

Epidemiology Impact of Solid Waste and Assessment of Awareness Level among Rural Areas of Pakistan

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Abstract: Solid waste is diverse as any garbage, refuse, slush from waste plant, water supply handling plant, air contamination manage serves and other resources, as well as solid, liquid, mushy, contained gaseous. The aim of the paper is study the solid waste disease among the villagers. The result is concluded that if people have more awareness and they look after their health and adopt safety habit for health they can be less victimized of solid waste disease.

Key words: Solid waste • Epidemiology • Rural areas • Awareness level

INTRODUCTION

Solid waste management is a difficult work because it utilizes a number technologies and disciplines. These technologies are linked with the creation on site management and collection, storage, processing, transportation and disposal of solid wastes [1] Urbanization and population growth changes in life standards in developing countries and give rise to per capita community waste production. Keeping tempo with the standards of hasty economic progress and ongoing population increase, because of its serious role in shielding the environment and public health, proficiency successful and efficient municipal solid waste administration should be precedence for cities in developing countries [2] Solid waste widely contains different accumulation of discards from the urban people as well as more similarly generates from industrial, farmhouses and mineral wastes [3] Solid waste is diverse as any garbage, refuse, slush from waste plant, water supply handling plant, air contamination manage serves and other resources, as well as solid, liquid, mushy, contained gaseous from industrials, commercials, drawing out and agricultural work from societies activities [4].

Significant of Study: This paper gives brief description on the present waste-generation, uniqueness and management situation in rural areas, along with the

environmental effects. This paper finds the cause of domestic solid waste disposal and knowledge of area about health impacts by solid waste. The study focused on the guidelines about the solid waste executive health area at state as well as at region level. This research gives an opportunity for multidisciplinary work of the natural and social sciences to evaluation the experiences and problem related to public involvement of solid waste issues.

Statement of Problem: Solid waste disposal poses a greater problem because it leads to land pollution if openly dumped, water pollution if dumped in low lands and air pollution if burnt. Rural areas are facing serious environmental degradation and public health risk due to uncollected disposal of waste on streets and other public areas, clogged drainage system by indiscriminately dumped wastes and by contamination of water resources near uncontrolled dumping sites.

Objectives of the Study:

- To study the solid waste disease among the villagers
- To find out way to disposal of solid waste in the village
- To investigate the awareness level among villager
- To Analyses the health behavior amongst the villagers

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Solid Waste Relationships with Disease: According to Hanks, T. G. (1967) represents hypothetically, solid wastes association with diseases. He utter that solid create superfluous psychological, chemicals, biological, physical, mechanical, effects on the human health,

Thrift G. presents path way to describe association among solid waste an diseases. He sates five steps

- Detection of dangerous agents in the waste
- Show that such agents in relationship with, the wastes.
- Finding of infection amongst the people which may logically be related with agents;
- Illustration of the pathway from which effects are realized
- Explanation of the nonappearance of effects following break of these pathways by one means or another.

Amongst the individual population, circumstances exist which suit necessities three above (that is, there are many cases of disease, damage, or behavior which realistically could be supposed of arise from the sorts of dangers suggest).

The pathways from which agents of infection could effect in human contact and potential disability can be highly difficult, but a simplify diagram of the common form of diffusion can be presented in figure [5].

Theoretical model of the variables

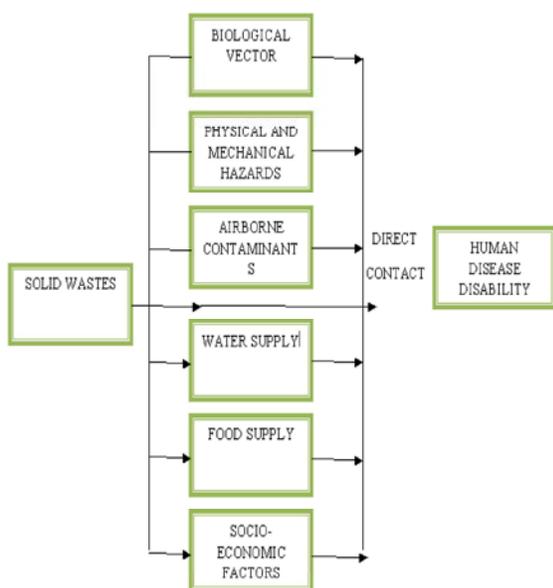


Fig. 1: Solid waste/ human disease pathways

Pathways: The first six of the pathways diagrammed above will be presented first.

Pathway 1:

Biological Vectors: The biological vectors of infection agents that can molest man include members of basically every family and kind of higher forms. The vector position either automatic or biological; that is, the agent may be elated on or in the vector without increase or vary in stage (mechanical carrier state), or the agent may need way in the transporter for increase or to experience a essential returning modification their organic transporter position. The transporter may so be either a accurate ‘host’ of the ailment or serve up only as an agent of transport

Pathway 2:

Physical and Mechanical Hazards: Solid wastes frequently have flammables and in the course of organic or chemical decay, evolve volatile, or smother gases. These gases cross soil and can most probably make danger to humans and their lodging of these are proximal to the removal, action, or other sites of dispensation of solid wastes.

Pathway 3:

Airborne Solids: Solids wastes are develop in many burning processes. A mainly heavy basis of particulates is the on fire of coal. Burning of solid wastes generate solid substance which go into the air. It is also imaginable that pathogenic soil fungus, multiplying through the nutritive result on soil of some solid waste ingredient, can discharge spores to the air

Pathway 4:

Direct Contact: Several potential for straight communication of humans with natural or toxic cause in solid wastes have to be present. solid waste have to be measured in two rather separate situation: first, as a assembly and removal difficulty involving hygiene workers and second, as a difficulty of private and household sanitation. Possibilities for kings of contact are to be incidental from the basis and element of solid wastes. therefore, farm works would emerge must main revelation to animals wastes, sanatorium staffs and entourage to infective human wastes, cleanliness workers treatment solid wastes in or exterior manufacturing to toxic wastes. also, family unit associate particularly children may be closely exposed to buildup of solid wastes in and about the house the being balanced to the danger in the waste.

Pathway 5:

Water Supply: Solid waste resources that are hanging able in water can create a possible basis of danger by excess into plane waters, or by leakage and percolation into land water or aquifers use for drinkable water. In adding, the probable modify as of solid to liquid or balanced and once more to solid to solid condition, could most probably cause specula involve with evaporation of the in the black and attentiveness and buildup of the solid stage.

Pathway 6:

Food Supply: The potential for bring in toxic agents or natural pathogens to the human life form through the foodstuff waste series are a lot of and multifaceted. most probably, contact could consequence from straight contact, as in the make use of containers holding loose ends of waste for food transfer, from contagion throughout the organization of biologic vector for instance flies and rodents and from infectivity by waste remains during food indulgence. contact too could approach throughout contagion of food harvest by fertilizers prepared from wastes ready food in market

merchandizing such fertilizers, throughout contagion of not poisonous fish by release of wastes into bodies of water, or diseases of animals use as a basis of food.

Pathway 7:

Socioeconomic Factors: Special attention clash, instructive and educational shortfall, jurisdictional argument and alike issue contain reasoned and will carry on to reason holdup in accurate shortage in solid waste administration and, by so responsibility, make a pathway potentially most significant to human disease and squalor of the surroundings to the decrease of human

Disease Related with Animals Waste: Other fecal borne infection in which man's home animals are the pool hosts, or which can serve up as hosts, are recognized to contaminate man. There are great numbers of type of protozoa create in vertebrate hoists, extremely a small amount of are recognized to infect man. The flies' wastes are enclosed somewhere else in the account. In review, flies are recognized to transfer the microorganisms; cases, the microorganisms have been exposed to increase inside the fly.

Theoretical model of the variables

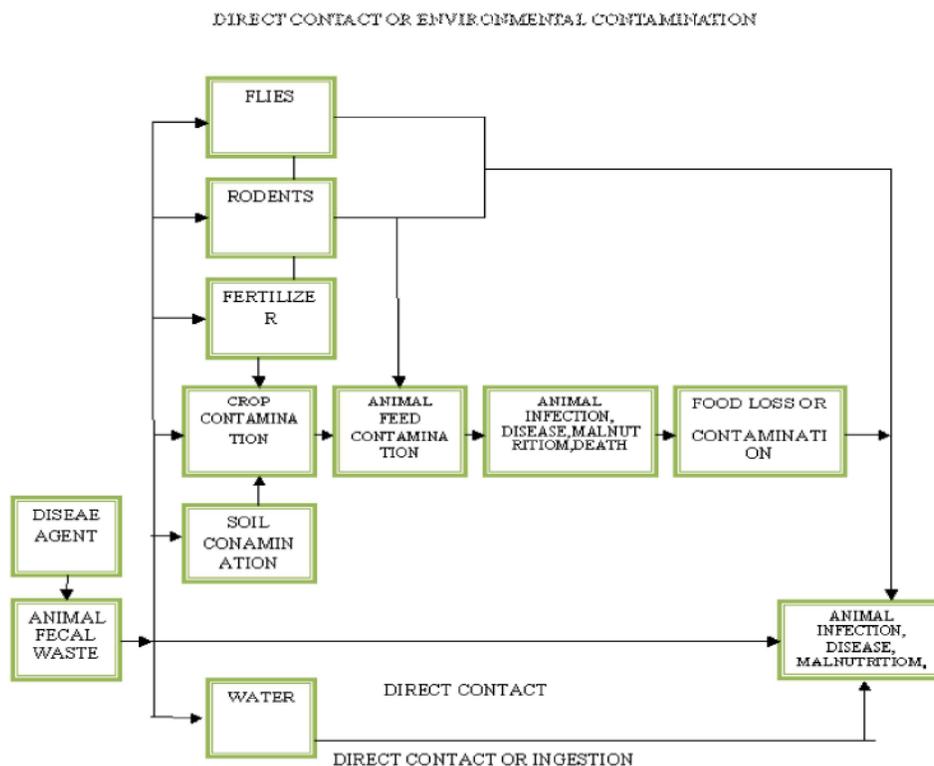


Fig. 2: Animal fecal waste/disease relationship

Conclusion: The Theory hold statements entail declaring that important relations between solid wastes and human disease be present. Theoretically, if all etiologic matter are there in an essential quantitative and chronological way, an essential and enough atmosphere for infection will be present and the infection procedure may consequence. Any sequence of proceedings among agent and host and inside imitate of the infection, have to unbroken. Each connection has to be resolutely recognized by reproducible comments. The infectious diseases most incriminated are those whose agents are establish in fecal wastes mainly human fecal wastes. Flies are transporter of a lot of infection agents, though and fly manage trial point to that they are important transmitters of shigellosis bacillary dysentery. The wastes from which the fly happen, or by which it is impure, thus comprise the main danger. In other terms, any solid waste which endorses fly spread will add to the occurrence of an infection when the agent of that infection is obtainable to the flu and when additional circumstances of conduction (for instance, the aptitude of the fly to pass on the agent, nearness of flies to hosts, amount issue) are satisfied.

MATERIALS AND METHODS

The study was conducted in Sabour village (Gujrat Pakistan) this is a Descriptive study. The researcher explains the effect of the solid waste on the rural areas. Survey research method was used to collect data. Data was collected by using a well-structured questionnaire. The sample size was 150 researches have selected sample through non-probability Convenience sampling technique. Researcher used non probability technique for data collection for the present study because the sampling frame of the population was not available. Maximum number of the items of questionnaire was close ended and some of them was open ended question included the questionnaire were classified by the recording with the help of SPSS for more appropriate analysis.

Data Analysis

Age of the Respondent:

Category	Frequency	Percent
19-24	23	15.3
25-29	28	18.7
30-34	23	15.3
35-39	17	11.3
40-44	20	13.3
45-49	13	8.7
50+	26	17.3
Total	150	100.0

The table shows that majority of respondent's age is 25-29 which is 18.7%. 50+ ages of the respondents is 17.3%. 19-24 and 30-34 age of respondents is 15.3%. Then 13.3% is 40-44 age and 11.3% is 35-39 so the data is mostly collect by the youth.

Gender of the Respondent:

Category	Frequency	Percent
Male	85	56.7
Female	65	43.3
Total	150	100.0

According to this table majority of respondent is Male 56.7% because the study is conduct in village and mostly male is give interview easily. Female respondent is 43.3%.

Category	Frequency	Percent
Illiterate	42	28.0
Primary	17	11.3
Middle	27	18.0
Metric	24	16.0
Intermediate	15	10.0
B.A	18	12.0
Master	7	4.7
Total	150	100.0

Education of the Respondent:

Category	Frequency	Percent
Govt Employee	15	10.0
Private Job	32	21.3
Own Business	30	20.0
Agriculture	15	10.0
House Wife	47	31.3
Other	11	7.3
Total	150	100.0

Education is important variable which determines ones level of awareness about health status According to tale that majority of respondents 28.0% is illiterate. 18.0% is middle. 16.0% is metric 11.3% is primary. 12.0% is B.A. 10.0% is Intermediate and only 4.7% is Master.

Occupation of the Respondent: The table shows that female respondent is house wife about 31.3%. Majority respondents is doing private job which is 21.3%. the respondents which have their own business is 20.0%. Related to Govt job and Agriculture is 10.0%. Other such as abroad respondents is 7.3%.

Monthly Income of the Respondents:

Monthly Income						
Descriptive Statistics	N	Range	Minimum	Maximum	Mean	Std. Deviation
Monthly Income	150	65000	5000	70000	2.17E4	12525.677

The Table shows Monthly income of the respondent maximum it is about 70000 and minimum 5000.

Healthy Monthly Expenditures of the Respondents:

Monthly Health Expenditures						
Descriptive Statistics	N	Range	Minimum	Maximum	Mean	Std. Deviation
Monthly Health Expenditures	150	31500	500	32000	4011.33	4148.721

The Table demonstrates Monthly health expenditures of the respondent maximum it is about 32000 and minimum 500.

Family Member of the Respondents:

Number of household						
Descriptive Statistics	N	Range	Minimum	Maximum	Mean	Std. Deviation
Number of household	150	13	2	15	6.41	2.586

The Table demonstrates Number of household of the respondent maximum it is about 15 and minimum 2.

Category	Frequency	Percent
Yes	105	70.0%
No	45	30.0%
Total	150	100.0

Do You Know Health Hazard by Solid Waste?: 70.0%% respondents have knowledge about that solid waste can danger for health. 30.0%% is not aware about it

Safety Behavior:

Category	Frequency	Percent
yes	57	38.0
no	93	62.0
Total	150	100.0

According to the above table 38% adopted safety behavior such They do not buy any food from shops which are near solid waste ground, They washed their hand properly after disposal waste, They drink boil water. They throw garbage daily etc whereas 62% have not adopted it.

Is Your Children Play near to Solid Waste?

Category	Frequency	Percent
Family	29	19.3
media	57	38.0
friend	18	12.0
health professional	46	30.7
Total	150	100.0

The table is demonstrate that 61.3% children play the near of solid waste. Where many insect and other poisoning is present but community people do not care about it.

From Where You Get Awareness about Solid Waste:

Category	Frequency	Percent
Yes	92	61.3
No	58	38.7
Total	150	100.0

In this table shows that 38.0%respondents say that media enhance respondent knowledge about solid waste hazard and 30.7% say health professionals give them information.. 19.3% get from family and 12.0% by friend

Have Pet Animals:

Category	Frequency	Percent
Yes	93	62.0
No	57	38.0
Total	150	100.0

The table describes that 62% respondents have pet animals at home and 38% has not pet animals.

Do You Ever Complaint about Solid Waste?

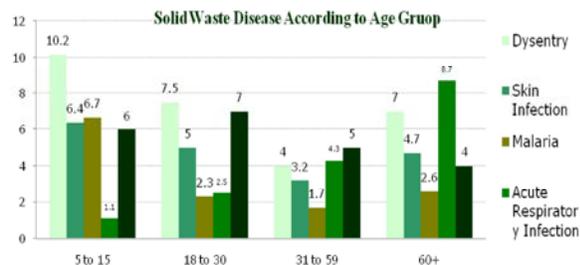
Category	Frequency	Percent
Yes	31	20.7
No	119	79.3
Total	150	100.0

79.3% respondents say that they did not complaint about solid waste which is spread in community people throw it in the open land only 20.7% complaint about it.

How You Spoil Household Solid Waste?: The way of disposed solid waste is nothing just through it on open land 94.7% replied it. Only 5.3 respondent burn it

How Your Community Solid Waste Is Disposed?: The table illustrates how solid waste is disposed by the municipal community 22.0% said that the solid waste is disposed by the burning. By the burning it releasing many poison gases which is inhale by the community. And 76.0% say that the solid waste is not disposed by anyone it lay on open land which also cause by many diseases and only 2.0% says picked by municipal community.

Disease among Rural Population:



The Graph demonstrates that mostly effect population by solid waste is children because usually children’s rural areas play near to wastes. Children have dysentery disease which is about 10.2% more than other age groups. There is also acute respiratory disease high rate among the older that is 8.7%.

Statistical Analysis

Hypothesis:

Ho = There is no relationship between improperly Disposal solid waste and Diseases.

H1 = There is relationship between improperly Disposal solid waste and Diseases.

Level of Significance:

$\alpha=0.05$

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.507 ^a	4	.021
Likelihood Ratio	11.699	4	.020
Linear-by-Linear Association	.553	1	.457
N of Valid Cases	150		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 2.66.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.277	.021
	Cramer's V	.277	.021
N of Valid Cases		150	

Critical Region: We reject the null hypothesis if p-value is less than 0.05.

Conclusion: Our calculated p-value is less than level of significance so we reject our null hypothesis. The table shows that there is relationship between improperly Disposal solid waste and Diseases among people. It indicates by phi Cramer s value that there is wanted relation among the variables.

Hypothesis:

Ho = Safety Behavior is not Decrease the Solid Waste Epidemiology

H1 = Safety Behavior is Decrease the Solid Waste Epidemiology

Level of significance:

$\alpha=0.05$

Chi-Square Tests			
	Value	df	Asymp. Sig.
Pearson Chi-Square	82.586 ^a	5	.000
Likelihood Ratio	103.587	5	.000
Linear-by-Linear Association	44.983	1	.000
N of Valid Cases	150		

Critical Region: We reject the null hypothesis if p-value is less than 0.05

Conclusion: Our calculated p-value is less than level of significance so we reject our null hypothesis. Above the table shows that there is a strong relationship between adopt the safety behavior and less diseases to solid waste. It indicates that there is high levels of adoption to safety behavior will be save the community from the solid waste epidemics.

		Cross Tabulation							
		Do Your Family Members Have Such Disease?							

			Dysentery	Skin Infection	Malaria	ARI	Diarrhea	No Diseases	Total
Safety behavior	Yes	Count	3	12	0	3	7	33	58
		% Within Diseases	10.7%	41.4%	.0%	12.0%	53.3%	100.0%	39.%
	No	Count	25	17	20	22	8	0	92
		% Within Diseases	89.3%	58.6%	100.0%	88.0%	46.7%	.0%	61.%
Total	Count	28	29	20	25	15	33	150	
	% Within Diseases	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100%	

The People Adopted Safety Behavior Such as:

- Their children do not play near the solid waste
- They do not buy any food from shops which are near solid waste ground
- They washed their hand properly after disposal waste
- They drink boil water
- They throw garbage daily
- They usually keep garbage near the outside door

CONCLUSION

Poor management of Solid Waste can also affect ground water and marine ecosystems. Consequently everyone has to be involved in Solid Waste Management for effective and efficient Solid Waste Management systems. On the other hand waste can be a resource that can be used and provide employment opportunities that may contribute to poverty alleviation if the populations are informed, educated and included in the Solid Waste Management decision making process. It is not only important to involve individuals in Solid Waste Management but also groups and the private sector as full ownership and management by the government may not be the most efficient approach. Increasing Environmental and Health Impact of Solid Waste Disposal Residents are not happy about the location of the dump site. The disposal methods of solid waste used by residents in the study area were very unsatisfactory. Majority of both nearby and far away residents indicated that the dumpsite is the breeding place for disease vectors, cause diseases and makes the place dirty. Many disease is spreading in village because of solid waste and it has a bad effect on people health Effected population is considered burden on the society that area cannot progress properly [7]. The result is concluded that if people have more awareness and they look after their health and adopt safety habit for health they can less victim of solid waste disease.

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