e-ISSN: 0975-5160, p-ISSN: 2820-2651

Available online on www.ijtpr.com

International Journal of Toxicological and Pharmacological Research 2023; 13 (6); 207-215

Original Research Article

Occupational Health Hazards amongst Agricultural Workers Working in Rural Area

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Received: 18-03-2023 / Revised: 21-05-2023 / Accepted: 20-06-2023

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Conflict of interest: Nil

Abstract:

Background: Occupational diseases among farmers can be caused by exposure to multiple hazardous agents such as animal exposure, pesticide exposure, hazardous machinery handling etc.

Aim and Objectives: To know about occupational health hazards in farmers working in rural areas.

Material and Method: This was a community based cross sectional study, conducted to find out the various health hazards among farmers in filed practicing area. Total of 350 agricultural workers were recruited into the study by using simple random sampling after following inclusion and exclusion criteria. Predesigned and pretested proforma was used to collect data; The principal investigator interviewed the participants in local language using the predesigned proforma.

Results: 59.1% of study population was male and 41.9% of the population was female. 80.9% of the population was lying in lower middle socio economic status. The present study observed that maximum health hazards were due to the exposure of pesticides, followed by animal attack, physical, hazards due to heat and cold, respiratory hazards and mechanical hazards. The present study also reported that near about 81.1 % study participants were aware about personal protective equipment's

Conclusion: Majority of study population were males, who were suffered due to exposure of pesticides and animal attack, who were mostly illiterate and had poor knowledge about pesticide.

Keywords: Occupational Health Hazards, Animal attack, Physical hazards, etc.

Introduction

"A healthy workforce is vital for sustainable social and economic development on a global, national, and local level." According to the International Labour organization, "The inadequate prevention of occupational diseases has profound negative effects not only on workers and their families but also on society at large due to the tremendous costs that it generates; particularly, in terms of loss of productivity and burdening of social security systems. Globally one third of the

population is involved in agriculture related works. India being a developing country, majority of its population is dependent on agriculture for employment. Occupational diseases among farmers can be caused by exposure to multiple hazardous agents such as animal exposure, pesticide exposure, hazardous machinery handling etc., which can interplay in producing a disease[1].

In India, 60% of the working population is employed in farming and agricultural works with high economical impact. Whereas, farmers and agricultural workers involved in this sector are exposed to factors and work conditions which have an adverse effect on their health. Occupational health hazards are risk and dangers that worker can encounter in their work environment, leading to adverse effects on their health and well-being. These hazards can arise from various factors including physical, chemical, biological, ergonomic, and psychosocial elements, electrical hazards and fire and explosive hazards.

Despite wide knowledge on occupational hazards in farming and agricultural sector, the incidence of occupation related diseases among farmers might remain underestimated because of lack of proper reporting or subclinical manifestations and also due to low health seeking behaviour among farmers. In other occupational groups, in contrary to farmers, the incidence of occupational diseases to a large extent reflects health consequences of occupational exposure, like pneumoconiosis in cotton mill workers.

The present study area having population in 2023 is 112,741. Based on 2011 census data, it has 86.52% of its population living in rural area. Agriculture is the most predominant sector of the District economy, as 20 percent of the population is engaged in Agriculture and allied activities for their livelihood. The gross cropped area of the district is 261360 Ha with 267663 no. of farm holdings. The chief agricultural products in the district are paddy, cotton, maize, red grams, horticulture etc. Every year agriculture has good contribution in generating revenue thereby helps in its economy to a great extent.[2]

While accurate figures for occupational issues are still hard to obtain on a global scale, it is recognized today that occupational accidents and diseases can have an impact on the productivity, competitiveness, and reputation of individual enterprises, as well as on the livelihoods of individuals and their families. The underreporting of occupational accidents and diseases remains an obstacle in raising the awareness of the need to place safe work higher in the political agenda. Most work-related deaths and nonfatal occupational accidents occur in low- and middle-income countries in South-East Asia and the Western Pacific region. There are very less studies available on occupational health hazards among farmers in present study area, thus we have undertaken this study to know about occupational health hazards in farmers working in rural areas.

Objectives –

- To find out the magnitude of mechanical, physical, respiratory ,hazards amongst agricultural workers working in rural area.
- To find out the magnitude of hazards due to heat and cold, animal attacks, pesticides exposure among them .
- To find out the awareness and use of personal protective equipments among them .
- To find out the association between socio-demographic, other factors and agricultural health hazards.

Material and Method -

This was a community based cross sectional study, conducted to find out the various health hazards among farmers in filed practicing area of Rural Health Training Centre of Private Medical Institute in South India region over the period of one year. Agricultural workers residing in the study area were recruited to the study after

obtaining informed consent. Total of 350 agricultural workers were recruited into the study by using simple random sampling after following inclusion and exclusion criteria.

Inclusion Criteria

- Farmers both men and women who were residing in selected area, who gave consent.
- Those who understand read and speak the local language.

Sample Size

According to the study conducted by Davey S [3] The prevalence of overall OHDs was 65.2%, thus taking this prevalence calculated sample size was 350, for estimation the expected proportion with 5% and 95% confidence. Sample size was calculated by using online software statulator.

Data collection Method

Predesigned and pretested proforma was used to collect data; The principal investigator interviewed the participants in local language using the predesigned proforma. The participants were interviewed at their residence. If not available during visit, two subsequent visits were made. Participants were also interviewed in their farm during working hours. Informed written consents were obtained after explaining about the study purpose and patient information sheets were also given.

Statistical Analysis

Collected data were entered in the Microsoft excel for further statistical analysis. Quantitative data were expressed in the form of mean and standard deviation while categorical variables were expressed in the form of frequency and proportion. Statistical analysis were done with the help of SPSS version 25.

Result and Observations

This study includes 350 participants after following inclusion and exclusion criteria, in which 59.1% of study population was male and 41.9% of the population was female. In the study majority of the population was lying in the age interval between 31-40 years of age followed by 21-30 years, 40-50 years, < 20 years and more than 50 years of age. Majority of the population was married. We have observed 31.1% of the population was illiterate and rest of literate, but among that also only 19.4% of the population had education intermediate and graduation.

Table 1: Distribution of Demographic Profile

Parameter	Frequency	Percentage
Age		
<20 Years	20	5.7
21 - 30 Years	97	27.7
31 - 40 Years	167	47.7
40 - 50 Years	48	13.7
> 50 Years	18	5.1
Gender		
Male	207	59.1
Female	143	40.9
Religion		
Hindu	309	88.3
Muslims, Christians	41	11.7
Marital Status		
Married	334	95.4

Unmarried	8	2.3
Widowed	6	1.7
Divorced	2	0.6
Education		
Illiterate	109	31.1
Secondary School	173	49.4
Intermediate	57	16.3
Graduate	11	3.1
Socio Economic Status- Modified BG Prasad SES Scale		
Lower class	32	9.1
Lower middle class	283	80.9
Middle class	27	7.7
Upper middle class	8	2.3
Upper class	0	0.0
Years of Working		
< 5 Years	68	19.4
5 - 10 Years	85	24.3
> 10 Years	197	56.3
Duration of work per day		
<8 Hours	73	20.9
>8 Hours	277	79.1
Addiction		
Tobacco chewing	41	11.7
Smoking	31	8.9
Alcohol	105	30
No addiction	173	49.4

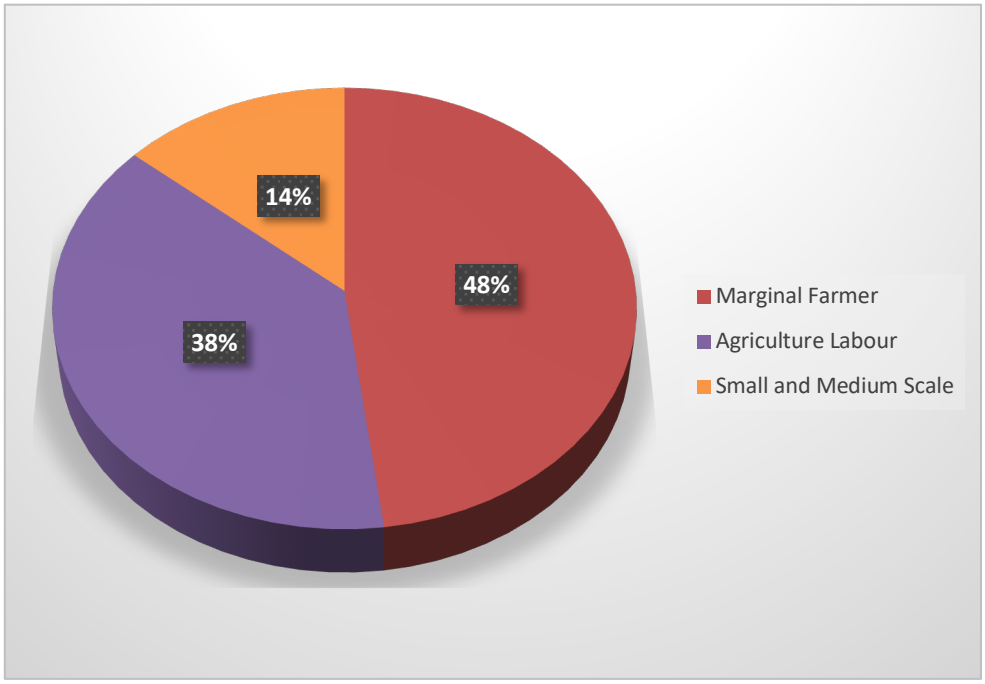

Figure 1: Distribution of Type of Farmers among study population

Table 2: Distribution of Health Hazards among study population

Occupational Hazards	Frequency	Percentage
Mechanical Hazards		
Yes	37	10.6
No	313	89.4
Physical Hazards (Musculoskeletal)		
Yes	114	32.6
No	236	67.4
Respiratory Hazards		
Yes	52	14.9
No	298	85.1
Hazards due to Heat and Cold		
Yes	77	22
No	273	78
Animal Attack(Snake bites and others)		
Yes	143	40.9
No	207	59.1
Pesticides exposure		
Yes	163	46.6
No	187	53.4

80.9% of the population was lying in lower middle socio economic status. More than 50% of the population had working experience more than 10 years and nearly 80% of the population were working more than 8 hours daily. Among all study population 30% of the population had addiction of alcohol, followed by tobacco and smoking shown in Table 1. In our study population nearly half of the population were marginal farmers followed by agricultural labours shown in pie chart. The present study observed that maximum health hazards were due to the exposure of pesticides, followed by animal attack, physical, hazards due to heat and cold, respiratory hazards and mechanical hazards shown in table 2.

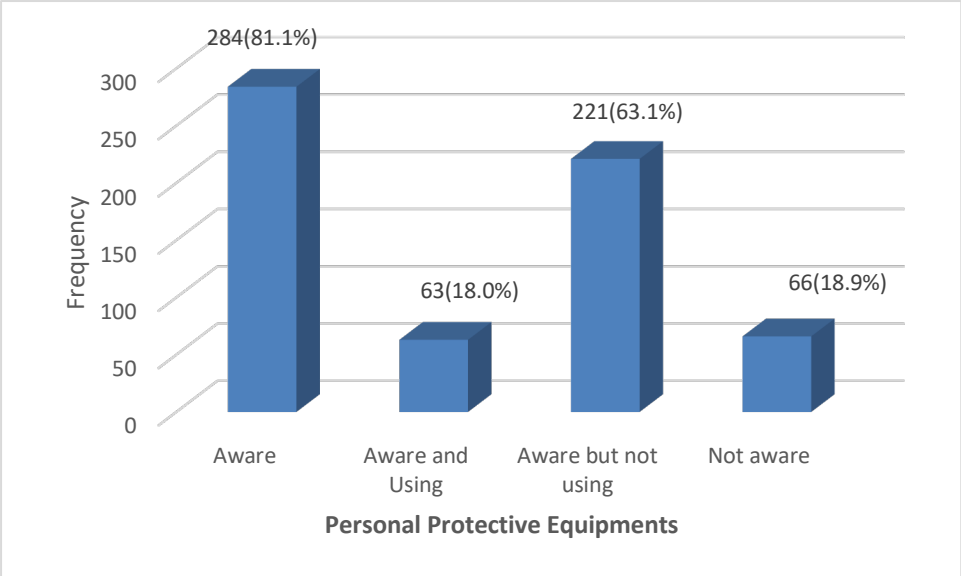

Figure 2: Distribution based on personal protective equipment's awareness and use among farmers

The present study also reported that near about 81.1 % study participants were aware about personal protective equipments but only 22.18% among aware are using personal protective equipments during working hours and 77.1% were not using it while 19% study participants were still unaware about personal protective equipments.

Table 3: Distribution of Health Hazards among study population

Parameters	Health Hazards			Chi-square	P-value
	Yes	No	Total		
Age					
<20 Years	2	18	20	12.01	0.017*
21 - 30 Years	34	63	97		
31 - 40 Years	51	116	167		
40 - 50 Years	17	31	48		
> 50 Years	11	7	18		
Duration of work per day					
<8 Hours	16	57	73	5.003	0.0258*
>8 Hours	99	178	277		
Addiction					
Tobacco	37	4	41	151.12	<0.001**
Smoking	22	9	31		
Alcohol	49	56	105		
No addiction	7	166	173		
Addiction					
Male	63	144	207	1.34	0.245
Female	52	91	143		

The present study revealed that there was statistically significant association between health hazards and age group, duration of work per day, addiction. Among age group 21 – 40 years of age found more suffered with health hazards, also those who were working for more than 8 hours suffered with health hazards shown in above table 3.

Discussion

The current study was a community based cross sectional study conducted in field practicing area of Rural Health Training Centre of Medical Institute of South India region among agricultural workers. The study's findings reveal that the overall occupational health hazards among farmers were 32.85%. Among the study participants majority (59.1%) were male farmers. The reason for this is male were available at the time of study. In study area male and women both are employed more in agricultural work, when compared to work in other occupation such as in construction site, factories etc.Among the study participants 95.4% were married and mostly belong to Hindu religion. .Among the sufferers from health hazards, majority were illiterate. Knowledge about the occupational hazards, poor work hygiene and lack of awareness could be the reason for this significant difference. Similar findings were present in a study done by Kumari et al [4], in which the study's participants had poor knowledge on safe work practices leading on to high prevalence of morbidity. Consistent with our finding, other studies by A. Saha et al., Kadam Shridhar M et. Al., Nayak CS et al., and Thomas A. Arcury et al. [5-8] observed that majority of the population were male and commonest age group between 21 – 40 years in almost all studies. The socioeconomic class of the participant also influences the health of farmers. Affordability of health services, personal protective equipment's are all determined by the socioeconomic class of the

participants [9]. In the current study majority (65.8%) of the participants belonged to lower middle class having range of monthly income Rs. 1183 - 2366 Per Month of Modified BG Prasad's Scale.In the current study, 11.7% of the study participants were consuming tobacco. This is comparatively low compared to a cross sectional study conducted in Chandigarh [10], to assess the lung functions among famers.

The present study observed that, majority of the agricultural workers were suffered from pesticide exposure, followed by followed by animal attack, physical, hazards due to heat and cold, respiratory hazards and mechanical hazards, Pesticides being the most common chemical used in modern agriculture put the agricultural worker at the risk of exposure and development of adverse effects. A study done by Banerjee et al [11] had findings similar to current study with 85% of the farmers reported health problems after application of pesticides. A study done on knowledge and practices of safety use of pesticide among agricultural workers by Kumari et. al [4] in Andhra Pradesh showed that self-reported toxicity symptoms with pesticide use were skin rash (40.5%), headache (48%), excessive sweating (22.5%) and diarrhoea (21.3%). In our study also headache and diarrhoea observed more who were exposed to pesticides, also due to the pesticides spraying agricultural workers were suffering from respiratory hazards. Chitra et. Al [12] among 631 agricultural workers, 433 were pesticide sprayer and 198 were non-sprayer who involved other agricultural activities like weeding, sowing etc., 373 sprayers (86.1%) and 156(78.8%) non-sprayers reported at least one respiratory symptoms.

Exposure to animals and handling animals puts agricultural workers at the risk of animal attacks in the workplace which is also an occupational hazard.In the current study, animal attacks were reported by 40.9% of the participants during one year of span, we have observed mainly attack from snakes, scorpion and attack by pig. A study done by Cooper et al [13] on agricultural accidents, also had similar findings. The most common type of injury reported were bull-gore injury, lacerations, poisonous stings. consistent with our study, study by Saket A Patil [14] where musculoskeletal disorders was the most common morbidity among the agricultural workers (83.8%) and study by A. Sangamithra [15] in Tamil Nadu reported the similar findings.

In the present study 10.6% of the agricultural workers reported history of injuries due to machinery while working inthe field. In the study by Vijay Kumar Manwani [16] 64.15% of the agricultural workers reported injuries due to machinerieswhich is very high when compared to the present study.The animal induced injuries (35.85%) were also highcompared to the present study (9%). In present study Injuries due to machinery, snake or animal bite, respiratory problems, musculoskeletal problems, problems after pesticide exposure, were high among male agricultural workers, heat or cold related problems were high among female agricultural workers. This may be because the type, duration of work done by them was different from female agricultural workers. Carrying heavy loads, Harvesting, working with the machineries predisposes the male agricultural workers to experience the health problems more than the female.

The present study also shows that near about 81.1 % study participants were aware about personal protective equipments but only 22.18% among aware are using personal protective equipments during working hours and 77.1% were not using it while 19% study participants were still unaware about personal protective equipments. These findings of the study are near about similar to study conducted by Manwani VK [17] which showed 83.02% study participants were not using personal protective equipments.

The present study encountered with some limitations, the study was self-reported study, no laboratory investigation or examinations of participants were done. To observe environmental condition and effect of pesticides, examination of soil was not done.

Conclusion

Overall observation and after discussing with other studies, the present study conclude that majority of study population were males, who were suffered due to exposure of pesticides and animal attack, who were mostly illiterate and had poor knowledge about pesticide. Also it can be conclude that due to the addiction like tobacco, smoking and alcohol consumption and also due to poor knowledge about hygiene suffered from exposure to pesticides. There is a need to create awareness regarding occupational health hazards , their preventive measures using personal protective equipments engaging all the stakeholders from the community and health system.

Acknowledgment: None

Funding: None

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