Government should pay attention toward providing these facilities.

Recommendation:

- Keeping in mind the growing critical situation of solid waste management in Lahore, there is an immediate need for appropriate measures to be taken for the betterment of waste management throughout all districts of the city.
- Cleanliness can only be achieved, if LWM have a labor pool.
- There is a need to hire additional employees to assist the municipalities in dealing with the growing waste situation in the city.
- Furthermore, the workforce must be competent in handling specialized heavy machinery and vehicles used for waste collection and disposal, such as dumpers.
- To implement an integrated and systematic solid waste management policy, waste management procedures must be carried out by adopting the latest technology and engineering techniques.
- For this purpose, employees must be provided with suitable training programs to aid in increasing on the job.
- Current practice is that waste pickers collect the majority of recyclable leftovers from various dumping sites around the city using inappropriate methods that involve relatively no safety precautions.
- These waste pickers must be equipped with suitable tools and equipment, as well as proper

clothing and gloves to ensure their health and hygiene.

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