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PREVALENCE OF HYPERTENSION AND DIABETES AMONG SANITARY WORKERS IN TIRUVANNAMALAI MUNICIPALITY – A CROSS-SECTIONAL STUDY

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Abstract

ABSTRACT : Prevalence of Hypertension and Diabetes among sanitary workers in Tiruvannamalai Municipality – A Cross-sectional study

BACKGROUND : Sanitary Workers are an important but neglected occupational group. They engage in manual labour of door to door collection of wastes and exposed to stress at work interacting with public on a daily basis. In this background, study to estimate prevalence of hypertension and diabetes among sanitary workers becomes important.

AIM : The study aims to estimate the prevalence of Hypertension and Diabetes among sanitary workers in Tiruvannamalai Municipality.

METHODOLOGY : : A cross-sectional study among 267 sanitary workers of Tiruvannamalai Municipality was done. All eligible sanitary workers after inclusion and inclusion criteria were included for the study and data collected using semi-structured questionnaire. Physical parameters, blood pressure, fasting and postprandial blood glucose were measured.

RESULTS : Among participants 19.9% had hypertension, 7.5% had diabetes mellitus and 7.5% had both hypertension and diabetes mellitus. More than 60% of them were newly detected.

CONCLUSION : Sanitary workers of Tiruvannamalai municipality differ in prevalence of hypertension and diabetes compared to general population. Screening and early detection of NCDs are important to prevent late detection and prevent complications.

KEYWORDS : Non-communicable diseases, Sanitary Workers, Tiruvannamalai Municpality

INTRODUCTION

World Health Organization reported in 2020, 70% of deaths globally are due to four major non communicable diseases – cardiovascular disease, diabetes, cancer and chronic respiratory disease.[1] Almost three quarters of all NCD deaths and 82% of premature deaths happen in low and middle income countries.[2] In India 63% of deaths are from non- communicable diseases.[1] Sustainable Development Goals 2030, aims to reduce premature mortality due to NCDs by one third. Age, sex, race, tobacco use, insufficient physical activity, harmful use of alcohol, unhealthy diet, raised blood pressure, overweight, obesity, raised cholesterol, cancer associated infections and environmental factors are risk factors for non- communicable diseases. Importantly, tobacco use, physical inactivity, harmful use of alcohol and unhealthy diet are the four major risk factors, which leads to overweight, obesity, raised blood pressure and raised cholesterol which independently and synergistically increase the risk of NCDs.

Different occupations have different levels of physical activity, stress, satisfaction, timings, smoking predilection and access to health care. People engaging in such occupations tend to differ in their risk for NCDs. White collar jobs are more sedentary, requires more mental effort, involve more stress and less physical inactivity. While Blue collar jobs, involves more physical activity and people in such jobs tend to have more smoking and alcohol use.[3-7]

Sanitary work involves a range of activity including and not limited to cleaning and sweeping public spaces, cleaning of pubic and community toilets, clearing public drains and collection of domestic and commercial wastes. Sanitary work involves moderate to hard physical activity, irregular work timings and poor societal recognition.(8-10) Sanitary workers tend to be from low social class and economically weaker sections of the community. People engaged in sanitary work also face stigmatisation and marginalisation in the community.[11] Perceived difficulty to access health care exists among sanitary workers.[9,12,13]

Among NCDs, hypertension and diabetes mellitus are the most common, and share common risk factors

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including physical inactivity, overweight, obesity, unhealthy diet, tobacco use and alcohol use. In India, prevalence of high blood pressure is estimated to be 24% among adults.[14]

In a study among Sanitary workers of Thrissur Municipal Corporation 14.61% had diabetes and 13% had hypertension.[15] In a similar study among workers in Shimla municipality 18.5% had high blood pressure.[16] Among Aurangabad Municipal Corporation sweepers, prevalence of hypertension was 9.34% and diabetes was 4.9%.[17] In a study among Ahmedabad municipal workers, 45.01% had hypertension.[18] In a study among sanitary workers of Greater Chennai Corporation, prevalence of chronic non-communicable diseases was reported as 17.8%.[19]

In this background, need to study prevalence of hypertension and diabetes among sanitary workers of Thiruvannamalai Municipality was felt and undertaken.

METHODOLOGY

The study was undertaken as a cross-sectional study, among sanitary workers engaged in Tiruvannamalai municipality. The workers who were engaged in sanitation duties and have been continuously working for at least one year were included for the study. Sample size was calculated based on a study conducted among sanitary workers of Greater Chennai Corporation, prevalence of chronic non-communicable diseases was 17.8%.[19] At confidence level of 95% and absolute precision of 5%, and a non-response rate of 20%, sample size was calculated as 270. After getting informed consent, sanitary workers were interviewed through a semi-structured questionnaire for socio-demographic factors. Out of total 330 sanitary workers, 23 have joined in past 6 months, 5 didn't consent, 7 were absent during the study, 16 individuals absented during blood sample collection and 12 individuals were not contactable during the study. Height was measured using stadiometer, weight using a bathroom weighing scale. Blood pressure was taken after ensuring participants hadn't consumed coffee/tea or smoked in last 30 minutes using digital sphygmomanometer. Blood pressure was measured twice during the interview at 10 minute interval and average of the readings was taken. Fasting and 2 hours post prandial venous blood sample was taken for blood sugar measurement. Systolic blood pressure more than or equal to 140 mm Hg and or diastolic blood pressure more than or equal to 90 mm Hg was taken as cutoff values for hypertension. Participants with history of hypertension and or being on treatment for hypertension were classified as known hypertensives. Fasting blood glucose more than on equal to 126 mg/dl and or post prandial blood glucose more than or equal to 200 mg/dl was taken as cut off for diabetes. Participants with history of diabetes mellitus and or being on treatment for diabetes were classified as known diabetics. Data collected from 267 sanitary workers was entered and analysed using SPSS. All instruments used in the study were calibrated for accuracy. Study was conducted after obtaining ethical clearance from Institutional Ethical Committee. Participants were provided follow-up care for diabetes and hypertension at urban Primary Health Centre, Tiruvannamalai.

RESULTS

Socio-demographic characteristics of study participants are tabulated in tables 1-4. Among participants, males were 91 and females were 176. Participants in age group of 30 to 44 years were 47.6%, 39% in 45 to 50 years age, and 13.5% in 18 to 29 years age group. Mean age of the participants is 40.6 years and standard deviation 9.49 years.

Table 1 : Age characteristics of study participants

Characteristics	Males (N=91) n (%)	Females (N=176) n (%)
Age, 18 to 29 years	28 (30.8%)	8 (4.5%)
Age, 30 to 44 years	46 (50.5%)	81 (46%)
Age, 45 to 60 years	17 (18.7%)	87 (49.5%)

Table 2 : Residential status of study participants

Characteristics	Males (N=91) n (%)	Females (N=176) n (%)
Residence from urban	81 (89%)	152 (86.3%)
Residence from urban slum	4 (4.4%)	11 (6.3%)
Residence from rural	6 (6.6%)	13 (7.4%)

Table 3 : Marital status of study participants

Characteristics	Males (N=91) n (%)	Females (N=176) n (%)
Married	67 (73.6%)	107 (60.8%)
Single	24 (26.4%)	8 (4.5%)
Living without spouse (divorced, separated, widowed)	0 (0%)	61 (34.7%)

Table 4: Educational status of study participants

Characteristics	Males (N=91) n (%)	Females (N=176) n (%)
Not attended school	13 (14.3%)	64 (36.4%)
Primary school	22 (24.2%)	61 (34.6%)
Middle school	27 (29.7%)	33 (18.8%)
High school	24 (26.4%)	16 (9.1%)
Higher secondary school	5 (5.4%)	2 (1.1%)

Majority, 87.3% of participants were from urban area, 5.6% were from slum areas as per classification of municipal records and 7.1% were from rural areas. Majority of participants were married. Nearly one third of female participants reported as living separated including separated, divorced and widowed. Among males 26.4% were unmarried and among females less than 5% were unmarried. More among females (36.4%) had not attended schools as compared to males (14.3%). Among 45 to 60 years old, nearly 50% haven't attended school. Among 18 to 29 years old only 1 didn't attend school. Nearly 80% among not attended school were females.

Hypertension and Diabetes mellitus

Among study participants, individuals with only hypertension were 19.9%, only diabetes mellitus were 7.5% and with both hypertension and diabetes were 7.9%. Sex wise distribution of disease status is summarised in table 5.

Table 5: Sex distribution of hypertension and diabetes mellitus.

Disease status	Male (N=91) n (%)	Female (N=176) n (%)
Only Hypertension	20 (22%)	33 (18.8%)
Only Diabetes mellitus	5 (5.5%)	15 (8.5%)
Both hypertension and diabetes mellitus	6 (6.5%)	15 (8.5%)
Normal	60 (66%)	113 (64.2%)

Among individuals detected with Hypertension and diabetes, 33 (35.1%) have known their disease status and are on treatment. While, 61 (64.9%) are newly detected hypertension and diabetic individuals. Status of treatment and newly detected disease status of individuals is presented in table 6.

Table 6 : Old and newly detected hypertension and diabetes mellitus

	Hypertension (N=53) n (%)	Diabetes (N=20) n (%)	Both hypertension & diabetes (N=21) n (%)	Total (N=94) n (%)
On treatment	14 (26.4%)	10 (50%)	9 (42.9%)	33 (35.1%)
Newly detected	39 (73.6%)	10 (50%)	12 (57.1%)	61 (64.9%)

Socio-demographic factors association with hypertension and diabetes mellitus.

Age was dichotomised using mean age 41 years. Education was dichotomised as attended and not attended school. Association between socio-demographic factors with disease status was analysed by chi-square method and odds ratio calculated. Results presented in table 7. Association of age more than or equal to 41 years and less than or equal to 41 years was found to be statistically significant with odds ratio 2.19 (1.26 – 3.84). Prevalence of hypertension among age ≥ 41 years was 35% as compared to 19.7% among < 41 years.

Table 7: Association between socio-demographic factors and hypertension

Characteristic	Category	Hypertension Yes n (%)	Hypertension No n (%)	Chi-square & p value	OR (95% CI)
Sex	Male	26 (28.6)	65 (71.4)	0.051 p = 0.82	1.07 (0.60-1.87)
	Female	48 (27.3)	128 (72.7)		
Age	≥ 41 yrs	49 (35)	91 (65)	7.79 p = 0.006*	2.19 (1.26-3.84)*
	< 41 yrs	25 (19.7)	102 (80.3)		
Education	Yes	48 (25.3)	142 (74.7)	1.98 p = 0.176	0.66 (0.37-1.18)
	No	26 (33.8)	51 (66.2)		

* Statistically significant

Table 8 : Association between socio-demographic factors and hypertension

Characteristic	Category	Diabetes mellitus Yes n (%)	Diabetes mellitus No n (%)	Chi-square, p value	OR (95% CI)
Sex	Male	11 (12.1)	80 (87.9)	1.13, p = 0.29	0.67 (0.32-1.41)
	Female	30 (17)	146 (83)		
Age	≥ 41 yrs	35 (25)	105 (75)	21.06, p = 0.00 *	6.72 (2.72-16.61)*
	< 40 yrs	6 (4.7)	121 (95.3)		
Education	Yes	13 (16.9)	64 (83.1)	0.19, p = 0.66	0.85 (0.41-1.75)
	No	28 (14.7)	162 (85.3)		

* Statistically significant

Chi-square test between socio-demographic factors and diabetes mellitus showed age more than 41 years and less than 41 years was statistically significant with odds ratio 6.72 (2.71-16.61).

DISCUSSION

Sanitary workers are important service providers, unseen and unheard in the socio-cultural milieu of the society. Health status of sanitary workers are relatively less studied compared to other working populations. In this study among sanitary workers of Tiruvannamalai municipality, 19.9% had hypertension, 7.5% had diabetes mellitus, and 7.9% had both hypertension and diabetes mellitus. Among participants, females (n=176, 65.9%) were nearly double the number of males (n=91, 34.1%). This was similar to the study among sanitary workers in Greater Chennai corporation in which females were 67.1% and males were 32.9%.[19] In studies among sanitary workers in other states of India had more males comparted to females (15,17,18). Though sanitary work involves more physical and manual labour, more

females are engaged in this job. Less preference among males could be due to less recognition in society and job timings of 6am to 11am in the morning and 2pm to 5 pm in the evening. Among participants in this study, 28.8% had not attended school, similar to the study among sanitary workers in Greater Chennai Corporation.[19] Interestingly, among those completed middle school, more females are present as compared to more males among those attended school education after middle school. This indicates the need to promote girl child education in sections of the society.

Prevalence of hypertension was 27.7% among all participants, among males it was 28.6% and among females it was 26%. This proportion was more compared to study among sanitary workers by Mahajan et al. in Aurangabad Municipal Corporation, Chellama et al. Thrissur Corporation, Kerala, and Zapdey and Zopdey in Nagpur Municipal Corporation, while it is less compared to sanitary workers in Ahmedabad Municipal Corporation, reported by

Parikh et al.[9,15,17,18] Among sewage workers of National capital region of Delhi, prevalence was more at 67.3%.(20) While Oommen et al. reported 21.4% of general population as being hypertensive.[21] Prevalence of hypertension in the current study was also more compared to NCD risk factor survey in Tamil Nadu.[22] Prevalence of diabetes among all sanitary workers in this study is 19.9%. This was more compared to 14.6% among sanitary workers in Thrissur corporation, 4.9% in sanitary workers in Auragabad municipality and 1.1% among street sweepers of Nagpur municipal corporation.[9,17,15] Prevalence of diabetes was less compared to 25% among sewage workers in NCT Delhi.[20] In the present study, 12% among males and 17% among females had diabetes mellitus. Among general population in Tamil Nadu prevalence of diabetes mellitus was 15.9% which is less compared to sanitary workers.[21]

CONCLUSION

In our study prevalence of only hypertension is 19.9%, only diabetes is 7.5% and both hypertension and diabetes is 7.9%. All identified individuals with hypertension and diabetes were referred to Urban Primary Health Centre, Tiruvannamalai for further evaluation and follow-up. Differential rates of NCDs in different occupational groups is observed and need for further studies to understand NCDs and risk factors among occupational groups, especially among sanitary workers. More than 60% of hypertension and diabetics were newly detected. Regular screening is needed to detect these individuals early and prevent complications.

LIMITATION

Cross-sectional nature of the study, small sample size and single centre study are limitations of this study. A larger sample with participants from different municipalities is needed.

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