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Study on agricultural accidents in Vidarbh region of Maharashtra state

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ABSTRACT

Farm mechanization along with increased application of other agricultural inputs such as seeds, fertilizers, pesticides, insecticides etc. has enhanced the productivity and production on farms. It also needs energy, suitable tools and implements along with operators for carrying out different agricultural operations. Agriculture workers are the main forms of energy used in agriculture for various activities besides the use of electric power, mechanical power and other non-conventional energy sources. The present investigation was undertaken with the objectives to collect the information on agricultural accident and severity of injuries due to accident and to study the magnitude and type of agricultural accidents and to identify the various cases of agricultural accidents. A survey was conducted in the selected four districts of the Vidarbha region of Maharashtra state. For collection of the agricultural accidents, data in survey were such as indirect and direct observation, archival records, interview, and questionnaire and analysis of data was done. Proforma formulated by CIAE, Bhopal was used for data collection. Analysis of accident data indicated that the tools/machines that needed immediate intervention were tractor, thunder bolt, chaff cutter, electric motors and pump sets. Among other sources, snakebites was observed to be one of the major causes of fatal accident and necessary action for educating workers and making available anti-venom injections at village level health centers are needed. It is very necessary that proper attentions to be given to minimize occupation health and safety problems in agriculture and also to provide due compensation to agriculture workers for their rehabilitation/ family sustenance in case of accidents.

INTRODUCTION

Farm mechanization along with increased application of other agricultural inputs such as seeds, fertilizers, pesticides, insecticides etc. has enhanced the productivity and production on farms. It also needs energy, suitable tools and implements along with operators for carrying out different agricultural operations. Human workers are the main forms of energy used in agriculture for various activities besides the use of electric power, mechanical power and other non-conventional energy sources. About 8 per cent of the power used in crop production and about 220 million workers contribute related activities in the country. Female workers constitute 30 per cent of total agricultural workers. At present, agricultural machinery population in the country is estimated at about 150 million, which includes about 3 million tractors and other self-propelled equipment. In addition, there are more than 400 million hand tools such as spade, hand hoe, sickle, crowbar, axe etc., which are extensively used by agricultural workers (Kathirvel and Sivakumar, 2003).

Use of agricultural tools and implements and other machines is always risky to human safety, if they are not used properly. Accidents are very common in various agricultural operations due to ignorance, lack of training, lack of knowledge about the operation at improper design of tools and implements (Mehta, 2004).

Agricultural accidents are increasing day by day with increase of mechanization in agriculture due to handling of machines by untrained personnel. Study of magnitude and type of agricultural accidents are essential to spell out the man

machine variables involved in agricultural accidents and to suggest possible measures for accident minimization. Based on the information collected during village survey, recommendations to be made for modifications of existing agricultural implements and to train/appraise the user for safe uses of implements so as to minimize accidents.

Dubey (2000) showed that the use of mechanically powered equipment is limited. Since the use of human power is extensive in cultivation of crops, the accidents occur due to highest point of various factors *viz.*, strain, fatigue and lack of safety aspects in the traditional equipment, interference of the labourers during the use of long slashing equipment, misuse of equipment, steep slopes land slides. As sufficient and reliable data on agricultural accidents are not available, it is essential to collect the information on agricultural accidents, severity of injuries and causes for accidents so that necessary strategy can be developed to minimize the occurrence of such accidents.

Human inattention and negligence in various tasks and operations look like innocent mistake. Surprisingly, there are indications that people accept accidents as fate and uncontrollable and thus not compelled to eliminate them systematically. However, practically all the accidents at least their chances and severity can be controlled or minimized by adequate consideration and strategies applications of Human factors.

It was therefore decided to collect the information regarding the agricultural accidents in Vidarbha region of Maharashtra state with the objectives to collect the information on agricultural accident and severity of injuries due to accident, to study the magnitude and type of agricultural accidents and to identify the various cases of agricultural accidents.

METHODS

The investigation was conducted in the selected four districts of Vidarbha region of Maharashtra state during the year 2010 to 2011. The data were collected through the pre-structured questionnaire, local newspapers, doctors of primary health centres and insurance company offices. After getting the information of accident, the victims were personally visited and interviewed. Proforma formulated by Central Institute of Agricultural Engineering, Bhopal was used for data collection.

OBSERVATIONS AND ANALYSIS

Table 1 shows the total number of agricultural accidents reported and the total number of accident victims in selected four districts during the study period. Highest number of agricultural accidents were reported in Nagpur (55) followed by Amravati (45), Yavatmal (41), Buldhan (32) the overall accident rate per 1500 workers in all the villages of selected districts 173.

Table 1 : Total number of accidents in the selected 4 districts

Sr. No.	District	Number of accidents	No. of accident victims
1.	Nagpur	55	25
2.	Amravati	45	19
3.	Buldhana	32	27
4.	Yavatmal	41	22
	Total	173	93

Table 2 shows the farm machinery accidents in selected four districts. Highest number of farm machinery accidents and the accident incidence rate per 1500 machines per year was calculated and the highest incidence per 1500 in Yavatmal (4.49), Nagpur (3.53), Buldhana (3.25) and Amravati (1.96). The overall accidents incidence rate per 1500 machines was 3.17.

The accidents due to agricultural hand tools reported in four district is revealed in Table 3. There were 28 accidents due to agricultural hand tools and the overall accidents incidence rate was 0.138 per 1000 hand tools. Out of these accidents, 8

Table 2 : Farm machinery accidents in four district

Sr. No.	District	Total number of farm machinery	Farm machinery accidents	Accidents /incidence rate/1500 machines
1.	Nagpur	3108	11	3.53
2.	Amravati	2459	06	1.96
3.	Buldhana	3060	08	3.25
4.	Yavatmal	1781	08	4.49
	Total	10408	33	3.17

Table 3 : Hand tools related accidents in four districts

Sr. No.	District	Number of hand tools	Hand tools related accidents	Accidents incidence rate/1000 machines
1.	Nagpur	57775	08	0.138
2.	Amravati	52747	07	0.132
3.	Buldhana	51077	08	0.156
4.	Yavatmal	39984	05	0.125

Table 4 : Ratio of farm machinery accidents to other accidents in 4 districts

Sr. No.	District	Farm machinery accidents	Other accident	Ratio
1.	Nagpur	21	32	1:2
2.	Amravati	12	34	1:2.8
3.	Buldhana	16	24	1:1.5
4.	Yavatmal	16	20	1:1.2

Table 5 : Age wise and sex wise classification of victims

Age (yrs)	Sex	Nagpur	Amravati	Buldhana	Yavatmal	Total	Percentage of victims
<20	M	02	01	01	00	4	09(8.91)
	F	02	02	01	00	05	
20-30	M	01	02	02	01	06	23 (22.77)
	F	04	06	05	02	17	
30-40	M	12	08	07	09	36	46 (45.55)
	F	03	03	02	02	10	
>40	M	05	04	04	03	16	23 (22.77)
	F	04	02	00	01	07	
Sex wise total	M	24	20	16	15	75	75 (74.25)
	F	09	08	05	04	26	26 (25.74)

were in Nagpur, 08 in Buldhana, 07 in Amravati and 5 in Yavatmal. The accident incident rate per 1000 hand tools was the highest in Buldhana (0.156), Nagpur (0.138), Yavatmal (0.125) and Amravati (0.132).

The ratio of farm machinery accidents to other accidents (thunderbolt, well deepening and electric motor) is shown in Table 4. Table reveals that the farm machinery accidents were as high as 21 in Nagpur, 16 in Buldhan, 12 in Amravati and 16 in Yavatmal. This shows that other accidents were more than the farm machinery accidents in these districts.

Male victims constituted 74.25 per cent of total accident victims while percentage of female victims was 25.74 per cent. Majority of the people involved in agricultural activities are generally in the age group of 30-40 years and hence the highest percentage of accident victims 45.55 per cent was in this age group of 30-40 years. The accidents involved in the age groups of >40 years 22.77 per cent was due to lack of awareness and non-adoption of safety measures. The accidents involved in the age group of 20-30 years, 22.77 per cent were mainly due to negligence, lack of experience and lack of applications, which are typical mentality of this group. As the age group of below 20 years, 8.91 per cent was not keenly interested in doing farm work the accidents with this age group is less (Table 5).

Conclusion:

From the investigation, it can be concluded that number of accidents in Nagpur district were more than other districts. Farm machinery accidents were less in Amravati district and hand tools related accidents were less in Yavatmal district. Other accidents were more than the farm machinery accidents in these districts. Majority of the people involved in agricultural activities were generally in the age group of 30-40 years and hence the highest percentage of accident victims of 45.55 per cent was in this age group.

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