"Solid Waste Management and Environment Sustainability- a special reference to Mandya city"

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ABSTRACT:

Background: The present study is made on solid waste management and environment sustainability in the mandya city. Mandya is basically semi urban city backed by agriculture. Though it has enough good climate conditions, solid wastes generated from households, home based industries, SMEs located within the city area are alarming for sustainability of its natural environment.

Methods: Simple random sampling method has been used for collecting the primary data. Sampling area has been restricted to mandyacity only. The data have been collected from 60 respondents. the study has used simple frequency and percentages with the help of SPSS 20 version to analyse and interpret the data to draw the conclusion.

Results and Conclusion: Solid wastes causes on health of not only humans but also other creatures on the earth. Hence, everyone has their own responsibility towards keeping the environment clean and hygienic. Thereby, natural resources bestowed for us could also be available for next generation.

KEY WORDS: Solid Waste Management (SWM), Environment Sustainability, Natural Environment.

I.   INTRODUCTION:

Solid waste refers to all non-liquid wastes. In general this does not include excreta, although sometimes nappies and the faeces of young children may be mixed with solid waste. Solid waste can create significant health problems and a very unpleasant living environment if not disposed of safely and approximately. If not correctly disposed of, waste may provide breeding sites for insect-vectors, pests, snakes and vermin (rats) that increase the likelihood of disease transmission. It may also pollute water resources and the environment.

The present study is made on solid waste management and environment sustainability in the mandya city. Mandya is basically semi urban city backed by agriculture. Though it has enough good climate conditions, solid wastes generated from households, home based industries, SMEs located within the city area are alarming for sustainability of its natural environment. Despite of enough programmes and works carried by city municipality, still problems are knowingly or unknowingly crept.

II.   REVIEW OF LITERATURE:

Hoornweg and Parinaz (2012) opined that solid waste management is arguably the most important municipal service and serves as a prerequisite for other municipal action. Khandelwal et al. (2019) expressed increase in solid waste generation all over the world call for the development of waste management strategies for a sustainable environment. Life cycle assessment (LCA) is a tool cal help in answering the call. Das et al. (2019) felt solid waste management is an integral part of an environmental management system. The study show cased various innovative solutions that have been reported for the achievement of smart and sustainable waste management plans in many countries. Tsai et al. (2020) found existing inadequate and ineffective practices that are not only common in Vietnam but also explicit in each municipal area. The study compared the municipal solid waste management attributes of cities in Vietnam under uncertainty. Ibanez et al. (2019) studied the social performance of municipal solid waste (MSW) management systems in developing countries. The results suggested that despite the improvements made in the last decade in the current MSW management system of Joao Pessoa, there is still plenty of room for improvement.

III.   RESEARCH GAP:

The above reviewed articles have not spread light on solid waste management and environment sustainability in mandya city. Hence the present study has been pursued.

IV.   SCOPE OF THE STUDY:

The study was concerned to the variables influencing solid waste management and environment sustainability in mandya city. It is confined to expressions of mandya city people. The scope of the study was limited to mandya city.

V.   RESEARCH QUESTIONS:

a) What are the demographic profiles of respondents?
b) How will be the opinion of respondents on variables influencing solid waste management and environment sustainability?

VI.   OBJECTIVES OF THE STUDY:

The specific objectives of the study are as follows.
a) To know the demographic profile of the respondents
b) To analyse the opinion on variables influencing solid waste management and environment sustainability

VII.   RESEARCH METHODOLOGY:

a)   Sample Design: Simple random sampling method has been used for collecting the primary data. Sampling area has been restricted to mandya district only. The data have been collected from 60 respondents.

b)   Sources of Data: Both Primary and Secondary data have been used in the study. Primary data have been collected from the mandya citizens (respondents) by using questionnaire. A tool of Google form has been used to record the responses. The primary data have been collected through questionnaire and totally 100 questionnaires were administered to the mandya citizens. But 60 respondents were able to complete with the response rate of 60%. Secondary data have been collected through journals, newspapers, magazines, text books to review the literature and understand theoretical background.

c)   Statistical tools and techniques: the study has used simple frequency and percentages with the help of SPSS 20 version to analyse and interpret the data to draw the conclusion.
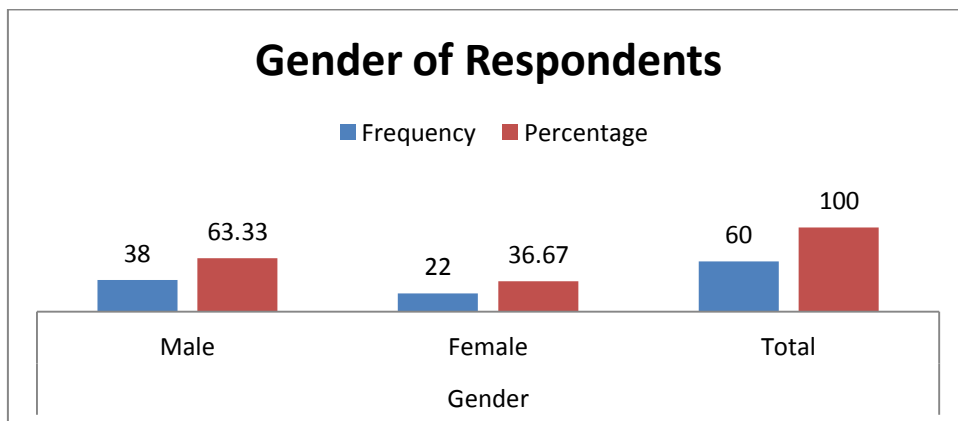
VIII.   RESULTS AND DISCUSSION:

a)   Demographic Data: the demographic variables such as Gender, Age group are very important. The following tables show demographic profile of respondents.

TableNo.1: showing Gender of Respondents

| Particulars		Frequency	Percentage
Gender	Male	38	63.33
	Female	22	36.67
	Total	**60**	**100.0**

Sources: Primary Data

The above table and chart shows the gender of respondents. Majority of them (63.33%) are male teachers and 36.67% of them are female. It shows male respondents have shown keen interest answering the interview schedule.

Table No.2: showing Age Group of Respondents

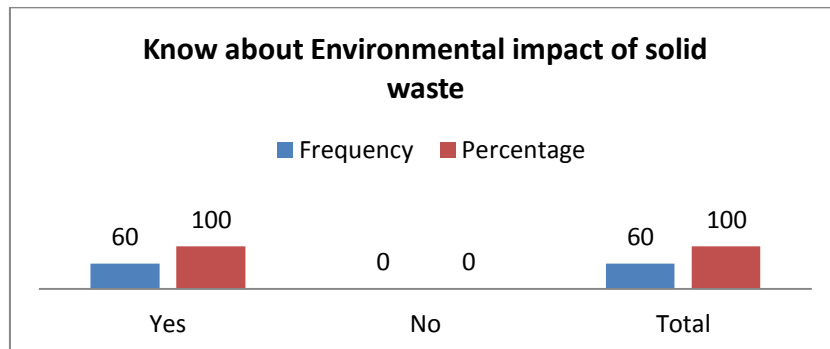| Particulars		Frequency	Percentage
Age Group	20-30	38	63.33
	30-40	14	23.33
	40-50	3	5.00
	50-60	5	8.34
	Total	**60**	**100.0**

Sources: Primary Data
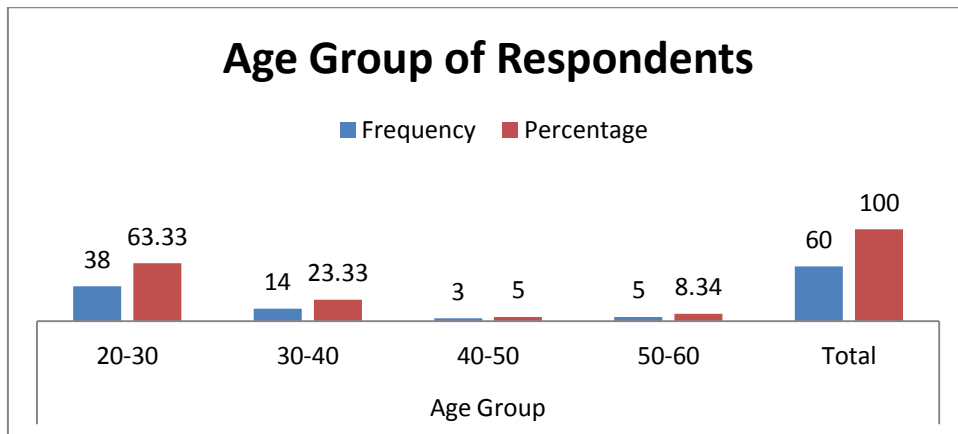
The above table and chart shows the age group of respondents. Majority (63.33%) of the respondents are falling in the age group of 20-30. 23.33% of them are falling in the age group of 30-40. 8.34% of them are falling in the age group of 50-60 and 5% of them are falling in the age group of 40-50. It is found that young respondents have shown more interest in responding the interview schedule.

b)   **Research Data:** For the purpose of studying solid waste management and its sustainability in mandya city, following variables have been tested.

Table No.3: showing know about environmental impact of solid waste

| Particulars	Frequency	Percentage
Yes	60	100.00
No	00	000.00
Total	**60**	**100.00**

Sources: Primary Data

The above table and chart shows know about environmental impact of solid waste in mandya city. 100% of the respondents have expressed that they know that solid wastes will impact negatively on environment.

Table No.4: showing ever notice of waste in the road, land or and public area

| Particulars	Frequency	Percentage
Yes	60	100.00
No	00	000.00
Total	**60**	**100.00**

Sources: Primary Data
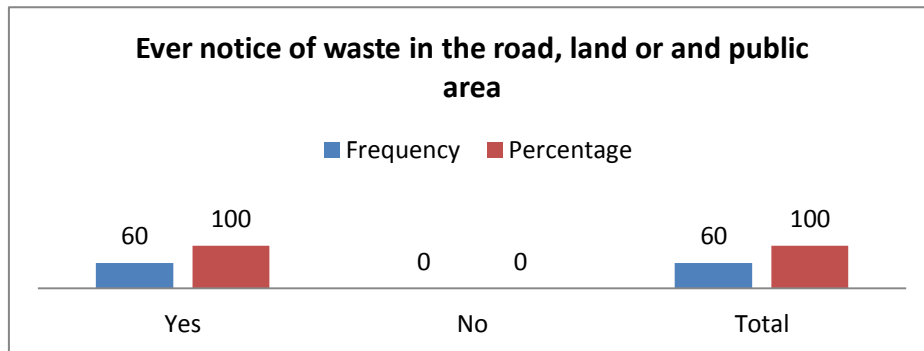
The above table and graph shows ever notice of waste in the road, land and or public area by the respondents. All the respondents have said yes and being seen regularly. It tells us how mandya city solid waste management is.

Table No.5: Showing hear of health problems due to solid waste

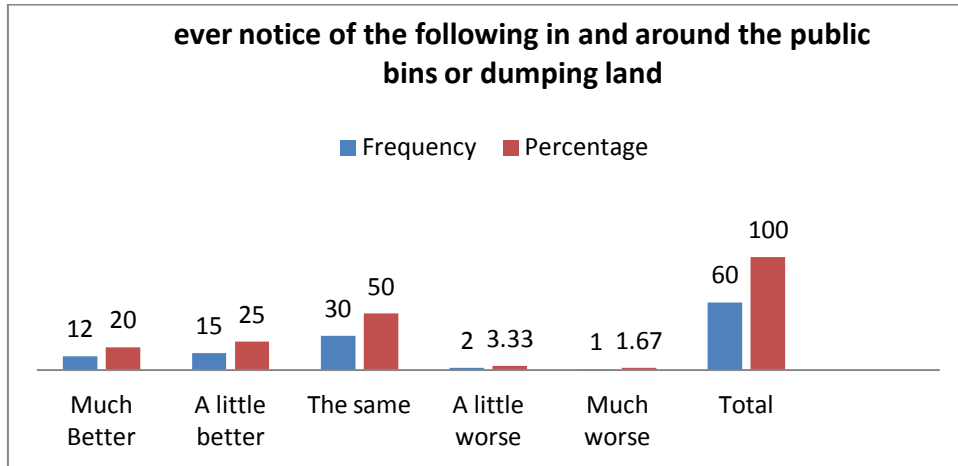| Particulars	Frequency	Percentage
Yes	54	90.00
No	06	10.00
Total	**60**	**100.00**

Sources: Primary Data
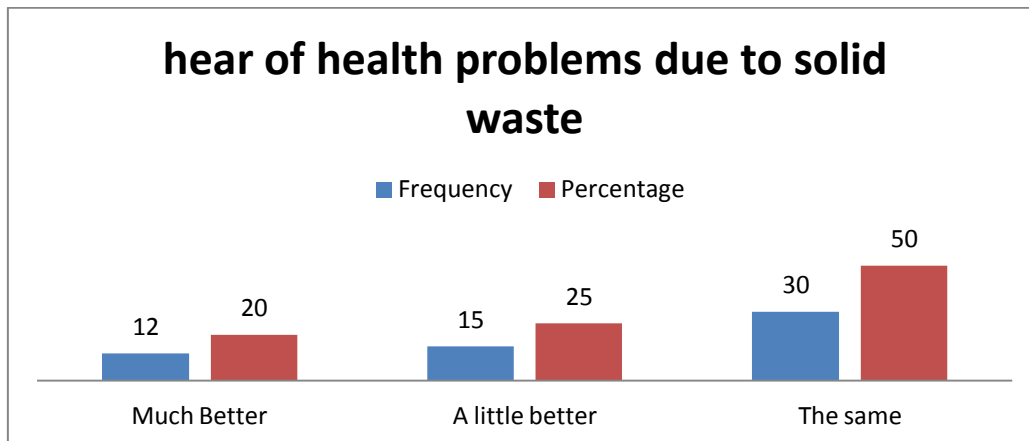
The above table and graph shows ever hear of health problems due to solid waste by the respondents. Majority (90%) of them said yes as solid waste causes environment issues and hazardous on the health of citizens and 10% of them have said no as might not be noticed in their area.

Table No.5: Showing ever notice of the following in and around the public bins or dumping land

Particulars	Frequency	Percentage
Dark flowing water	50	83.33
odour	45	75.00
Mosquitoes and Cockroaches	55	91.67
Fire	40	66.67
Domestic animals	60	100.00

Rats	57	95.00
Scavengers	58	96.67

Sources: Primary Data

ever notice of the following in and around the public bins or dumping land

■ Frequency ■ Percentage

|	Much Better	A little better	The same	A little worse	Much worse	Total
Frequency	12	15	30	2	1	60
Percentage	20	25	50	3.33	1.67	100

The above table and graph shows ever notice of the following in and around the public bins or dumping land by the respondents. 83.33% of the respondents have found dark flowing water in mandya city, 75% of them have found odour, 91.67% of them sensed Mosquitoes and Cockroaches, 66.67% of them have seen fire, 100% of them have seen domestic animals standing, sleeping and eating at public bins, 95% of them have seen died or alive rats and 96.67% of their nose sensed scavengers in and around the public bins or dumping land.

Table No.6: Showing the solid waste is a major issue currently affecting mandya natural environment

Particulars	Frequency	Percentage
Yes	50	83.33
No	10	16.67
Total	**60**	**100.00**
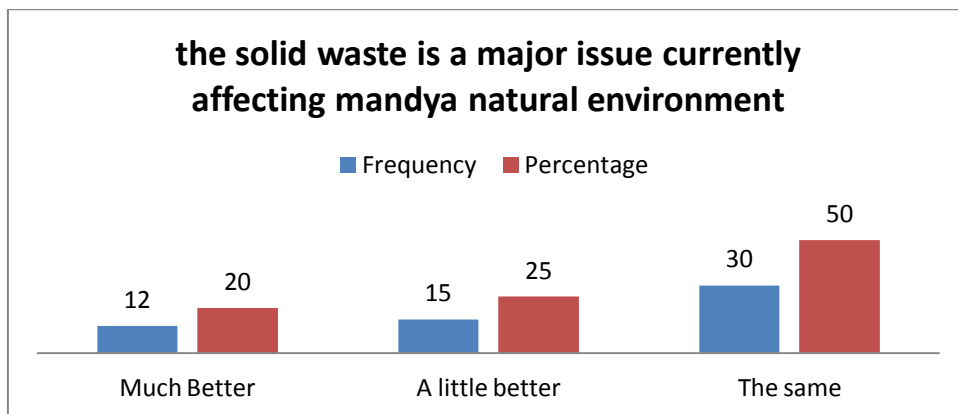
Sources: Primary Data

the solid waste is a major issue currently affecting mandya natural environment

■ Frequency ■ Percentage

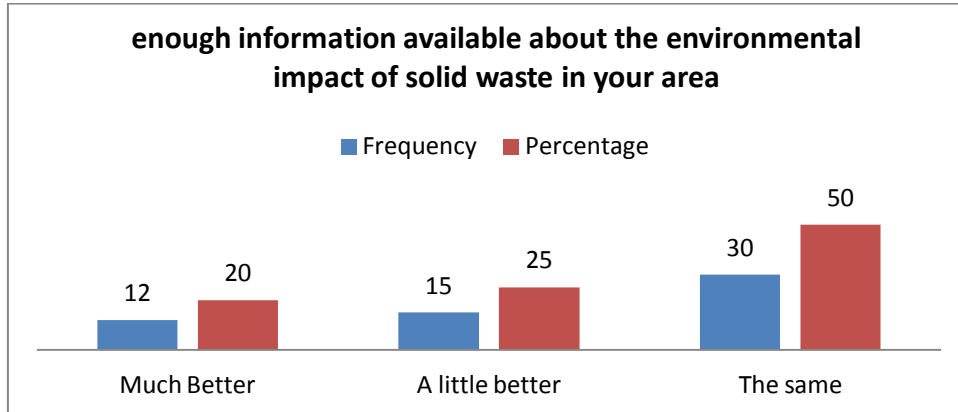|	Much Better	A little better	The same
Frequency	12	15	30
Percentage	20	25	50

The above table and graph shows the solid waste is a major issue currently affecting mandya natural environment by the respondents. Majority (83.33%) of them have agreed that solid waste is a major issue currently affecting mandya natural environment and 16.67% of them have not agreed.

Table No.7: Showing enough information available about the environmental impact of solid waste in your area

Particulars	Frequency	Percentage
Yes	10	16.67
No	50	83.33

Total	**60**	**100.00**

Sources: Primary Data

enough information available about the environmental impact of solid waste in your area
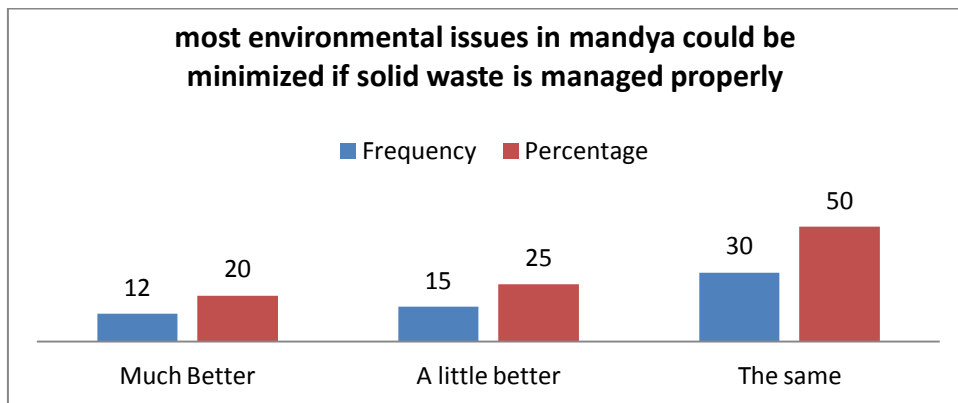
The above table and graph shows the solid waste is a major issue currently affecting mandya natural environment by the respondents. Majority (83.33%) of them have agreed that solid waste is a major issue currently affecting mandya natural environment and 16.67% of them have not agreed.

Table No.8: Showing most environmental issues in mandya could be minimized if solid waste is managed properly

Particulars	Frequency	Percentage
Yes	55	91.67
No	05	08.33
Total	**60**	**100.00**

Sources: Primary Data

most environmental issues in mandya could be minimized if solid waste is managed properly

The above table and graph showsmost environmental issues in mandya could be minimized if solid waste is managed properly.Majority (91.67%) of respondents have agreed that environmental issues could be minimized if solid wastes are properly managed and 8.33% of them have not agreed.

Table No.8: Showing the new development process has impact on solid waste generation

| Particulars	Frequency	Percentage
Yes	56	93.33
No	04	6.67
Total	**60**	**100.00**

Sources: Primary Data
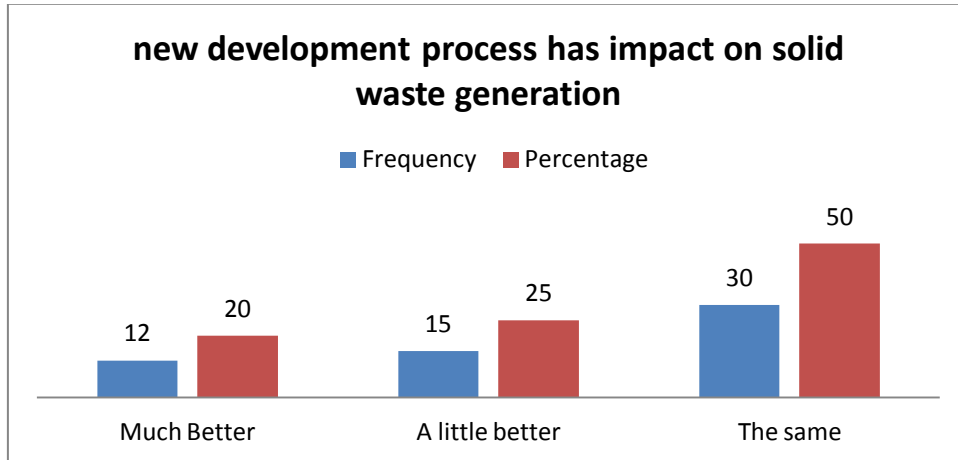
The above table and graph showsnew development process has impact on solid waste generation in mandya city.Majority (93.33%) of respondents have agreed that new works like road repair, sanitation, drainage have impact on solid waste generation in mandya city and 6.67% of them have not agreed.

Table No.8: Showing overall rate of quality of environment in mandya as compared the environment had 5 years ago

Particulars	Frequency	Percentage
Much Better	12	20.00
A little better	15	25.00
The same	30	50.00
A little worse	2	3.33
Much worse	1	1.67
Total	60	100.00

Sources: Primary Data
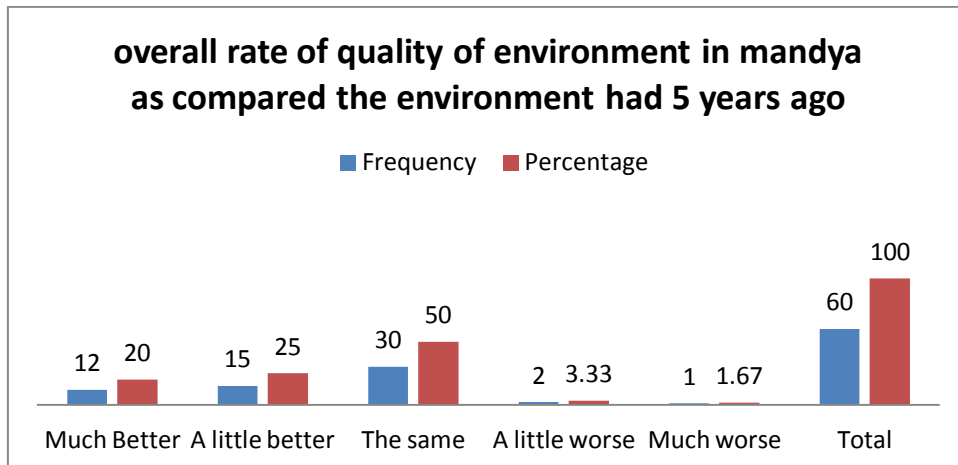
The above table and graph showsoverall rate of quality of environment in mandya as compared the environment had 5 years ago. Majority (50%) of the respondents have said it has the same environment and no changes have been had. 25% of them have agreed that it is a little better, 20% of them agreed it's much better, 3.33% have said its little worse and 1.67% have said much worse. The opinion depends upon the area of the respondents in which they are dwelling.

IX.   FINDINGS OF THE STUDY:

Solid wastes are results of developing areas and management of them is challenging. Mandya city is a semi urban area, it comprises of all types of areas of a city. The present study has found that the respondents (citizens of mandya city) are aware of

environmental impact of solid wastes, wastages are regularly found in the road, land or and public area, river, lakes etc., heard health problems due to solid wastes, Dark flowing water, odour, mosquitoes and cockroaches, fire, domestic animals, rats and scavengers are found in and around the public bins or dumping land, but solid wastages are not major issues currently affecting mandya natural environment, either government or non government institutions are not made enough efforts to make public impacts of solid waste in their areas, most of environmental issues could be minimized if solid wastes are managed properly, any new development process in mandya like construction or repair of road, drainages will impact on solid waste generation and in overall quality of environment is same as compared to the 5 years ago.

X.   CONCLUSION:
Solid wastes are common for any developmental works. Managing of them without affecting the natural environment is challenging task of individual as well as government and non government institutions. Solid wastes causes on health of not only humans but also other creatures on the earth. Hence, everyone has their own responsibility towards keeping the environment clean and hygienic. Thereby, natural resources bestowed for us could also be available for next generation.

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