
HEALTH STATUS OF SOLID WASTE WOMEN WORKERS IN THIRUVANANTHAPURAM

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Abstract: Waste collection is a vital activity that happens all around the world and municipal solid waste removal is a job with an inherent risk associated with a variety of biological, chemical, mechanical, physical and psychological hazards (Bhatia, 2007). The study on “Health Status of Solid waste women workers in Thiruvananthapuram” was carried out in ten selected units of Thiruvananthapuram. The main aim of the study was to identify the socio-economic, health and nutritional status of the samples. Convenience sampling method was used to select the samples, and lottery method was used to select the wards. A detailed interview schedule was used to find out the socio-economic status of the samples. A 24 hour recall method was used to assess the nutritional status of the selected samples (30 nos). Bio clinical assessment was also done to find out the health status of the women working in waste management, which includes analysis of haemoglobin level, blood pressure level and anthropometry of the subsamples. The socio-economic status of the samples is low. The mean intake of nutrients of the samples is low when compared to RDA table suggested by ICMR. The selected samples have low blood pressure level and haemoglobin result shows that twenty four percent of the samples have prevalence to anaemia. Hence the present study is an attempt to find out the health status of solid waste women workers and it will definitely help to peep in to the socio-economic and nutritional status. The study will also help the planners and policy makers to take necessary steps to improve their health and nutritional status and thereby the quality of life of the women workers as a whole.

Key words: Solid waste, health status, women workers.

Introduction: Waste collection is a vital activity that happens all round the world and municipal solid waste removal is a job with an inherent risk associated with a variety of biological, chemical, mechanical, physical and psychological hazards (Bhatia, 2007). Solid waste segregation and disposal in developing countries is mostly labour intensive and is done manually with hand drawn carts when compared to mechanized waste disposal in developed countries. This poses an increased risk among the solid waste workers in developing countries to develop occupational hazards (Kerala Environmental Congress, 2010).

Waste can be defined as any unwanted and useless materials which arise from human activities and hence discarded. These wastes are essentially solid in nature. Their principal sources include domestic, commercial, industrial and agricultural activities (Sastri, 2005).

Kerala is a state considered to be having a developed modern society. The consumption of more resources results in the generation of more waste. All types of waste including solid, hazardous and biomedical waste generation in the state are more compared to other states in the country. There is a series of actions initiated at the National and State level abate the problems arise due to the wastes, particularly the pollution problem. Solid waste generation is mainly due to industrial and domestic activities. The waste generated due to industrial activities is of hazardous as well as non – hazardous nature. The solid waste generation due to domestic sources, the garbage, is very high in the State. The biomedical wastes are generated from all health care institutions. The responsibility of collection, treatment and safe disposal of all types of solid wastes rests with the generator (<http://www.kerenvis.nic.in/2010>).

Thiruvananthapuram Corporation had started a project,

Capital City Clean City Project (CCCC) for integrated waste management since May 2006 in 29 wards initially and extended in a phased manner to the 86 wards of the Corporation. As per the records of Corporation 817 women members are working in the waste management project from 66 registered Kudumbasree units, an organized government supported Self Help Group (SHG) under Kerala State Poverty Alleviation Mission. Waste collection from the source is implemented through the women workers of Kudumbasree; the 10-15 women constitute an SHG (Klean Well Kudumbasree Unit) and operate in an entrepreneur mode. Corporation and Kudumbasree are only facilitators.

Scope of the study: Waste management is a universal activity, and lot of women workers are engaged in this job due to their poor socio-economic status of their family. Moreover in Kerala mechanized equipments are not available for waste management. As women are weaker than men in physical conditions, the workers have to face lot of burden in their work. The “Capital City Clean City” project of the Thiruvananthapuram Corporation aims at economic development of the women in the city. In this project, Kudumbasree women were engaged in carrying out the solid waste management process a success. Lack of knowledge on the various health hazards leads to several ill hazards to the workers while involving in the waste management. Hence, the present study is an attempt to find out the health status of solid waste women workers and it will definitely help to peep in to the socio-economic and nutritional status. The study will also help the planners and policy makers to take necessary steps to improve their health and nutritional status and there by the quality of life of the women workers as a whole.

The **objectives** framed for the study is as follows:

1. To find out the socio-economic status of solid waste

women workers.

2. To study the health status of solid waste women workers.
3. To assess the nutritional status of solid waste women workers.

Methodology: The methodology adopted for the present study on “Health status of solid waste women workers in Thiruvananthapuram” is discussed under the following heads.

1. Locale of the study: Thiruvananthapuram city was selected as the locale for the study due to easy availability of the samples. More over a lot of Kudumbasree units are engaged in solid waste management process in the city.
2. Selection of the sample: A total of 802 women were working in solid waste management at different wards of Thiruvananthapuram, out of which 100 women workers were selected by using convenience sampling method. There are 86 wards performing solid waste management process in Thiruvananthapuram, out of those 10 wards were selected using lottery method.
3. Design of the study: Interview method was used to obtain the information regarding the samples. It includes a set of question regarding education, age, family composition, place of residence, family income, religion, nature of job, type of family, reason for taking up the job at present, regular personal income, habit of savings, possession of assets, nature of assets, previous employment and nature of employment. The details regarding the health status of the samples include general health, chronic morbidity pattern of the samples, system of treatment, adoption of health improvement strategies, frequency of health checkups, meal pattern of the samples, general eating pattern of the samples, satisfaction in food consumption and diet pattern of the samples. A 24 hour recall method was used to assess the nutritional status of the selected samples. Bio clinical assessment was also done to find out the health status of the women working in waste management, which includes analysis of haemoglobin level, blood pressure level and anthropometry (BMI) was done on the sub samples.
4. Collection of data: Both primary and secondary data were collected for the study. Primary data’s were collected by personally approaching the selected samples. Secondary data’s were collected from reviewing the literatures and from various written aids.
5. Pilot study: A pilot study was conducted by taking 10 women working in waste collection process.
6. Statistical analysis and Interpretation of data: The collected data were statistically analyzed and interpreted using appropriate statistical tools and SPSS package.

Analysis of the data: The key findings of the study are summarized below:

1. Regarding the age of the sample, forty two percent of

the samples belong to 30-39 years of age.

2. The nature of job of all the samples is waste collection.
3. Regarding the educational status of the sample, forty two percent were studied up to below SSLC and it was shocking that fourteen percent have no literacy and they even don’t know how to read and write.
4. Seventy six percent of the sample was married and nineteen percent were divorced or widows.
5. The reason for taking up the job varies among the samples majority of the sample opined poverty as the main reason.
6. It is seen that the health status of the solid waste women workers in respect to majority of the samples is found to be poor (fifty three percent). It was surprising to note that no samples rated them in excellent or good health conditions.
7. It was found that certain illness like head ache (ninety three percent), skin disease (sixty six percent) and eye disorder (fifty six percent) were found to be high among the samples.
8. The nutritional intake of the samples was assessed among the sub samples (30 nos). It includes dietary pattern and bio clinical assessment of the samples. It was found that there is significant relationship between the age of the samples and their health.

Characteristics					Total n=100	Chi square	p
Health	25	53	22	0	100	12.37	0.002
Age	6	42	37	15	100		
Total	7	66	90	37	200		

From the above table, it was found that the chi square value is greater than the calculated table value and it is found to be statistically significant at five percent level, which means that there is significant relationship between the age of the samples and their health.

Nutrients	RDA	Mean	SD	T	p
Energy (kcal)	2925	2619	296	48.4	0.02*
Protein (gm)	50	58.2	9.31	34.2	0.02*
Iron (mg)	30	21.9	19.86	48.7	0.02*
Calcium (mg)	400	386.1	9.8	68.3	0.01*
Vitamin A (ucg)	2400	782.1	54.9	78	0.01*
Thiamine (mg)	1.2	1.1	1.12	5.3	0.50
Riboflavin (mg)	1.5	0.8	0.88	5	0.50
Vitamin C	40	36.7	36.7	64.7	0.01*

9. The nutrient intake of the sub samples (30 nos) was calculated with the help of the 24 hour recall method.

It was found that the mean intake of almost all the nutrients like energy, iron, Calcium, Vitamin A, compared to the normal RDA suggested by ICMR, and this variations is found to be statistically significant at one percent level. The table also shows that the protein intake of the samples is normally high.

10. Nutritional anthropometry serves as a useful indicator of the past and present. Among the various anthropometric measures, weight and height are used to assess the BMI of the samples.

BMI Category	Total (n= 30)
Under weight (≤ 18.5)	2
Normal (18.5 - 22.9)	16
At risk (23.0 - 24.9)	7
Grade I (25- 29.0)	5
Grade II	-
Grade III	-

The above table reveals that sixteen percent of the samples belong to normal BMI, about seven percent belongs to the risk factor, while five percent of the samples belong to Grade I and two percent were under nourished. Hence, it can be interpreted that the nutritional status of the sub samples were found to be poor.

11. The normal range of blood pressure level of the samples between 120/80 mm of Hg. It was found that about eleven percent of the samples have normal blood pressure levels, about sixteen percent have low blood pressure level, and three percent of the samples have

Thiamine, Riboflavin and Vitamin C were very low when high blood pressure level. Low blood pressure level was found among majority of the samples.

12. The normal level of haemoglobin among the selected samples is between 12-16 gm/ 100 ml of blood. The results of the laboratory investigation show that twenty four percent of the sub samples have prevalence to anaemia, and the remaining samples have normal haemoglobin levels. High prevalence of anaemia among the sub samples may be due to low intake of iron rich foods in their daily diets, lack of awareness about proper nutrient intake.

Conclusion: From the present study, it is understood that the socio- economic , health and nutritional status of the solid waste women workers is comparatively low.

Recommendations:

- Provision for annual medical examination is highly recommended.
- Provision for protective clothing, face masks, glasses, shoes or boots and gloves should be given to all solid waste women workers and it should be compulsorily monitored that they are using the same.
- Provision of supplementary food is recommended to all solid waste women workers.
- Provision of vaccination for tetanus and typhoid should be made mandatory.
- Development of training materials on occupational environmental health and injury issues of solid waste management that are suitable for distribution to solid waste women workers is highly recommended.

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