GEO-EYE

ORIGINAL ARTICLE

Causal Relationship of Occupational Health Issues: A Case Study of Solid Waste Management Workers in the South Zone of Coimbatore Corporation, Tamil Nadu, India

P Murali[1]*, S Balaselvakumar[2], S Vadivel[2], T Pavendar[2]

1 *Guest Lecturer, Post Graduate and Research Department of Geography, Thanthai Periyar Government Arts and Science College (Autonomous), (Affiliated to Bharathidasan University), Tiruchirappalli, Tamil Nadu, India*
2 *Associate Professor, Post Graduate and Research Department of Geography, Thanthai Periyar Government Arts and Science College (Autonomous), (Affiliated to Bharathidasan University), Tiruchirappalli, Tamil Nadu, India*

OPEN ACCESS

Received: 16-11-2024
Accepted: 10-10-2025
Published: 16-10-2025

Citation: Murali P, Balaselvakumar S, Vadivel S, Pavendar T. (2025). Causal Relationship of Occupational Health Issues: A Case Study of Solid Waste Management Workers in the South Zone of Coimbatore Corporation, Tamil Nadu, India. Geo-Eye. 14(1): 21-28. https://doi.org/10.53989/bu.ge.v14.i1.24.34

* **Corresponding author**.
muraligeo9681@gmail.com

Funding: None

Competing Interests: None

Published By Bangalore University, Bengaluru, Karnataka

ISSN
Print: 2347-4246
Electronic: XXXX-XXXX

Abstract

The objective of the study is to measure the causal relationship of occupational health issues of solid waste management workers working in the south zone of Coimbatore Corporation. The information was collected through the questionnaire schedule from the 300 sanitary workers working in the south zone of Coimbatore Corporation by stratified random sampling method. These variables are vital factors in determining the occupational status of sanitary workers in this study area. The results of the Structural Equation Model (SEM) of sanitary workers' data set suit the fit indices and the proposed hypothesis causal model relationships are acceptable fit by the recommended values. The structural equation model demonstrates that the variables namely behaviour of alcoholism, visiting the hospital, job satisfaction, accessibility to the workplace, health problems, public prejudice, occupational security and insufficiency of equipment are the occupational issues of sanitary workers in the study area. The scale used in this study adequately fits into the data collected and it concludes that the hypothesized thirteen assumptions model fits the collected sample data. As a result, the likelihood and statistical association of essential variables estimate, the good fit of the structural model and represent an adequate description of sanitary workers indicators support the model fit.

Keywords: Occupational Health; Solid Waste; SEM; Path Analysis

1 Introduction

Globally, in urban areas, solid wastes are the most perceptible environmental problems because of the increasing population, urbanization and industrialization and consumption patterns are the results of increasing amounts of solid waste. Therefore, solid waste generation creates more environmental problems, particularly in urban areas. This leads to all kinds of environmental and public health issues

for the residents and solid waste management workers. Hence, this present study focuses on "**Casual Relationship of Occupational Health Issues: A Case Study of Solid Waste Management Workers Working in the South Zone of Coimbatore Corporation, Tamil Nadu, India**".

This present study analyses the occupational health issues of sanitary workers working in solid waste management activities in the south zone of Coimbatore Corporation. Particularly, sanitary worker's socio-economic backgrounds, modes of travel to the workplace, details of children, psychological condition, technical know-how of equipment, complexity during work, healthcare problems, expectations and insurance policy. Further, based on the above-cited information major dimensions were extracted, identified and analyzed with the structural equation modelling (SEM). This path analysis is used to explain the suitability of the hypothetical model based on the extracted variables. These variables are vital factors determining the occupational issues of sanitary workers in this study area.

2 Overview

The sanitary worker's health condition and handling of hazardous materials and gases has discussed in his studies [1]. The various studies confirmed that the public people are underestimating and discriminating against the sanitary workers [2–4]. The woman sanitary workers and point out that even though they are employed they face a lack of proper housing or sanitation [5]. The sanitary workers face awkward smells during their work [6]. Methane gas released from the dumpsites is one of the causes of global warming and generating fires and explosions at the open dumps [7] leads to air pollution, and loss of lives [8] particularly workers engaged in solid waste management activities. Furthermore, open waste burning can affect dumpsite workers and surrounding people [8]. Similarly, the fine particles and smog released from the burning dumpsites can cause respiratory diseases [7].

The sanitary workers are at risk of injuries and health problems by using bare hands to collect sharp bits and pieces [9]. These objects are in contact with toxic, corrosive, flammable or explosive garbage. Moreover, biomedical waste can cause respiratory, skin and other deadly diseases to these workers [9]. They are working in filthy and vulnerable conditions. However, they do not receive any social security and labour rights [9]. The study has accounted that there is an increased risk of musculoskeletal problems for sanitary workers during the collection of waste [10]. The electrical and electronic waste releases toxins which are exposed to the workers by direct contact [11].

The sanitary workers workers suffer from acute toxicity to the kidney and nervous system [12]. The workers associated with the handling of solid waste are facing respiratory and cardiovascular health problems like bacterial infection, impaired lung function, low haemoglobin, altered immunity, allergy, asthma, and inflammation in the nose, throat, lung, and other impairments bear their mark [13]. Regulations and guidelines should encourage providing recognition and societal benefits to waste workers engaged in such activities as legal recognition, housing, health and education [2]. The voluntary organizations may provide technical, financial and social assistance to the sanitary workers through social aid projects [14].

Path Analysis is a method that allows the application of theoretical models to examine dependency relationships between variables [15]. A key feature of this method is its ability to examine direct and indirect effects between variables [16]. The results allow researchers to identify or hypothesize causal relationships between variables obtained in cross-sectional studies [17,18].

2.1 Study Area

The South Zone of Coimbatore Corporation is extended latitudinally between 11°01′30″ N to 10°54′00″ N and longitudinally from 76°54′00″E to 77°00′30″ E with an area of 54.13 sq. km (Figure 1).

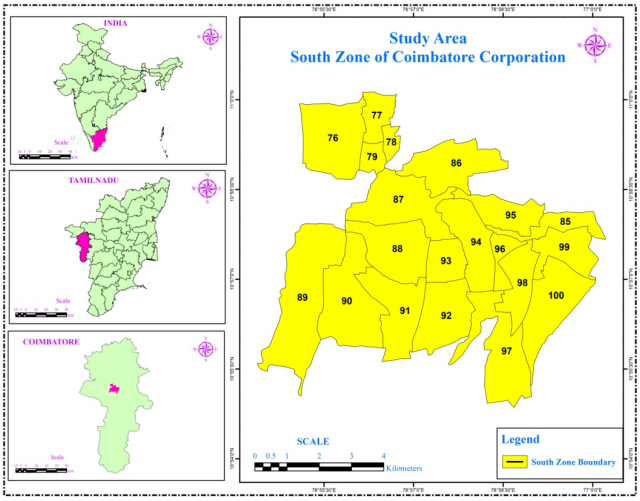

Fig. 1. Study Area

This study area has been covered in the Toposheet of 58A16, 58B13 and 58F1. It is surrounded by the Western Ghats Mountain range on the West and North and reserved forests on the Northern side. As a result, it has pleasant weather conditions. The Noyyal River runs through this region and forms the Southern boundary of the Corporation. The city is situated in the Noyyal's basin area and extensive tank system fed by the river and rainwater. The surface slope runs towards the west to east on the west side of the Western Ghats Mountains and altitudinal elevation is between 256 feet to 6371 feet from mean sea level. It has a projected population of 5, 37,019 (2021), with 268939 males and 268080 females. The average sex ratio was 964.35 and the literacy rate was

80.96 per cent in 2011. Coimbatore is famous for textile industries, engineering firms, manufacturing of machine and machine tools, health care facilities and educational institutions. Hence, this present study demonstrates the causal relationship of occupational health issues of solid waste management workers in the south zone of Coimbatore corporation, Tamil Nadu, India.

There were 20 wards (76 to 100) in the south zone of Coimbatore corporation, in which permanent (329) and contract (660) and a total of 989 workers are engaged in solid waste management works for 354734 households. Accordingly, the employee and household ratio was 1:100.35 and the population ratio was 1:356.17 in this area.

3 Materials and Methods

The information was collected through the questionnaire schedule from the 300 sanitary workers working in the south zone of Coimbatore Corporation by stratified random sampling method. These observed and measured variables were used for path analysis. These variables are vital factors in determining the occupational status of sanitary workers in this study area. The results of the Structural Equation Model (SEM) of sanitary workers' data set suit the fit indices and the proposed hypothesis causal model relationships are acceptable fit by the recommended values.

3.1 Objective

To measure the causal relationship of occupational health issues of solid waste management workers working in the south zone of Coimbatore Corporation.

4 Result

4.1 Socio-Economic Backgrounds of Solid Waste Management Workers

Of the 300, sample populations of solid waste management workers are male (44.30%) and female (55.70%) working in the south zone of Coimbatore corporation. Their ages were <20 (2.30%), 21 and 40 (48.0%), and >41 (49.70%) years. The respondents confirmed that they were working in this sector for <10 years (37.70%), 11 to 20 years (37.00%) and more than 21 years (25.30%). Religiously they belong to Muslim (6.0%), Christian (18.70%) and Hindu (75.30%) religions. The solid waste management workers revealed that their educational background was Illiterate (25.30%), Elementary (15.70%), High school (40.70%), Higher Secondary/Diploma (9.70%), and Bachelor's Degree (8.70%). These workers conveyed that they are living as a separate (62.30%) and joint family (37.70) and their family sizes were <2 (13.70%), 3 and 5 (65.30%) and >6 (21.0%).

In this study zone the workers are engaged in Sweeping (34.0%), Collection of waste (43.30%), Driver (19.70) and Supervisors (3.0%) and they are permanent (39.70), contract (50.30%) and daily wage labourers (10.0%). The respondents confirmed that their relatives (20.30%) are also working in this same type of work. The present study workers monthly earnings were ₹<20,000 (11.60%), ₹20,001-30,000 (51.00%), ₹30,001-40,000 (14.00%) and ₹40,001-50, 000 (12.70%) and >₹50001 (10.70%).

The working respondents stated that they live in huts (45.0%), thatched houses (10.30%), tiled houses (1.70%) and concrete houses (43.0%). However, they also revealed that they are living in the areas of slums (6.705), villages (43.00%) and in the core of the city (50.30%). However, 80.70 per cent of the solid waste management workers live in the adjacent areas of sewage flow. Therefore, 52.70 per cent of the respondents are not satisfied with their living area. Similarly, they also confirmed that they expressed that their area had awful environmental conditions (33.30%), mosquito problems (55.00%) and awkward smell through sewage (11.70).

5 Discussion

5.1 Model Fit Assessment

5.1.1 ***Path Analysis with Structural Equation Modelling: Maximum Likelihood Estimates***

Path analysis with structural equation modelling is used to analyze the suitability of the model based on the selected variables. As recommended by Anderson and Gerbing the measurement model to test the reliability and validity of the survey instrument is analyzed [19]. Further, the path analysis model is analyzed next. This path analysis with the Structural Equation Model (SEM) is the most constructive model while assessing the causal relationship between the variables as well as verifying the compatibility of the model used [20].

Structural equation modelling evaluates whether the data fit a hypothetical model. As per the result, Chi-square statistics with P=0.001 is less than the recommended value (p=<0.05). Therefore, it demonstrates a good fit for the model. However, according to Joreskog and Sorbom, a sample size of over 200 (300 in this research), could affect Chi-Square statistics to indicate a significant probability level [21].

However, this model is considered for further interpretation in the goodness of fit measures [22]. Common model-fit measures like chi-square/degree of freedom ($\chi 2$/df), the comparative fit index (CFI), root mean square error of approximation (RMSEA), the normated fit index (NFI), incremental fit index (IFI), and the Tucker Lewis index (TLI) are used to estimate the measurement model fit. Table 1 illustrates the estimates of the model fit indices from AMOS structural modelling.

According to Gerbing and Anderson, present study the criteria for a suitable model are as follows[23]: RMSEA of 0.05 or lower; CFI of 0.90 or higher; and NFI of 0.90 or higher. The fit between the data collected and the proposed measurement model can be tested with a Chi-Square Goodness of Fit (GFI) test where the likelihood is greater than or equal to 0.9 indicating a good fit[24]. The GFI (Table 1) of this study was 0.997more than the recommended value of 0.90 the other measures fitted satisfactorily; AGFI=0.973, RFI=0.960, CFI=1.000, TLI=1.061, IFI=1.006, NFI=0.951 with $\chi 2$/df= 9.000, RMSEA=0.001[21], RMR=0.019 and PGFI=0.111 indicates a good absolute fit of the model. The goodness of fit indices support the model fit and these highlighted indices demonstrate the appropriateness of this structural model.

Table 1. Fit statistics of the Measurement model

Sl. No.	Fit statistic	Recommended	Obtained
1	Chi-Square	-	3.599
2	df	-	4
3	Chi-Square significance	P< =0.05	0.463
4	Chi-Square /df	<5.0	0.900
5	Goodness of Fit Index (GFI)	>0.9	0.997
6	Adjusted Goodness of Fit Index (AGFI)	>0.9	0.973
7	Normated Fit Index (NFI)	>0.9	0.951
8	Relative Fit Index (RFI)	>0.9	0.960
9	Comparative Fit Index (CFI)	>0.9	1.000
10	Tucker Lewis Index (TLI)	>0.9	1.061
11	Incremental Fit Index (IFI)	Approaches 1	1.006
12	Root mean square error of approximation (RMSEA)	<0.05	0.001
13	Root Mean Square Residual (RMR)	<0.02	0.019
14	Parsimony goodness-of-fit index (PGFI)	<5.0	0.111

To test the hypothesis following assumptions are made.

H_1: Accessibility to the workplace is a significant cause of health problems of the sanitary workers.

H_2: Public prejudice has a significant impact on the health problems of the workers.

H_3: Occupational security has a significant consequence on the health problems of the workers.

H_4: Insufficiency of tool facilities has a significant impact on the health problems of the workers.

H_5: Visiting the hospital has significant results on the health problems of the workers.

H_6: Accessibility to the workplace has significant influences on worker's level of job satisfaction.

H_7: Public discrimination of people has a significant effect on worker's level of job satisfaction.

H_8: Occupational safety of the workers has a significant role in worker's level of job satisfaction.

H_9: Insufficiency of tool facilities has significant responsibility on worker's level of job satisfaction.

H_{10}: Sanitary workers visiting the hospital have a significant impact on worker's level of job satisfaction.

H_{11}: Worker's health problem has a significant influence on their level of job satisfaction.

H_{12}: Worker's health problems have a significant impact on their behaviour of alcoholism.

H_{13}: Worker's job satisfaction level has a significant effect on their behaviour of alcoholism.

The test of the above-mentioned hypothesis, the SPSS-AMOS result provides thirteen regression weights, unstandardized and standardized factor model structures (Figures 2 and 3) for every path and its significance.

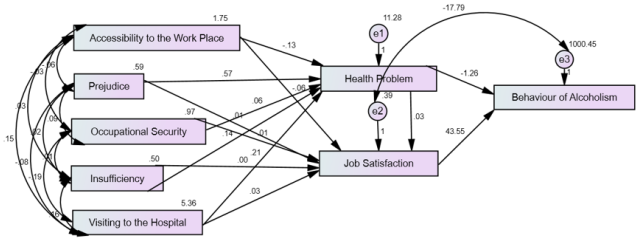

Fig. 2. Path Model-Sanitary Workers: Unstandardized

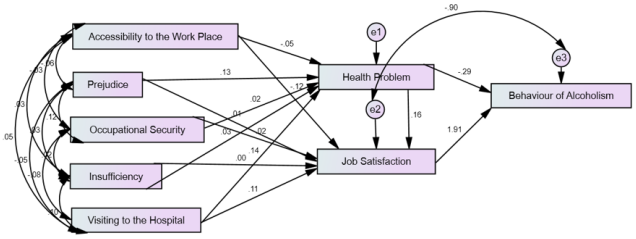

Fig. 3. Path Model-Sanitary Workers: Standardized

Table 2 demonstrates the unstandardized coefficients and associated test statistics. The amount of change in the dependent or mediating variable for each unit change in the variable predicting it is symbolized by the unstandardized regression coefficient. Table 2 also illustrates the standardized estimate, standard error (abbreviated S.E.), and the estimate divided by the standard error (abbreviated C.R. for Critical Ratio). Under the column P, the probability value associated with the null hypothesis is displayed.

Table 2. The Regression Weights for Every Path and Its Significance

Sl. No.	Construct	Path	Construct	Unstandardized co-efficient	S.E.	Standardized co-efficient	C.R.	P	Label
1	Health Problem	<—	Accessibility to the Work Place	-0.131	0.147	-0.050	-0.887	0.375	**Not Significant**
2	Health Problem	<—	Prejudice	0.566	0.255	0.127	2.224	0.026	Significant
3	Health Problem	<—	Occupational Security	0.060	0.200	0.017	0.302	0.763	**Not Significant**
4	Health Problem	<—	Insufficiency	0.136	0.275	0.028	0.493	0.622	**Not Significant**
5	Health Problem	<—	Visiting to the Hospital	0.210	0.085	0.142	2.476	0.013	Significant
6	Job Satisfaction	<—	Accessibility to the Work Place	-0.056	0.022	-0.115	-2.524	0.012	Significant
7	Job Satisfaction	<—	Prejudice	0.011	0.022	0.013	0.522	0.601	**Not Significant**
8	Job Satisfaction	<—	Occupational Security	0.011	0.017	0.017	0.659	0.510	**Not Significant**
9	Job Satisfaction	<	Insufficiency	-0.004	0.023	-0.005	-0.185	0.853	**Not Significant**
10	Job Satisfaction	<	Visiting to the Hospital	0.029	0.012	0.105	2.440	0.015	Significant
11	Job Satisfaction	<	Health Problem	0.030	0.011	0.160	2.821	0.005	Significant
12	Behaviour of Alcoholism	<	Health Problem	-1.264	0.834	-0.295	-1.516	0.130	**Not Significant**
13	Behaviour of Alcoholism	<	Job Satisfaction	43.552	18.656	1.914	2.334	0.020	Significant

** Denotes significance at 1% level
* Denotes significance at 5% level

5.2 Level of significance for regression weight

5.2.1 H_1*: accessibility to the workplace is a significant cause of health problems of the sanitary workers*

The variable accessibility to the workplace increases by 1 unit and the health problem of the sanitary workers decreases by -0.131 units. The regression weight estimate, 0.131, has a standard error of about 0.147, predominantly the regression weight estimate by the estimate of its standard error gives z=0.131/0.147 = -0.887. Thus, the regression weight estimate is 0.887 standard errors above zero. The probability of getting a critical ratio is as large as 0.887 in the absolute value is 0.375. However, the regression weight for accessibility to the workplace in the prediction of health problems of the sanitary workers is not significantly different from zero at the 0.050 level (two-tailed). As a result, the hypothesis (H_1) that Accessibility to the workplace is a significant cause of health problems among sanitary workers is not supported.

The results of hypothesis testing for the respective paths are shown in Table 3.

Table 3. The Results of Hypothesis Testing for the Respected Path

Hypothesis of Path Analysis	Estimate	P-value	Results on Hypothesis
H_1	-0.131	0.375	**Not Significant**
H_2	0.566	0.026	Significant
H_3	0.060	0.763	**Not Significant**
H_4	0.136	0.622	**Not Significant**
H_5	0.210	0.013	Significant
H_6	-0.056	0.012	Significant
H_7	0.011	0.601	**Not Significant** t
H_8	0.011	0.510	**Not Significant**
H_9	-0.004	0.853	**Not Significant**
H_{10}	0.029	0.015	Significant
H_{11}	0.030	0.005	Significant
H_{12}	-1.264	0.130	**Not Significant**
H_{13}	43.552	0.020	Significant

5.2.2 H_2*: public prejudice has a significant impact on the health problem of the workers*

When the variable Public prejudice goes up by 1 unit and the health problem of the workers rises by 0.566 units. The regression weight estimate, 0.566, has a standard error of about 0.255. Separating the regression weight estimate by the estimate of its standard error provides z=0.556/0.255 = 2.224. In particular, the regression weight estimate is 2.224 standard errors above zero. The possibility of receiving a critical ratio as large as 2.224 in absolute value is 0.026. Therefore, the regression weight for Public prejudice in the prediction of health problems of the workers is significantly different from zero at the 0.026 (0.05%) levels (two-tailed). As a result, the hypothesis (H_2) that Public prejudice has a significant impact on the health problems of the workers is supported.

5.2.3 H_3*: occupational security has a significant consequence on the health problems of the workers*

The component occupational security increased by 1 unit and the health problem of the workers increased by 0.060 units and it has a standard error of about 0.200. Subtracting the regression weight estimate by the estimate of its standard error gives z=0.060/0.200= 0.302. Consequently, the regression weight for occupational security in the prediction of health problems of the workers is not significant at the levels because the absolute value 0.763 is larger than 0.05 levels (two-tailed). Therefore, the hypotheses (H_3) that occupational security has significant consequences on the health problems of the workers are not supported in the study area.

5.2.4 H_4*: insufficiency of tool facilities has a significant impact on the health problems of the workers*

The variable Insufficiency of tool facilities goes up by 1 unit, and the health problem of the workers goes up by 0.013 units. The regression weight estimate, 0.013 has a standard error of about 0.275. The regression weight estimate by the estimate of its standard error gives z=0.013/0.275=0.493. The opportunity of getting a critical ratio as large as 0.493 and the absolute (p) value is 0.622. Especially, the regression weight for the Insufficiency of tool facilities in the prediction of health problems of the workers is not significantly different from zero at the 0.05 level (two-tailed). Therefore, the hypothesis (H_4) Insufficiency of tool facilities has a significant effect on the health problems of the workers of this study area is not supported.

5.2.5 H_5*: visiting the hospital has significant results on the health problems of the workers*

The variable visiting the hospital is higher by 1 unit and the health problem of the workers increases by 0.210 units, and it has a standard error of about 0.085. Taking away the regression weight estimate by the estimate of its standard error gives z=0.210/0.085=2.476. Then, the regression weight for visiting the hospital in the calculation of the health problems of the workers is significant (p=0.013) at the 0.05 level (two-tailed). Hence, the hypothesis, (H_5) that visiting the hospital has significant results on the health problems of the workers is supported.

5.2.6 H_6 *: accessibility to the workplace has significant influences on worker's level of job satisfaction*

When the variable accessibility to the workplace has gone up by 1 unit and worker's level of job satisfaction decreases by 0.056 units. The regression weight estimate, 0.056, has a standard error of about 1.022. Separating the regression weight estimate by the estimate of its standard error provides z=0.056/1.022=-2.524. Especially, the regression weight estimate is 2.524 standard errors above zero. The possibility of receiving a critical ratio as large as 2.524 in absolute value is 0.012, less than 0.05. Thus, the regression weight for accessibility to the workplace in the prediction of worker's level of job satisfaction is significantly different from zero at the 0.012 (0.05%) levels (two-tailed). Consequently, the hypothesis (H_6) that Accessibility to the workplace has significant influences on workers' level of job satisfaction in this study region is supported.

5.2.7 H_7*: public discrimination of people has a significant effect on worker's level of job satisfaction*

The element of public discrimination (prejudice) of the people goes up by 1 unit and the worker's level of job satisfaction goes up by 0.011 units. It has a standard error of about 0.022. Dividing the regression weight estimate by the estimate of its standard error gives z=0.011/0.022=0.522. As a result, the regression weight for public discrimination of the workers in the prediction of worker's level of job satisfaction is not significant at the 0.05 (p=0.601) level (two-tailed). Thus, the hypothesis (H_7), that public discrimination of people has a significant effect on worker's level of job satisfaction in this study area is not supported.

H_8*: occupational safety of the workers has a significant role in worker's level of job satisfaction*

The variable occupational safety of the workers rises by 1 unit the worker's level of job satisfaction increases by 0.011 units and the standard error is about 0.017 units. Separating the regression weight estimate by the estimate of its standard error gives z=-0.011/0.017=-0.659. Accordingly, the regression weight for occupational safety of the workers in the prediction of worker's level of job satisfaction is not significant (p=0.510) level. Therefore, the hypothesis (H_8), Occupational

safety of the workers has a significant role in worker's level of job satisfaction in the study area is not supported.

5.2.9 H_9*: insufficiency of tool facilities has significant responsibility on worker's level of job satisfaction*

The variable insufficiency of tool facilities increases by 1 unit and the worker's level of job satisfaction decreases by -0.004 units. The regression weight estimate, 0.004, has a standard error of about 0.023; mainly the regression weight estimate by the estimate of its standard error gives z=0.004/0.023=-0.185. Therefore, the regression weight estimate is 0.185 standard errors above zero. The probability of getting a critical ratio as large as 0.185 in absolute value is 0.853and it is more than 0.05 (two-tailed). But the regression weight for insufficiency of tool facilities in the prediction of worker's level of job satisfaction is not significantly different from zero at the 0.050 level (two-tailed). Accordingly, the hypothesis (H_9) insufficiency of tool facilities has a significant responsibility on workers' level of job satisfaction is not supported.

5.2.10 H_{10}*: sanitary workers visiting the hospital has a significant impact on worker's level of job satisfaction*

The factor variable sanitary workers visiting the hospital has increased by 1 unit and worker's level of job satisfaction increases by 0.029 units and it has a standard error of about 0.012. Therefore, subtracting the regression weight estimate from the estimate of its standard error gives z=0.029/0.012=2.440. As a result, the regression weight for sanitary workers visiting the hospital in the prediction of worker's level of job satisfaction is significant. Because the absolute value is 0.015 and it is less than 0.05 (two-tailed). Hence, the hypothesis (H10) that sanitary workers' visiting the hospital has a significant impact on worker's level of job satisfaction is supported in the study area.

5.2.11 H_{11}*: worker's health problem has a significant influence on their level of job satisfaction*

The variable Worker's health problem goes up by 1 unit the worker's level of job satisfaction increases by 0.030 units. The regression weight estimate, 0.030, has a standard error of about 0.011. Hence, separating the regression weight estimate by the estimate of its standard error provides z=0.030/0.011=2.821. Particularly, the regression weight estimate is 2.821 standard errors above zero. The possibility of receiving a critical ratio as large as 2.821 in absolute value is 0.005 and it is less than 0.05. Thus, the regression weight for the Worker's health problem in the prediction of the worker's level of job satisfaction is significantly different from zero at the 0.005 (0.05%) levels (two-tailed). Therefore, the hypothesis (H_{11}) Worker's health problem has a significant influence on their level of job satisfaction is supported.

5.2.12 H_{12}*: worker's health problems have a significant impact on their behaviour of alcoholism*

The variable worker's health problem gets higher by 1 unit, and their behaviour of alcoholism decreases by -1.264 units and it has a standard error of about 0.834. Hence, the regression weight estimate by the estimate of its standard error gives z=1.264/0.834=-1.516. Therefore, the regression weight for workers' health problems in the prediction of their behaviour of alcoholism is not significant (p=0.130) because the absolute value is higher than 0.05 level (two-tailed). Hence, the hypothesis, (H_{12}, that workers' health problems have a significant impact on their behaviour toward alcoholism is not supported.

5.2.13 H_{13} *: worker's job satisfaction level has a significant effect on their behaviour of alcoholism*

The worker's job satisfaction level rise by 1 unit and their behaviour of alcoholism increases by 43.552 units and the standard error is about 18.656 units. So, separating the regression weight estimate by the estimate of its standard error gives z=43.552/18.656=2.334. As a result, the regression weight for workers' job satisfaction level in the prediction of their behaviour of alcoholism is significant (p=0.020) level, since the absolute value is higher than 0.05 level (two-tailed). Therefore, the hypothesis (H_{13}), that Worker's job satisfaction level has a significant effect on their behaviour of alcoholism in the study area is supported.

6 Conclusion

In the study area both male and female, permanent, contract and daily wages labourers are working in the solid waste management activities. Specifically, they are engaged in sweeping and collecting household waste and drivers and supervisors. The majority of the workers are taking proper self-protection measures before going to fieldwork. They live in substandard houses and environments. Most of the workers have the habit of drinking alcohol due to their psychological and health problems. Lack of vehicles, non-availability of equipment, people discrimination, and healthcare facilities are their major problems. Half of the workers regret doing this kind of work. However, commonly the workers feel that they are getting low salaries. Two-fourths of the workers have insurance policy.

Further, the structural equation model demonstrates that the dimensions namely behaviour of alcoholism, visiting the hospital, job satisfaction, accessibility to the workplace, health problems, public prejudice (discrimination), occupational security and insufficiency of equipment are determining the household solid waste management activities of sanitary

workers in the South Zone of Coimbatore Corporation. The scale used in this study adequately fits into the data collected in the study area. Besides, it concludes that the hypothesized thirteen assumptions model fits the collected sample data. As a result, the likelihood and statistical association of essential variables estimate, the good fit of the structural model and represent an adequate description of sanitary workers indicators support the model fit. Hence, these factors have having fundamental association with occupational issues of the sanitary workers working in the study area.

In addition, the workers working in the solid waste management activities in this study area suggest that they are unable to have food on time, difficult to follow safety measures, maintain personal hygiene, and face physical injuries, bad odour and lack of public co-operation. The majority of the sanitary workers have the habit of drinking alcohol so the local authorities should arrange counselling activities once in a while to recover from the habit. However, the sanitary workers are doing solid waste management practices and keeping a clean environment.

References

1) and AKL. Health, Identity and Livelihood Status of Sanitation Workers in Bhubaneswar City Odisha. *IJRAR* . 2019;6(2):438–450. Available from: https://www.researchgate.net/publication/345973650_Health_Identity_and_Livelihood_Status_of_Sanitation_Workers_in_Bhubaneswar_City_Odisha.
2) Kaza S, Yao LC, Bhada-Tata P, Van Woerden F. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Washington, DC. World Bank. 2018. Available from: https://openknowledge.worldbank.org/entities/publication/d3f9d45e-115f-559b-b14f-28552410e90a.
3) Ma J, Hipel KW. Exploring social dimensions of municipal solid waste management around the globe – A systematic literature review. *Waste Management*. 2016;56:3–12. Available from: https://dx.doi.org/10.1016/j.wasman.2016.06.041.
4) Obeng-Odoom F. Enclosing the urban commons: Crises for the commons and commoners. *Sustainable Cities and Society*. 2018;40:648–656. Available from: https://doi.org/10.1016/j.scs.2018.01.001.
5) Selvamani R, Rajan D. Socio Economic status of Dalit Women Sanitary Workers: A Social Work Perspective. *Empowering People: Effective Social Work Approaches & Strategies*. 2015;5(12):108–111. Available from: https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/special_issues_pdf/December_2015_1453445715__38.pdf.
6) Joseph K, Visvanathan C. Dumpsite rehabilitation. In: Lehmann EC, editor. Landfill Research Focus. New York. Nova Science Publisher Inc. 2008;p. 337–360. Available from: https://www.researchgate.net/publication/251572831_Dumpsite_Rehabilitation.
7) Sridevi V, Modi M, Lakshmi MVVC, Kesavarao L. A review on integrated solid waste management. *International Journal of Engineering Science & Advanced Technology*. 2012;2:1491–1499. Available from: https://www.scribd.com/document/527876783/10-1-1-300-9119.
8) Chavan D, Arya S, Kumar S. Open dumping of organic waste: Associated fire, environmental pollution and health hazards. In: Hussain C, Hait S, editors. Hussain C and Hait S (eds) Advanced Organic Waste Management. United Kingdom. Elsevier. 2022;p. 15–31. Available from: https://shop.elsevier.com/books/advanced-organic-waste-management/hait/978-0-323-85792-5.
9) Kumari S, Kiran UV. Prevalence of health problems of rag pickers due to various hazards at Lucknow city. *Human Factors in Healthcare*. 2022;2:100023. Available from: https://dx.doi.org/10.1016/j.hfh.2022.100023.
10) Cointreau E. Occupational and Environmental Health Issues of Solid Waste Management: Special Emphasis on Middle and Lower-Income Countries;vol. 16. Washington, DC. The World Bank. 2005. Available from: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/679351468143072645/occupational-and-environmental-health-issues-of-solid-waste-management-special-emphasis-on-middle-and-lower-income-countries.
11) Yang H, Ma M, Thompson JR, Flower RJ. Waste management, informal recycling, environmental pollution and public health. *Journal of Epidemiology and Community Health*. 2018;72(3):237–243. Available from: https://dx.doi.org/10.1136/jech-2016-208597.
12) Fahmi W, Sutton K. Cairo's Contested Garbage: Sustainable Solid Waste Management and the Zabaleen's Right to the City. *Sustainability*. 2010;2(6):1765–1783. Available from: https://dx.doi.org/10.3390/su2061765.
13) Yannawar VB, Shaikh P, Bhosle AB. The impact of landfill on soil and groundwater quality of the Nanded City, Maharashtra. *Researcher*. 2012;4:56–63. Available from: https://www.sciencepub.net/researcher/research0407/007_10305research0407_56_63.pdf.
14) Aparcana S. Approaches to formalization of the informal waste sector into municipal solid waste management systems in low- and middle-income countries: Review of barriers and success factors. *Waste Management*. 2017;61:593–607. Available from: https://dx.doi.org/10.1016/j.wasman.2016.12.028.
15) Kleinbaum D, Kupper L, Nizam A, Rosenberg E. Applied regression analysis and other multivariable methods. 5th ed. Boston MA. Cengage Learning. 2013. Available from: https://www.researchgate.net/publication/267093056_Applied_Regression_Analysis_and_Other_Multi-Variable_Methods.
16) Gamborg M, Jensen GB, Sørensen TIA, Andersen PK. Dynamic Path Analysis in Life-Course Epidemiology. *American Journal of Epidemiology*. 2011;173(10):1131–1139. Available from: https://dx.doi.org/10.1093/aje/kwq502.
17) Bielderman A, de Greef MHG, Krijnen WP, van der Schans CP. Relationship between socioeconomic status and quality of life in older adults: a path analysis. *Quality of Life Research*. 2015;24(7):1697–1705. Available from: https://dx.doi.org/10.1007/s11136-014-0898-y.
18) Howe LD, Tilling K, Galobardes B, Lawlor DA. Loss to follow-up in cohort studies: bias in estimates of socio-economic inequalities. *Epidemiology*. 2013;24(1):1–9. Available from: https://doi.org/10.1097/ede.0b013e31827623b1.
19) Anderson JC, Gerbing DW. Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*. 1988;103(3):411–423. Available from: https://psycnet.apa.org/doi/10.1037/0033-2909.103.3.411.
20) Peter T. Adoption of Mobile money technology: Structural Equation Modelling Approach. *European Journal of Business and Management*. 2011;3(7):59–77. Available from: https://files.core.ac.uk/download/pdf/234624099.pdf.
21) Bagozzi RP, Yi Y. On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*. 1988;16(1):74–94. Available from: https://doi.org/10.1007/BF02723327.
22) Barbara MB. Structural Equation Modelling with AMOS. Basic concepts, applications, and programming. 2nd ed. New York. Routledge, Taylor & Francis Group. 2009.
23) Gerbing DW, Anderson JC. Monte Carlo Evaluations of Goodness of Fit Indices for Structural Equation Models. *Sociological Methods & Research*. 1992;21(2):132–160. Available from: https://dx.doi.org/10.1177/0049124192021002002.
24) Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*. 1999;6(1):1–55. Available from: https://dx.doi.org/10.1080/10705519909540118.