

Gardening and Health: A Cross Sectional Study of Occupational Health Behaviour of Gardeners

Shashi Prabha Tomar¹, PK Kasar², Rajesh Tiwari³

ABSTRACT

Introduction: Occupational safety and health (OSH) also commonly referred to as occupational health and safety (OHS) or workplace health and safety (WHS) is an area concerned with the safety, health and welfare of people engaged in work or employment. The goals of occupational safety and health programs include to foster a safe and healthy work environment. Working in Garden and field without taking appropriate protective measures will lead these workers several risk like Physical, biological and psychological hazards Hence the present study aims at studying socio demographic and health related behaviour of occupational gardeners.

Materials and Methods: The study group comprised 100 occupational gardeners of the Jabalpur city. A pretested proforma questionnaire was used to record the necessary information like medical history, sociodemographic factors, and findings of clinical investigations.

Result: Among the study subjects 33% were underweight with a mean BMI of 16.89 and further 11% persons were overweight with 26.78 mean BMI. Regarding personal protective behaviour during work only 17% gardeners uses cloth or mask to cover mouth while working, none of them bear apron, only 4% gardeners bear goggles and mask while spraying. Only 3% wear gloves while working and 59% wear shoes while working. The most common health problems are vision disturbance (25%), eye inflammation (16%), sneezing and running nose found in(11%), joint pain swelling and muscle stiffness16.%, and accidental injury (26%). Most rarely found health issue was varicose veins 2%.

Conclusion: Gardeners should be educated to use protective clothing, quit smoking and tobacco consumption, adopt proper body posture, and ensure vaccination.

Keywords: Body weight, BMI, blood pressure, community gardener, occupational disease

ly impact health. These workers often worked long hours. The prevalence rate of working more than 48 hours a week among workers employed in these industries was 37%, and 24% worked more than 60 hours a week. Of all workers in these industries, 85% frequently worked outdoors compared to 25% of all U.S. workers. Additionally, 53% were frequently exposed to vapors, gas, dust, or fumes, compared to 25% of all U.S. workers.⁴ Without appropriate protective measures Gardening may be associated with lots of injuries. the Consumer Product Safety Commission (CPSC) reports that gardeners suffer thousands of injuries every year. In 2012, for example, the CPSC estimates there were more than 100,000 injuries related to garden equipment or accessories in the United States.⁵ Although no such reports available for India due to lack of studies Lack of o health information in many sub-populations like gardeners in India, required to explore health behaviour of this perticular group of population. Working in Garden and field without taking appropriate protective measures will lead these workers several risk like Physical, biological and psychological hazards Hence the present study aims at studying socio demographic and health related behaviour of occupational gardeners.

MATERIALS AND METHODS

The study was conducted on 100 gardeners randomly selected from work place from different nurseries and garden during between July to September 2014. Sample of 100 purposefully selected for study convenience. Nurseries of all the four directions east west north south were covered to complete the sample of 100. Data were collected by person-to-person visits. They were assured of the confidentiality of the data and their informed consent was obtained. Sociodemographic information like age, sex, educational level, occupation status, and behavioral characteristics like use of tobacco, bidi, and alcohol were collected using a predesigned and pretest-

INTRODUCTION

World Health Organization defined "occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards."^{1,2} Health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."³ The 2010 NHIS-OHS found elevated prevalence rates of several occupational exposures in the agriculture, forestry, and fishing sector which may negative-

¹Assistant Professor, ²Professor and Head, ³Associate Professor, Department of Community Medicine, NSCBMC Jabalpur, M.P, India

Corresponding author: Dr. Shashi Prabha Tomar, Plot no: 137, PNT Colony, Dhanvantri Nagar, Jabalpur, India

How to cite this article: Shashi Prabha Tomar, PK Kasar, Rajesh Tiwari. Gardening and health: a cross sectional study of occupational health behaviour of gardeners. International Journal of Contemporary Medical Research 2016;3 (1):301-304.

ed questionnaire. Health status was assessed by conducting appropriate anthropometrical, history and examination of each subject following standard clinical methods. All the available personal medical records including investigation report and medication held by the persons were evaluated and were recorded. During personal interviews, the subjects were asked specific questions regarding the use of personal protective devices like shoes, gloves, goggles, face masks, etc. Similarly, they were asked whether the employer organized any health education session or were given any personal advice regarding the use of personal protective devices and quitting habits such as smoking and tobacco chewing.

STATISTICAL ANALYSIS

The results were expressed in terms of mean \pm SEM. Experimental data were entered analysed in MS excel.

RESULTS

A total of 100 gardeners with the age ranging from 11 to 65 years were surveyed during in three month duration between July to September 2014. Most of the population 87% belongs to 20- 50 yrs of age group, only 5 gardener were of age 51-60 yrs and 3 were of 61 to 70 yrs of age. 74 % gardeners were males. Table 1

Among the study subjects 33% were underweight with a mean BMI of 16.89 and further 11% persons were overweight with 26.78 mean BMI. table 2. High blood pressure was found in 15% subjects with systolic BP 140 and above and diastolic BP 90 and above. and 15 were diabetics found on the basis of history and clinical reports. table 3. All the subjects were surveyed for their general health status and be-

Age distribution in years	No (%)
11-20	5(5%)
21-30	30(30%)
31-40	34(34%)
41-50	23(23%)
51-60	5(5%)
61-70	3(3%)
Total	100(100%)
Sex Distribution	
Male	74(74%)
Female	26(26%)
Total	100(100%)

Table-1: Socio-demographic profile of study subjects

According to BMI: Category	No (Percentage)
Normal	56(56%)
Underweight	33(33%)
Overweight	11(11%)
BMI: Body Mass index (Underweight, 16.5-18.5, normal 18.5—25, overweight 25-30).	

Table-2: Distribution of study subjects according to body weight

havioral characteristics concerning different organ systems as depicted in Table 3

Most common physical hazard was overworking 53% followed by feeling of fatigue 45%. In our study 51% suffered minor cuts during gardening with 78 % of them site effected was hands. Regarding personal protective behaviour during work only 17% gardeners uses cloth or mask to cover mouth while working, none of them bear apron, only 4% gardeners bear goggles and mask while spraying. Only 3% wear gloves while working and 59% wear shoes while working. None of the gardeners bore apron during work. Smoking behaviour

Health related problems and working behaviour	No (%)
1. Physical complains	
Fatigue	45(45%)
headach	17(17%)
body ache	25(25%)
Poor sleep	39(39%)
Overworked	53(53%)
2. Work related injury:-	
Minor cuts from routine weapon	51(51%)
Insect bite	17(17%)
Snake bite	1(1%)
Accidental injuries during work	23(26%)
Vericose veins	2(2%)
3. Respiratory problems	
Respiratory allergies	30(30%)
Asthma	3(3%)
Cough and cold Running nose	11(11%)
4. Ocular problems	
Watering of eyes	7(7%)
Diminished vision	25(25%)
Any Ocular inflammation(conjunctiviites an,keratiis,,sty)	16(16%)
5. Skin problems	
Contact dermatis	32(32%)
Skin infection mostly fungal and bacteria	39(39%)
Worm penetration through abraded skin	2(2%)
6. Chronic disease	
Diabetes	15(15%)
Hypertention	23(23%)
7. Personal habbits	
Alcoholism	21(21%)
Smoking	39(39%)
Tobbaco chewing	28(28%)
8. Joint pain and muscels stiffness	
Arthritis	16(16%)
Back pain	34(34%)
9. Personal protective behavior atworking place	
Wear shoes while working.	59(59%)
Aprons	0(0%)
Gloves	3(3%)
Clothes / mask to cover mouth	17(17%)
Use of mask and googles while spraying pesticide.	4(4%)

Table-3: Distribution of study subjects according to their health status and behavioral characteristics

was found in 39 % subjects and alcohol consumption in 21%. The most common health problems are vision disturbance (25%), eye inflammation (16%), sneezing and running nose found in(11%), joint pain swelling and muscle stiffness16.%, and accidental injury (26%). Most rarely found health issue was varicose veins 2%.

DISCUSSION

Most of gardeners in our study (83%) were literate educated primary and above and only 17 % were illiterate. The study populations of gardeners were mostly literate.67% gardeners were fulltime gardeners and 33% were irregular workers do part time other works also, despite this their main occupation was gardening only. They resided in overcrowded and unhygienic conditions of the slum areas, making them susceptible to vulnerable diseases. Most of study population belongs to lower socioeconomic class. Among the study subjects 33% were underweight with a mean BMI of 16.89 and further 11% persons were overweight with 26.78 mean BMI. Body mass index (BMI): weight in kg/height in metres value less than 18.5 was considered as thinness or chronic energy deficiency and BMI more than 25 was considered as overweight.⁶⁻⁷

Hypertension was defined as SBP 140 mmHg and/or DBP 90 mm Hg and/or treatment with antihypertensive drugs.⁸ High blood pressure was found in 15% subjects with systolic BP 140 and above and diastolic BP 90 above.which was lower than general population. Gardening has been shown to be a relaxing active activity that can significantly lower blood pressure in people with hypertension and prehypertension According to the Centers for Disease Control and Prevention (CDC), moderate-intensity level activity for 2.5 hours each week can reduce the risk for obesity, high blood pressure.⁸

In a Sentinel Surveillance Project, documented 28% overall prevalence of hypertension (criteria: =JNC VI) from 10 regions of the country in the age group 20-69. Another study carried out in 1998 among Industrial population in the Bharat Electronics Limited (BEL), India using the same criteria illustrated a prevalence of 30% among men.⁹⁻¹¹

In our study 15% were diabetic found on the basis of history and clinical reports Which was found higher than general population. The hectic work schedules of occupational gardeners and unregulated diet may be the responsible factors. During 1972-75, ICMR carried out a large multicentric study in India, which documented 2.6% and 1.5% prevalence of diabetes (criteria:FBS>5.6mmol/l or Post 1-h glucose value>=7.8mmol/l or Post 2-h glucose value>=6.7mmol/l) among men and women in the urban areas while in rural areas had a lower prevalence: 1.8% and 1.3%.⁹

Smoking behaviour was found in 39 % subjects and alcohol consumption in 21% and tobacco consumption 27%. National Sample Survey Organization (NSSO) note on consumption of tobacco in India in Madhya Pradesh depicted 33.6 %urban male and 7.2 % urban female are tobacco consumers.¹⁰ State-level prevalence of tobacco smoking in India in

Madhya Pradesh found 29.4% in urban males 0.9% in urban females.¹³

In our study 51% suffered minor cuts during gardening with 78 % of them site effected was hands. Only 68 % of those having injury with rusted weapon followed primary medical treatment and TT vaccination, rest of the population just washed it and tied a wet cloth over it. These data reveals ignorant behaviour of gardeners regarding self health and minor cuts a and wounds. Most of gardeners using garden tools, those with sharp edges or pointed tips. Make them prone for cuts on hands and fingers. Several time these cut goes unnoticed.

In our study 59% wear shoes while working, working with working ware foot make them prone for soil contamination, worm penetration, also spraying and handling various kind of pesticides and insecticide make them prone for chemical hazards, respiratory allergies ocular inflammation and irritation. In our study vision disturbance was found in (25%), eye inflammation (16%), sneezing and running nose found in(11%).Small organisms in the soil can enter the body through lesions and lead to infection. Buried objects such as metal or glass can also cause puncture wounds and carry a risk of tetanus. In our study 17%, insect bites, one case of snake bite was found as most of gardener took place in open and outdoor making them prone for insect bite ants, scorpions, and a host of flying insects can have irritating bites or cause allergic reactions in some peoples.

In this study, joint pain swelling and muscle stiffness16.%, The gardeners have to work in different postures continuously for long durations which results in joints pain, swelling, muscle stiffness, and back pain. The percentage of accidental injury was found to be 28%. This can be reduced by proper training. Most gardening tools are old-fashioned and need more physical labor to operate

The most common health problems are vision disturbance (25%), eye inflammation (16%), The gardeners are exposed to intense sunlight, chemicals, and pesticides which cause inflammation and irritation in eyes. Long-term exposure to sunlight especially ultraviolet (UV) rays and chronic eye irritation from dry dusty conditions seem to play an important role.¹⁴

CONCLUSION

So on the basis of study we recommend the following action should be taken at personal as well as public label for all gardening population to assure positive health benefits and promote safe gardening practices.

Gardeners should be educated regarding proper use of safety goggles, sturdy shoes or high rubber boots, and long pants when using lawn mowers, and other machinery.

The gardeners should be motivated to wear gloves, long sleeves, and sunshades to lower risk of skin irritation, sunburn, and skin cancer.

Instructions and warning labels on chemical, lawn and gar-

den equipment should be followed carefully.

Tetanus lives in the soil and enters the body through cuts in the skin. Because gardeners use sharp tools, dig in the dirt and handle plants with sharp points, they are particularly prone to tetanus infections. Ensure tetanus/diphtheria vaccination.

Despite the fact study was carried in limited number of subjects, the study revealed several important facts regarding working behaviour of gardeners but still it is recommended at a broader scale to give more promising result and will definitely help to improve gardeners health and promote safe gardening practices.

ACKNOWLEDGMENTS

We heartily acknowledge the cooperation and support of the community gardeners who participated in our study. We also acknowledge the dedicated work of the students of NSCB Medical College who helped us in collecting the survey data.

REFERENCES

1. Oak Ridge National Laboratory | ORNL. www.ornl.gov. Retrieved 2015-10-30.
2. WPRO | Occupational health. www.wpro.who.int. Retrieved 2015-10-30.
3. WHO Definition of Health. World Health Organization. World Health Organization
4. CDC – NHIS – Agriculture, Forestry and Fishing Sector Profile Page – NIOSH Workplace Safety and Health Topic. National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. June 28, 2013. Retrieved July 16, 2013.
5. Available from: <http://www.mnn.com/family/protection/safety/stories/how-to-avoid-common-garden-injuries>.
6. World Health Organization. Physical status: The use and interpretation of anthropometry. Technical report Series-854. WHO: Geneva; 1995.
7. Ramana GN, Sastry JG, Peters D. Health transition in India: Issues and challenges. *Natl Med J India* 2002;15:37-42.
8. The sixth report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure. 1997;157:2413-46.
9. WHO-Project on sentinel surveillance of Indian Industrial population.
10. Prabhakaran D, Shah P, Chaturvedi V, Ramakrishnan L, Manhapra A, Reddy KS. Cardiovascular risk factor prevalence among men in a large industry of North India. In press
11. Ahuja MMS. Epidemiological studies on diabetes mellitus in India. In: *Epidemiology of diabetes in developing countries*. Ahuja MMS, Ed. New Delhi, Interprint, 1979: 29–38.
12. National Sample Survey Organization (NSSO). A note on consumption of tobacco in India: NSS 50th Round, 1993-94. Sarvekshana 1998 anuary-March; New Delhi: Department of Statistics, Ministry of Planning, Government of India; 1998:76-89.
13. Rani M, Bonu S, Jha P, Nguyen SN, Jamjoum L. Tobacco use in India: Prevalence and predictors of smoking and chewing in a national cross-sectional household survey. *Tobacco Control* 2003;12:4. Available from URL:<http://www.tobaccocontrol.com/cgi/content/full/12/4/e4> (accessed on 17 August 2004).
14. Anonymous. Eye irritation, white growth on cornea, diminished vision? Pterygium. [last accessed on 2009 May 24]. Available from: <http://www.mylot.com/w/discussions/1440139.aspx>.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 06-12-2015; **Published online:** 27-12-2015