

Full Length Research Paper

Social, Economic, Political and Developmental Impact on Solid Waste Management in Lideta Subcity, Addis Ababa Ethiopia

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Abstract

The problems of stakeholders related with social, economic and political impact of solid and liquid waste were the main cause. This study uses different type of sampling methods because of the variation of stakeholders (target group) interested even though taking 10% from the total population sample by the selection method by using systematic random sampling as well as different sampling size to different target group and the study design of descriptive cross sectional method. The sample household of subcity responded that due to solid waste problem are related with liquid waste; 57.2% responded that bad odor; 40.7% related to different types of communicable disease and the rest 2.1% didn't acquire to any types disease/problems/. Most communicable disease (71%) is due to solid and liquid mismanagement. The stakeholders directly or indirectly can fell on extra expense related with solid and liquid waste management. This study highlights that solid and liquid waste creates critical problems and by improving their management system like handling, collection, transporting and disposing of solid and liquid waste activities in the right way and practice of scientific method which awarded the city clean and beautiful now and tomorrow.

Keywords: Waste management, Impact of social, Political and Economic, Environmental.

Introduction

In many developing countries solid waste management system are complex and difficult to properly manage due to lack of technology, good governance and strategies. Municipal Solid Waste Management (MSWM) is considered to be one of the most immediate and serious problems confronting urban government in most developing and transitional economies (8). Developing countries' main MSWM system has been collection, transportation and eventual disposal of co-mingled Municipal Solid Waste (MSW) unto uncontrolled and semi structured dumpsites. "The system has often been characterized by inadequate service coverage, operational inefficiencies of services, limited utilization of recycling activities, inadequate management of non-industrial hazardous waste and inadequate landfill disposal" (11). Such management practice has always come along with adverse public health effects and financial burdens. Environmental sanitation related diseases such as malaria, diarrhea, intestinal worms and acute upper respiratory tract infections are major health problems in the city (1). The system is neither environmentally friendly nor economically viable. The system has become more challenging in recent times with rapid population growth, urbanization, competing needs and diminishing availability of disposal sites especially in urban centers of countries with developing economies.

The existing MSWM situation and associated adverse impacts can be solved by implementing and establishing a sustainable and integrated solid waste management option where all types of municipal solid waste and all facets of the waste management process are considered together (10) they tried to advice for acceptance and implementation in countries with developing economies, a sustainable and integrated solid waste management (SISWM) system that requires, the collection of solid waste composition data; progress from uncontrolled dumping to the use of sanitary landfill; separation of organic waste from MSW, which can then be composted; and formal involvement of scavengers in the recycling of materials. A step toward the acceptance of such a sustainable and integrated system has already in construction in Ethiopia with the introduction of engineered landfills in Addis Ababa city.

Rapid growth of population and industrialization degrades the urban environment and places serious stress on natural resources, which undermines the quality of the immediate surroundings, and degradation of the environment in most cities of the developing world. Municipalities of the developing countries are not able to handle properly the increasing quantities of waste, which results in uncollected waste on roads and in other public places (3). The insufficient handling of solid waste represents a source of water, land and air pollution affecting the urban environment and the health of the people living in the cities and is one of the most critical environmental problems that cities in Africa are facing today.(6)

Many cities in East Africa are dealing with the environmental costs of rapid growth and urbanization represent a phenomenal change. This was particularly true in the area of solid waste management. While cities were generating an ever-increasing volume of waste, the effectiveness of their solid waste collection and disposal systems were declining. In urban centers throughout African region, less than half of the solid waste produced is collected, and 95 percent of that amount is either indiscriminately thrown away at various dumping sites on the periphery of urban centers, or at a number of so-called temporary sites, typically empty lots scattered throughout the city (3).

The current capacity of most solid waste management systems in Africa is inadequate and too slow to meet the increasing demand of the solid waste generated (4). Improper solid waste handling and disposing system was main cause of communicable disease. Among the disease which can cause directly are eye disease, AWD (Acute watery diarrhea) and others feco-oral disease as well as many type of disease caused indirectly by lack of solid waste handling. The community that vulnerable to these type of disease there economy social value were highly influenced. (9)

The city of Addis Ababa suffers from a chronic shortage of essential socio-economic services, an awfully inadequate physical infrastructure and unhealthy environmental condition. An inept administration that has failed to maintain, upgrade and expand the city's infrastructure and services in line with the growing population and economic activity has exacerbated its woes (1). The urban health problems were practical and riskful in which the inhabitants unfortunately took part in living and working. Some of the inhabitants suffer from various infectious diseases and many children dies. The urban poor, who lack many life supporting assets, were by far affected disproportionately from these negative impacts. (7)

Even if Addis Ababa administrative level there was good strategies to manage solid and liquid waste but there was the gap between the performance and ground root level imbalance specially problem related with latrine. Now a day Addis Ababa was head quarter of Africa union but the former leader of Libya Mohamed gadafi challenge the idea which raised Addis Ababa became to the head quarter because of the sanitation of Addis Ababa was under question. This showed that issue of sanitation was highly related with or influenced the politics. (5)

Even if there was solid waste management system in Addis Ababa 75% of solid waste can collected and recycle, reuse and 25% of solid waste scattered at different place e(river,road,channel,ditchetc)therefore, mismanaged solid and liquid waste can cause to various types of problems on different stakeholders like it can decrease the income of Micro and small enterpris,the community can felt on different types disease ,it decreased the a static value of town/subcity/ also the image of country, it can decrease the tourist flow and the income from them(2). Inadequate solid waste management in Addis Ababa has resulted in the accumulation of waste on open lands, in drains and in the living areas causing a nuisance and foul– smelling pools, environmental pollution through leachate from piles (water and soil Pollution) and burning of waste (air pollution), clogging of drains, and the possible spread of diseases. This situation was believed to result in poor environmental conditions which in turn pose a formidable threat to health. There was a need for improved waste Management system of the city, Addis Ababa. In woredas of lideta subcity the degree of problems acquired on different bodies can vary from one stakeholder to another due to improper management of solid waste. Micro and small enterpriser and others who work related job are primary vulnerable, secondly driver, assister an officers who worked a job related with sanitation finally the problem extended to the community and subcity. (1)

The aim of this research was to close this gap by examining the issue of municipal waste management in lideta, Addis Ababa. Special emphasis was placed upon: (1) the amount and type of solid waste generated and associated management activities, (2) the social, economic, political and jurisdictional factors influencing the city strategies and (3) the level of awareness and willingness of lideta subcity in Addis Ababa, Ethiopia to address the solid waste problem.

Methods and Materials

Study Area

Lideta was one of the subcities among ten subcity of Addis Ababa. The boarder subcity are at the north Addis ketema, at the south kirkose, at the East arada and at the west kolfe keranyo the area of subcity is 918.27 hectar and the expected number of household is households and population are 36000 and 283795 respectively. Located at (9° 0' 59" N) latitude and (38° 44' 1" S) longtiud.1200m above sea level. The subcity weather condition was mainly categorized into four seasons. hard rain season (kiremt) from June to August (mekher),from September to November, dry season (bega) from December to February and few rain season (tseyey) from march to may(from 2007 census of CSA (Central statics agency)report

Source of Data

Our source of sample was included primary and secondary data source. We used directly the primary data collected by quessionnior, observation and photo from the worker of cleansing management office, households and others and for secondary data we used different types of Pdf studies from internet web, and graduating paper for master program.

Study design

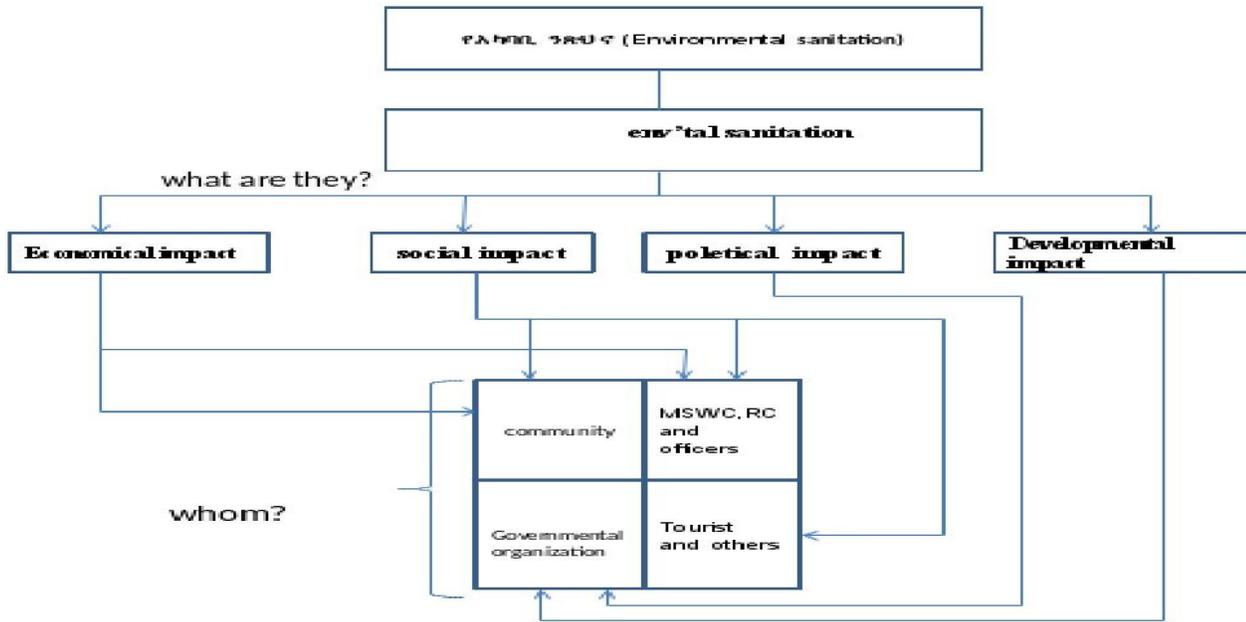


Fig 1: Design of the studied and what the solid and liquid waste problem and related to social, economical, political

Sample Size and Selection Method

As different documents indicated our study sample was selected from the total source, as well as when the sample size was increased, the result of the study becomes reliable and representative. Those included different types of data source therefore my sample size and selection method was varied from source to source.

Table 1: Shows the sample size of targeted group and there selection method

S. No	Target group	Total amount	Sample size	Selection method	
1	Household	33336	w1=3508	3334(10%)	random systematic sampling method
			w2=1506		
			w3=4764		
			w4=4794		
			w5=6084		
			w6=2980		
			w7=4000		
			w8=1565		
			w9=1295		
			w10=2840		
	w2=1506	w2=1506			
2	MSWC	419	40(10%)	By quota system	
3	RC	220	40(20%)	By quota system	
4	officers	67	20(30%)	By quota system	
5	HEW	150	30(20%)	By lottery method	
6	Culture & tourism office	10	5(50%)	By lottery method	
7	Trade & industry office	10	5(50%)	By lottery method	
8	Health institute(HC)	-	50%among health institutes in the subcity	By lottery method	
Total		34212	3474		

Selection Criteria

The sample included 3334 household sample from 33336 total household. The distributed sample size expressed on the above table. The study followed sample selection method for woreda level seen as an example woreda 1 and the other woredas also follow like them. Total household of woreda1 is 3508 the sample size of household is 351(10%) as a woreda that selected these sample size by using systematic random sampling method. Total number of household of woreda 1 divided to the sample size (3508/351=10) resulted number was ten this number represented the gap interval between two household when those were taken sample therefore when that can be taken one sample from one household and then jump 10 household after that take the second sample. For samples other than household we selected their sample by using lottery method. The samples selected the place where sample taken from institution 10%, as well as 10% from household that where around the channel and rivers and the remaining from other parts of woreda

Data Collection Procedures

Ten woredas officers followed the following procedures when they collected data. The sample size of every source of data was identified by the officers, the questionnaire of household filled evenly by followed the systematic sampling method, the sample of MSWC(Municipal solid waste collector) and road cleaner took from woreda and the officer filled questionnaire by asking them, for others target of study we gave to them the questionnaire to fill by them after told to them the aim of the study the officers used observation and photograph data beside to questionnaire, the supervisors was approved daily collected data, after data was collected the officers compiled it by used the prepared compiling sheet, each woreda organized the compiled data by different officers, the heads of all woredas cleansing management office supervised the study progress, finally the compiled data sent to subcity and then the researcher changed it in the form of information

Result and Discussion

Community

From the total 3333 sample of Households, 3272 of them participated in this study constituting response rate of 98.1 percent. The researcher saw below the respondents answers step by step. What types of disease acquired due to waste generated at residential place? From the total respondent 47.9% said that respiratory tract infection, 14.7 % disease of external bodies and 17.8% said hepatitis the rest respondent gave their response as follow 3.5% I don't know, 4.2% said diarrhea, 4.2% typhoid similarly 4.4% said cholera, 1.7% said asthmatic disease, 1.2% said most type of communicable disease only 0.7% of them said that every type of disease can caused.

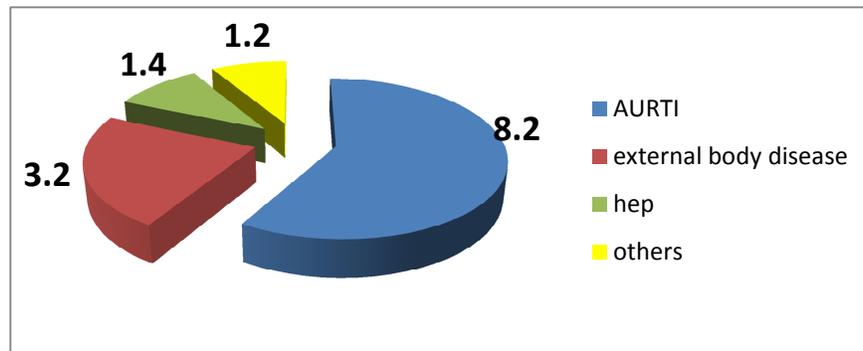


Fig 1:- Type of disease mostly acquired at household level due to solid waste in lideta subcity. (AURTI means Acute upper respiratory infection)

Table 2:- Problems due to solid and liquid waste in lideta subcity, 2008

S.no	Problems of solid and liquid waste that reflect on our environment due to lack of proper handling	Frequency	Percent
1	Exposing to disease	1322	40.4
2	cause to afford for medical treatment	836	25.6
3	Reducing a static of environment	866	26.5
4	Others		
	Asthma	27	0.8
	Bad odor and breeding site to vector and rodent	199	6
	I don't know	22	0.7

In above table 19.2% said improper disposal of waste in villages decreases the income of commercial centers, 27.9% said it decreased the flow of tourist, 47.2% of them said it reflects the image of society and decrease aesthetic value, the others 1% said it

has no problem, similarly 1% of them said improperly disposed solid waste was difficult to collect by MSWC especially which is disposed in the river (3.7%). The problem which acquired on stakeholders due to solid and liquid waste was obvious.

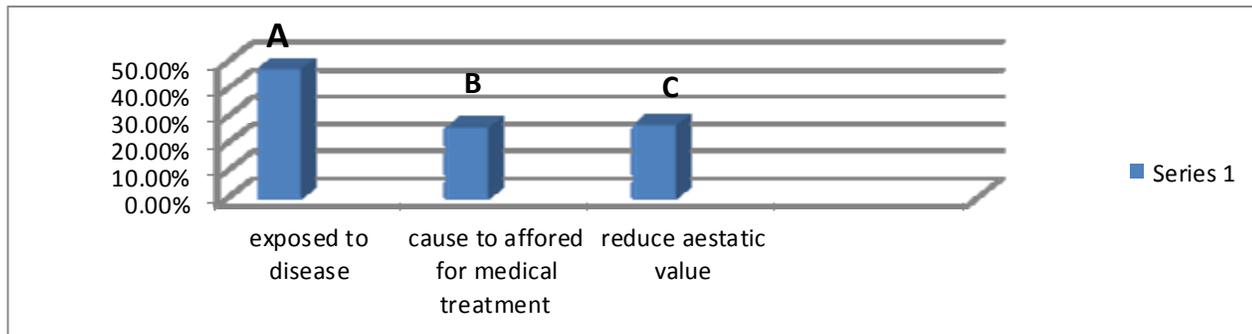


Fig 2. Improper solid and liquid waste management on the environment

From the above Fig, A show solid and liquid waste can cause to disease also; B show relatedly can cause to extra expense and point C show solid and liquid waste can cause to decrease the beauty of subcity.

Table 3:- Problems related with latrine in lideta subcity

S.no	The identified problems due to latrine	Frequency	Percent
1	Fell on disease and nuisance due to it bad odor	1370	43.7
2	The pits fill fastly	685	21.85
3	Lack of utilization	814	25.95
4	Others		
	Inserting plastic...in to the pit of latrine	114	3.6
	Our latrine cannot able to suck due to ...	77	2.45
	We don't have latrine	74	2.36

Table 3 states that the problem acquired related with liquid waste? 57.2% of respondent said bad odder 40.7% said acquiring to communicable disease and the rest 2.1% said we didn't acquired to any problems related with liquid waste. How do you dispose liquid waste in your house? 44.2% said we disposed it in the hole around our house traditionally, 35.86% said we disposed it by using prepared place which connect with modern sewerage system, 18.1% said we disposed it in the self prepared private land fill pit and only the rest 1.8% we disposed it in the shared street channel. almost all part of community in a subcity were vulnerable to a problem related with liquid waste especially to bad odder, communicable disease were common because of as we see from the answer of HH or from observation there was a gap of proper liquid waste management site. What was your comment on the administrative bodies in solid and liquid waste management system (related with good governance)?,15.9 % said they were neither giving service passionately nor handle customer properly ,32.7% of them said the higher level manager not followed and evaluated the work and problem related with solid and liquid waste at ground level,36.3% said we didn't see any problem,2.9% the problem related with latrine, Only 0.4% said solid waste did not pick by it schedule,0.6 said we didn't have any comment,11.2% said there was no owner specific responsible body to the problem related with liquid waste management system.

From the below figure 3 handling, collection, transportation and proper storage and management of solid and liquid waste is necessary and if does not happen can be attributed to lack of good governance.

In Addis Ababa city the management of solid and liquid waste is poor. It is heavily recommended to address these problems and efforts should be made to collectively management and strict evaluation and controlling system used to minimize the conditions.

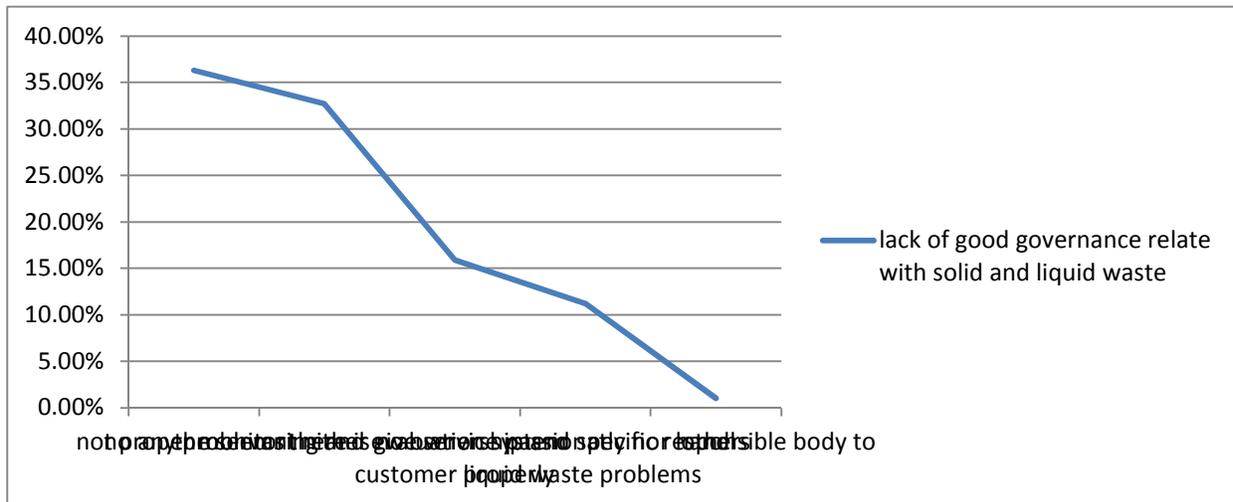


Fig 3:- Comment of good governance about solid and liquid waste

MSWC (Municipal solid waste collector)

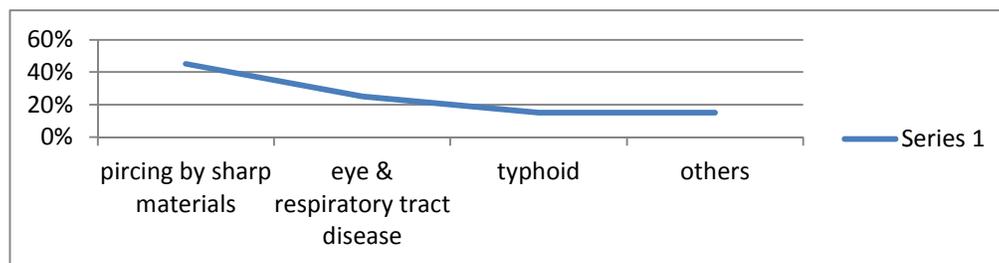


Fig 4:- Types of disease and injury acquired on MSWC in lideta subcity

The municipal solid waste collectors were affected by different types of disease during collection of waste. Fig 4 states that among the selected sample of MSWC 36.3% respondents were pierced by sharp materials during work, 23.9% said to respiratory tract infection and eye disease as well as 39.1 % to typhoid

Table 4:-Type of problem which acquired on MSWC in lideta subcity

The problem acquired on MSWC during work	Types of problem	Frequency	Percent
Sign and symptoms on MSWC related with their work	Back pain complain	16	41
	Skin screeching	11	28.2
	Headache	12	30.8
	Crashing of members by car	6	20.7
Problems during solid waste hauling	Felling of members	15	51.7
	Crashing of pedestrian by our cart	3	10.3
	Crashing of car by our cart	1	3.4
	Our cart frequently	3	10.3
General problem during service delivering	Demoralization, blaming etc	19	79.2
	Affording from saving due to crashing of car or pedestrian	5	20.8
The problem during solid waste putting in the plate	Solid waste arosoles enter to in our eye	20	51.3
	Liquid waste (leachate) enter to in our eye	10	25.6
	We fell on the land	9	23.1

From the total respondent; 40.9 % of said we carry solid waste by our back, but 45.5% said against and the rest 13.6% said only we hold it by our backside during picking from house.

Fig 5 states 29.4% didn't have any comment; similarly 29.4% of them said our monthly salary was not arrived timely, as well as the rest 42% said woreda officers and sub city cleansing management office follow and support us properly but the other managerial department never see toward us and our work.

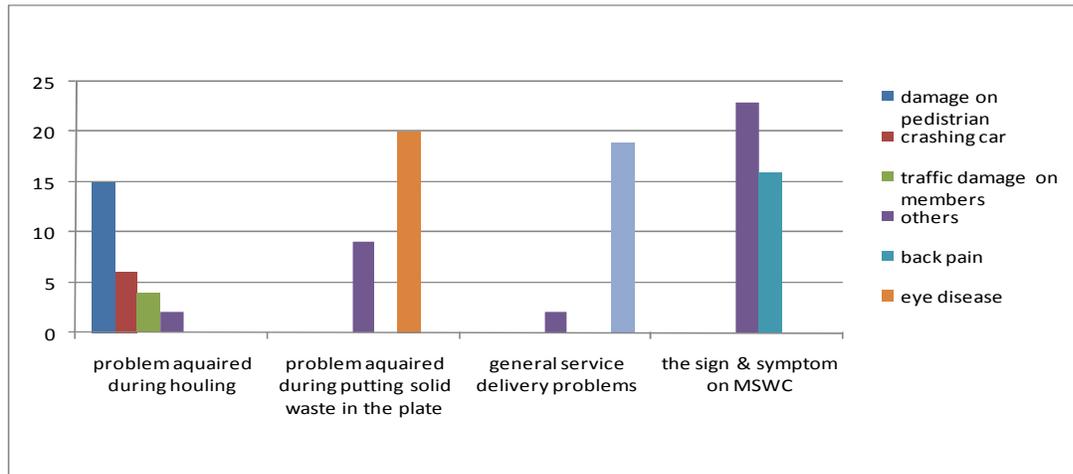


Fig 5:- Problems acquired on MSWC during service delivering in lideta subcity

Road cleaner/sweeper/rc/

The street sweeping worker said the problem of solid and liquid waste is due to improper management system and is shown in Table 5

Table 5:- Economic and social problem on RC in lideta subcity

S. No	Economical and social problems which acquired on RC	Frequency	Percent
1	Some part of community disposed waste even if they saw when we cleaned	4	16
2	Cleaning of street by two shift is good to the cleanliness of road but there is a great stress on the morning shift worker	1	4
3	No transport, fearing of robber etc during early morning	6	24
4	The materials which help to work are not full filled timely	2	8
5	We haven't a shiny close which helped to protect us from car accident at early morning	2	8
6	Affording to hospital repeatedly	10	40

55.6% said that we feel the sign of tiredness during and after work; 13.9% said headache; 30.9 % complaint back pain and the rest 5.5% said complaints of renal disease; Rest 5.5 % said pneumonia and AURTI.

Officers

What were the problems acquired on MSWC you saw during work? 50% of asked officers said they felt on different types of disease relatedly 28.6% of them said they afforded high cost to hospital and the rest 21.4% said they became to absent from the work for long time due to disease and decrease their monthly income.

It was really difficult for officers because they were under risk. As officers identified your daily activities? 66.7% we monitored and supervised the cleanliness of river, drainage and zones even we followed by presenting here during cleaning, 22.2% said we discussed with MSWC near the transfer station and the rest 11.1% said we used cafe suddenly during on work.

The officers said in our life span in this work we acquired on the following problems. 41.2% we acquired on AURTI, 29.4% we felt on different types of communicable disease repeatedly, 5.9% said on typhoid and typhus similarly 5.9% to head ach and the rest 17.6% said we didn't exposed to anything's. As the officers responded solid and liquid waste impact on the image of woreda 89% of them said the place where had high amount of solid and liquid waste caused to a bad a static value to woredas, 5.5% of them said the liquid waste impact on the image of woreda was the main, similarly 5.5% said the disposing of mixed liquid and solid waste can be a negative impact on the image of woredas.

Health extension workers/HEWs/

What was the sanitation status of your woreda? 3(23%) of HEWs said It is neither good nor bad in order to the life style of the community which is dense, 1(7.7%) said relatively it is good especially related with solid waste management, 7(53.8%) said there was a good progressed rather than the past years and the rest 2(15.4%) said it was not even sanitation status in the woredas some part was good but some was not. more than 50 % of subcity HEW comment that now day there was a progress on sanitation of subcity rather than past year but all of them believed that there is from the table 5 a gap of managing solid and liquid waste especially on liquid waste managing system. What types of problems can acquire due to improper management of solid and liquid waste? 7 (77.8%) of HEW said a static value of the environment was decrease, comfortable breeding site to vector and rodent, AURTI etc, 1(11.1%) said AWD,diarrhea and pneumonia similarly 1(11.1%) said typhoid and typhus. Expressed the economical, social, political and developmental impact of solid and liquid waste problems and the solution? All of them (100%) said improper liquid waste management system or absence of proper liquid waste management and problem related with latrine were the main samples which show lack of good governance because when the communities complain about the problems the managerial group not give to them a proper and enough answer therefore; the town administrative must be facilitate and construct modern drainage system

Health institution/HC/

From the total subcity health institution had taken 3 HC which include or give service to large amounts of community groups. Recent 10 top diseases in adult and under five patients which were causing of morbidity in the subcity.

Table 6:- Ten top cause of morbidity in lideta subcity health institutes

S.No	Types of disease	Frequency	Percent
1	AURTI	6638	26.7
2	Typhoid and typhus	3910	15.8
3	Diarrheal disease	2696	10.9
4	UTI	1982	7.9
5	Trauma	1758	7
6	Dyspepsia	1255	5
7	Infection of skin and sub coetaneous tissue	1096	4.4
8	Hypertension	1017	4
9	Pneumonia	913	3.7
10	Disease of eye	723	2.9
11	Others	2913	11.7
Total		24901	100

Above table highlights pest disease which is mainly caused by solid and liquid waste. Therefore, this is a great sign to the main cause of morbidity in the subcity sourced from improper management of solid and liquid waste with the aggravation of bad personal hygiene habit.

More than half (61%) disease is caused in subcity due to lack of proper solid and liquid waste management and different study shows that almost 85% communicable diseases is caused by lack of proper management of solid and liquid waste, therefore, the study resulted in a subcity slightly similar with global proven fact.

From the sample HC 1(33.3%) said we give the decomposable and reuse waste to woredas solid waste enterprise and burnt the hazardous (infectious) waste in the incriminator and the rest 2(66.7%) said we burnt all types of waste in the incinators.relatedly when they expressed about their liquid waste disposal system one HC (33.3%) said we have a septic tank and the 2 HC said we had drainage system. All HC (100%) expressed professionally the impact of solid and liquid waste on the community can be caused to respiratory truck infection, to communicable diseases as well as psychological impact (related with static values).

Others Sectors

Trade and Industries Office: Trade is common in woreda 3 office(37.5%) said kiosk shop and 5(62.5%) said cars spare part and 2(33.3%) of office considered the solid and liquid waste management system of customer during licensing for trade and the rest 4(66.7%) was not because one office (25%) said our customer came to us and ask only to repair his/her license, similarly another woreda office(25%) said there was an office which considered these criteria and the rest 2 office(50%) said it was not necessary to consider liquid and waste management system to the license of shops may be to food establishment house. The type of place which more trade is presented is non dense and cleaned area 2(66.7%) and (33.3%) said the place where in front of the main road and all office gave there comment about impact of solid and liquid waste on the trade sectors especially lack of sanitation on hotels, food establishment etc

Culture and Tourism Office

This office is new at woreda level. The sample office gave their comments related with solid and liquid waste as a exaggerated comment in related with solid and liquid waste rather some of them comment on the greenery area. General the attractiveness of subcity decreases as well as the area where were book store, hotels and parks are mostly visited by local and foreign tourists therefore the negative impact of solid and liquid waste on woredas they can cause to decrease the floe of tourist also the tourists who visited the place in subcity did not give an attractive.

Discussion

From the above it's clear that poor solid waste management system must be given attention for solving the social, economical, political and environmental problem by effective and efficiency of handling, collecting, transporting and disposing solid and liquid waste.

Many case studies indicates that understanding of a waste stream such as the generation and recovery rates and composition is the first measure in determining proper management solutions, which forms the third factor of Waste Characterization. The presence and efficiency of waste collection and segregation by scavengers, municipalities, or private contractors were commonly addressed by the case studies, which justified Waste Collection and Segregation.

Solid waste management is one of the less complicated services that municipalities provided to their residents. Municipalities have traditionally managed and financed the collection and disposal of waste, but an increasing number of local governments' were becoming responsible for systems which include not only handling, collection, transportation and disposal but recycling, reuse, composting, recovery, and the management of household hazardous waste.

Conclusion

Only 3.5% of community hadn't a knowledge about the negative impact of solid and liquid waste also 0.7% of them thought that all type of disease can cause due to solid and liquid waste almost 96% know there impact. more than 90% of community felt on the problems related with latrine (bad odor, different types of disease, pit fill fatly, lack of utilization etc...) One third of community comment that there was no problems related with solid and liquid waste on management group similarly 1/3 of community said there was a problem on worker these are not give service properly. More than 1/3 of MSWC priced by sharp material during work without proper care. 30.8% of them adapt headache, 20.8% of them felt on extra expense to car accident on them during they were on work. Similarly RC acquired different types of problem, 8% of them complain about protective material which were not fulfill timely similarly 8% of them said we hadn't shiny close which help to protect us from traffic accident. Almost all cleansing management office officers were susceptible to different types of disease either acute or chronic. 89% of them said improper management of solid and liquid waste can cause to decreasing the image of subcity. More than 50% of HEWs comment that now day there was progress on sanitation of subcity rather than past year. The primary disease due to liquid and solid waste in subcity was AURTI (77.8%) HEWs comment about it, 26.7% to pest in health center and the main and common disease which acquired on MSWC, RC, officers etc...) 66.7% of trade and industries office said the type of place which were non dense and clean are more trade is presented. In lideta subcity most community (tourist) visit park, book store, hotels but there was no negative comment related with solid and liquid management in that area. And what we were concluding that to show how solid and liquid waste improving their collection, handling, transporting and disposing activities in right way what we were thinking nicely tomorrow and now.

Recommendations

- The stakeholders must help the subcity health office by constricting latrine and the HEWs aware the community about proper utilization as well as the water and sewerage try to fasten their service of managing latrine waste.
- MSWC, RC must be use protective material especially glove, goggle, to protect themselves from prcing by sharp material, respiratory and eye disease etc...
- Improving solid waste Management handling, collection, transferring, disposal and new working direction
- To develop the awareance creation and practical work on about solid waste management
- To work alermly to manage solid waste in the protection of health, environment problem, tourism activities, economical, poetical and social problem, so what we were to give attention for solid and liquid waste management part of collection, proper handling, proper transporting and right disposal place to be assigned

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