

**RESEARCH ARTICLE :**

# Impact of health hazards on farm women in agricultural operations at Sawai Madhopur district of Rajasthan

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**SUMMARY :** The entry of women into the workforce as paid labour has been a gradual process extending over several centuries with a substantive increase following industrialization and World War -II. Women constitute almost half of the work force amongst in India. Women face problems and challenges in getting a sustainable livelihood and a decent life due to environment degradation and the interference of outsiders. No field operation is beyond the reach of women. The study was conducted purposively in Sawai Madhopur district of Rajasthan. The sample size for the study was 120 farm women. Most of the farm women (48.33%) were frequently occurring in health hazards in operation of agricultural activities. Out of fourteen independent variables eleven variables were found having negative and significant relationship with health hazards and only age was found to have positive and significant relationship with health hazards while family background and size of family were not having significant relationship with health hazards. Majority (75.83%) farm women suggested that medical facilities should be available at village level.

**KEY WORDS :**

Health hazards,  
Agricultural activities,  
Farm women,  
Multivariate effect

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## BACKGROUND AND OBJECTIVES

Farm women are the key of Indian agriculture. Global entry of women into economic employment, particularly focusing on agriculture, the occupational hazards and related adverse health outcomes are side effects that they encounter in agriculture. Growing food has been an interminable saga of her life. Like other rural women, farmwomen also play an important role in agriculture. No field operation is beyond the

reach of women. They are at their best in agriculture and animal husbandry. Besides this they are the manager of the household activities. They take important decisions in the home and outside the home. Women face problems and challenges in getting a sustainable livelihood and a decent life due to environment degradation and the interference of outsiders. Women are discriminated, though they make enormous contribution to the agriculture and allied sectors. They have very

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little access to the knowledge and skills of modern farm technologies and related resources. The women work for about 12 to 15 hours per day involving in agriculture and allied activities. When we refer to hazards in relation to occupational safety and health the most commonly used definition is 'A hazard is a potential source of harm or adverse health effect on a person or persons'. The terms hazard and risk are often used interchangeably but this simple example explains the difference between the two. Agriculture is one of the most hazardous sectors in both the developing and industrialized countries. According to ILO estimates for 1997, out of a total of 330,000 fatal workplace accidents worldwide, there were some 170,000 casualties among agricultural workers. The increasing use of machinery and of pesticides and other agrochemicals has aggravated the risks. In several countries, the fatal accident rate in agriculture is double the average for all other industries. Machinery such as tractors and harvesters cause the highest frequency and fatality rates of injury. Exposure to pesticides and other agrochemicals constitute major occupational hazards which may result in poisoning and death and, in certain cases, work-related cancer and reproductive impairments, (Engberg, 1993 and Van and Konradsen, 2005). One of the difficulties in dealing with agriculture is that it is a very complex and heterogeneous sector. Agriculture covers not only farming but also many other associated activities such as crop processing and packaging, irrigation, pest management, grain storage, animal husbandry, construction and domestic tasks (carrying water or fuel-wood, etc.). As agricultural work is carried out in the countryside, it is subject to the health hazards of a rural environment as well as those inherent in the specific work processes involved. Most agricultural work is carried out in the open air and consequently agricultural workers are dependent on weather changes to perform their tasks. This factor not only undermines the efficiency of the operations, but also influences working conditions, making them difficult and dangerous (e.g. a rainstorm while harvesting, gusts of wind when pesticides are being applied, etc. In its strict sense, a hazard is simply something which could potentially be harmful to a person's life or well-being. However, hazards are sometimes classified by the combination of the likelihood of the hazard turning into a (health) effect and by the seriousness of that effect. Therefore, the study was conducted with the following objectives :

- To study the profile of farm women.
- To determine the extent of health hazards among the farm women in operation different agricultural activities.
- To analyze the relationship between health hazards among the farm women in operation different agricultural activities and their profile.
- To seek the suggestions for reducing the health hazards among the farm women in operation different agricultural activities.

## **RESOURCES AND METHODS**

In order to fulfill the objectives, the study was conducted in Sawai Madhopur district of Rajasthan. There are eight blocks in the district namely –Sawai Madhopur, Chauth ka Barwara, Khandar, Bonli, Malarna Dungar, Gangapur City, Vazirpur, Bamanwas. Out of these, Sawai Madhopur and Malarna Dungar block were selected purposively due to maximum population of farm women. From each selected block 5 villages were selected purposively due to maximum population of farm women. After the selection of the villages, a village wise list of farm women was prepared and 12 farm women from each village were randomly selected. Thus, the total sample was consisted of 120 farm women. The data were collected through a well structured and pretested interview schedule. The statistical tests and procedures were used for analyzing the data, included percentage, mean, Karl Pearson's co-efficient of correlation and multiple regressions.

## **OBSERVATIONS AND ANALYSIS**

The results obtained from the present study as well as discussions have been summarized under following heads:

### **Profile of farm women :**

It is observed from the Table 1 that higher percentage (49.16%) respondents were from middle aged. Maximum (43.33%) of the farm women found in Illiterate to functionary literate category. Majority of the beneficiary respondents (49.16%) had moderate family background. Maximum of the respondents (41.66%) had large size of family (above 8 members). Majority of respondents *i.e.*, 56.66 per cent had medium size of land holding. Most of the respondents (43.33%) belonged to low category of

<b>Table 1 : Profile of the tribal farm women</b>					<b>(n=120)</b>
Sr. No.	Attributes	Categories	Frequency	Mean	S.D.
1.	Age	Young	48 (40.00)	38	11.10
		Middle	59 (49.16)		
		Old	13 (10.83)		
2.	Education	Illiterate	52 (43.33)	1.23	1.18
		Primary School	44 (36.66)		
		Middle School	14 (11.66)		
		High School	05 (04.16)		
		Above high School	05 (04.16)		
3.	Family background	Poor	33 (27.50)	2.27	0.81
		Moderate	59 (49.16)		
		Good	28 (23.33)		
4.	Size of family	Small	31 (25.83)	2.43	1.19
		Medium	39 (32.50)		
		Large	50 (41.66)		
5.	Size of land holding	Small	42 (35.00)	1.52	1.21
		Medium	68 (56.66)		
		Large	10 (08.33)		
6.	Social participation	Low	52 (43.33)	1.51	0.42
		Medium	41 (34.16)		
		High	27 (22.50)		
7.	Annual income	Low	68 (56.66)	1.75	0.72
		Medium	35 (29.16)		
		High	17 (14.16)		
8.	Irrigation availability	Low	37 (30.83)	1.95	0.69
		Medium	52 (43.33)		
		High	31 (25.83)		
9.	Credit availability	Low	38 (31.66)	3.61	2.06
		Medium	67 (55.83)		
		High	15 (12.50)		
10.	Innovativeness	Low	49 (40.83)	2.91	1.19
		Medium	54 (45.00)		
		High	17 (14.16)		
11.	Agricultural belief	Low	41 (34.16)	1.49	0.71
		Medium	58 (48.33)		
		High	21 (17.50)		
12.	Source of information	Low	41 (34.16)	6.86	3.25
		Medium	62 (51.66)		
		High	17 (14.16)		
13.	Extension contact	Low	17 (14.16)	4.26	1.91
		Medium	78 (65.00)		
		High	25 (20.83)		
14.	Knowledge	Low	31(25.83)	7.42	2.48
		Medium	74 (61.66)		
		High	15 (12.50)		

social participation. Majority of the farm women (56.66%) had low annual income.

A higher percentage of the respondents (43.33%) had medium irrigation availability followed by 30.83 per cent in low category of irrigation availability. Out of the total 120 respondents 55.83 per cent respondents were in the medium category of credit availability. Majority of respondents 45.00 per cent had medium innovativeness. Majority of the farm women (48.33%) had medium agricultural belief. Higher percentage of farm women *i.e.*, 51.66 per cent was having medium sources of information. Majority 65.00 per cent of farm women were having medium contact with extension personnel. Majority 61.66 per cent of farm women were having medium level of knowledge about health hazards in operations of different agricultural activities.

**Opinion of the respondents regarding occurrence of health hazards in order to explore the extent of health hazards :**

Opinion of the respondents regarding their

occurrence in different operations has been taken in terms of frequently, sometimes and rarely. Results clearly indicated in Table 2 that, majority of the farmers opined that skin irritation and allergies were frequently occurring during seed treatment (56.66%), manual threshing and cleaning grains (46.66%) loading and unloading of straw (53.33%), poisoning (56.66%) mostly occurred during pesticide application; cuts, wounds and injuries occurred frequently during weeding and harvesting (59.16%), threshing (27.50%) and chaffing (20.83%). The fourth health problem identified were chest congestion and breathing problem which occurred frequently during threshing, winnowing and cleaning grains (59.16%). Majority of the respondents confirmed frequent occurrence of swollen and sore hands and feet during irrigation (27.50%), digging, weeding and harvesting (56.66%), operations. Body ache was another common problem found to occur frequently after performing hard operations like digging, sowing and weeding (48.33%), harvesting and post harvesting work (55.00%), cleaning shed and making dung cake (64.16%) and marketing of

**Table 2 : Farm women’s opinion about occurrence of health hazards in different operations of agricultural activities**

Sr. No.	Type of health hazards	Operations	Extent of occurrence		
			Frequently Freq. / %	Sometimes Freq. / %	Rarely Freq. / %
1.	Skin irritation and allergy	Seed treatment	68 (56.66)	31 (25.83)	21 (17.50)
		Threshing and cleaning grains	56 (46.66)	31 (25.83)	33 (27.50)
		Loading unloading of straw	64 (53.33)	25 (20.83)	31 (25.83)
2.	Poisoning	Pesticide application.	68 (56.66)	42(35.00)	10 (8.33)
		Storage	71 (59.16)	31 (25.83)	18 (15.00)
3.	Cut, wounds and injuries	Land preparation	67 (55.83)	34 (28.33)	19 (15.83)
		Weeding and harvesting	71 (59.16)	29 (24.16)	20 (16.66)
		Threshing (mech.)	33 (27.50)	68 (56.66)	19 (15.83)
4.	Congestion and breathing	Chaffing (manual)	25 (20.83)	56 (46.66)	39 (32.50)
		Threshing and winnowing cleaning of grains	71 (59.16)	32 (26.66)	17 (14.16)
5.	Swollen and sore hands and feets	Irrigation	33 (27.50)	66 (55.00)	21 (17.50)
		Digging, weeding and harvesting	68 (56.66)	31 (25.83)	21 (17.50)
6.	Body ache and physical tiredness	Household work	31 (25.83)	58 (48.33)	31 (25.83)
		Digging, sowing, weeding	58 (48.33)	25 (20.83)	37 (30.83)
		Harvesting and post harvest work	66 (55.00)	39 (32.50)	15 (12.50)
		Cleaning shed and making dung	77 (64.16)	27 (22.50)	16 (13.33)
		Marketing of milk and milk product	68 (56.66)	31 (25.83)	21 (17.50)
7.	Eye irritation	Cooking	73 (60.83)	26 (21.66)	21 (17.50)
		Harvesting	41 (34.16)	62 (51.66)	17 (14.16)
		Threshing and winnowing	62 (51.66)	28 (23.33)	30 (25.00)
8.	Biting	Weeding, irrigation and harvesting	66 (55.00)	38 (31.66)	16 (13.33)

Freq.- Frequency, % - Percentage

milk and milk product (56.66%). Eye irritation was found to be frequently occurring due to the smoke of traditional chullha during cooking times (60.83%). The last and highly prevalent problem was identified as bite of insects and poisonous animals frequently in various cases of weeding, irrigation and harvesting (55.00%). The findings of Pandey *et al.* (2010) and Arthur *et al.* (2004) were in the same line of the present finding.

**Overall occurrence about health hazards in operation of agricultural activities among the farm women :**

In order to explore overall occurrence of health hazards, opinion of the respondents regarding their occurrence in different operations has been taken in terms of frequently, sometimes and rarely. Results clearly indicated in Table 3 most of the farm women (48.33%) were frequently occurred the health hazards in operation of agricultural activities and 35.00 per cent of the respondents were in sometimes occurred in health hazards in operation of agricultural activities

**Table 3: Overall occurrence about health hazards in operation of agricultural activities among the farm workers**

Category	No.	%
Frequently	58	48.33
Sometimes	42	35.00
Rarely	20	16.66
Total	120	100

followed by 16.66 per cent of the respondents were rarely observed the health hazards. Similar findings were also reported by Cordes and Foster (1988) and Aktar *et al.* (2009).

**Correlation analysis of independent variables with health hazards in operations of different agricultural activities :**

To determine the relationship of selected independent variables with health hazards in operations of different agricultural activities, the correlation analysis was worked out and results are present Table 4. The results reveal that the variables age ( $X_1$ ) was found positively and significant correlated with health hazards in operations of different agricultural activities at one per cent level of significant, while family background ( $X_2$ ) and family size ( $X_4$ ) were found non-significant relationship with health hazards in operations of different agricultural activities. However, the education ( $X_3$ ) was found significant and negatively correlated with the health hazards in operations of different agricultural activities at one per cent level of significance and rest of ten independent variables were also negatively significant correlation with health hazards in operations of different agricultural activities at one per cent level of significance. This finding clearly indicates that most of the selected independent variables had significant relationship with health hazards in operations of different agricultural activities.

**Table 4: Co-efficient of correlation between independent variables and health hazards**

Independent variables	'r' value	't' value
$X_1$ Age	0.351**	4.32
$X_2$ Family background	-0.101 <sup>NS</sup>	-1.19
$X_3$ Education	-0.751**	-11.69
$X_4$ Size of family	-0.063 <sup>NS</sup>	-0.069
$X_5$ Social participation	-0.653**	-9.87
$X_6$ Size of land holding	-0.340**	-4.31
$X_7$ Annual income	-0.517**	-6.19
$X_8$ Irrigation availability	-0.637**	-8.78
$X_9$ Credit availability	-0.542**	-7.09
$X_{10}$ Innovativeness	-0.583**	-7.38
$X_{11}$ Agricultural belief	-0.623**	-9.23
$X_{12}$ Source of information	-0.731**	-11.51
$X_{13}$ Extension contact	-0.734**	-11.93
$X_{14}$ Knowledge	-0.841**	-16.45

\*\* indicates significance of value at P=0.01

NS= Non-significant

**Multivariate effect of independent variables on health hazards :**

A backward multiple regression analysis was

worked-out to find the best set of the independent variables of health hazards in operations of different agricultural activities, from this analysis it was found that

**Table 5: Multiple regression analysis of independent variables with health hazards**

Independent variables	“b” value	“F” value
X <sub>1</sub> Age	1.163	71.86**
X <sub>2</sub> Family background	0.573	8.72**
X <sub>3</sub> Education	-2.474	240.13**
X <sub>4</sub> Size of family	-1.150	5.78*
X <sub>5</sub> Social participation	-1.837	39.72**
X <sub>6</sub> Size of land holding	2.394	0.01 <sup>NS</sup>
X <sub>7</sub> Annual income	-0.811	0.87 <sup>NS</sup>
X <sub>8</sub> Irrigation availability	-2.932	39.78**
X <sub>9</sub> Credit availability	-1.221	8.25**
X <sub>10</sub> Innovativeness	-0.271	2.79 <sup>NS</sup>
X <sub>11</sub> Agricultural belief	-0.272	3.68 <sup>NS</sup>
X <sub>12</sub> Source of information	-3.578	23.42**
X <sub>13</sub> Extension contact	-1.016	1.48 <sup>NS</sup>
X <sub>14</sub> Knowledge	-9.766	22.03**

\* and \*\* indicate significance of values at P=0.05 and 0.01, respectively  
 R<sup>2</sup> = 0.824, “F” calculated = 34.465 \*\* (1,120-14-1 = 105 d. f.)

NS= Non-significant,

**Table 6: Multiple effects of independent variables on health hazards**

	Model variable included in model	R <sup>2</sup> value	“F” value
I	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub> X <sub>8</sub> X <sub>9</sub> X <sub>10</sub> X <sub>11</sub> X <sub>12</sub> X <sub>13</sub> X <sub>14</sub>	0.8245	34.4651**
II	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub> X <sub>8</sub> X <sub>9</sub> X <sub>10</sub> X <sub>11</sub> X <sub>12</sub> X <sub>13</sub>	0.8123	34.8125**
III	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub> X <sub>8</sub> X <sub>9</sub> X <sub>10</sub> X <sub>11</sub> X <sub>12</sub>	0.8115	37.1957**
IV	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub> X <sub>8</sub> X <sub>9</sub> X <sub>10</sub> X <sub>11</sub>	0.8097	41.6584**
V	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub> X <sub>8</sub> X <sub>9</sub> X <sub>10</sub>	0.8078	44.9854**
VI	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub> X <sub>8</sub> X <sub>9</sub>	0.8069	50.8751**
VII	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub> X <sub>8</sub>	0.8061	57.1952**
VIII	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub> X <sub>7</sub>	0.8057	66.5987**
IX	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> X <sub>6</sub>	0.8015	75.1158**
X	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub>	0.7901	68.5144**
XI	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> X <sub>4</sub>	0.7842	71.2587**
XII	X <sub>1</sub> X <sub>2</sub> X <sub>3</sub>	0.6904	78.6854**
XIII	X <sub>1</sub> X <sub>2</sub>	0.5854	73.1148**
XIV	X <sub>1</sub>	0.5547	141.5847**

(Based on step down multiple regression analysis)

\*\* indicates significance of value at P=0.01

**Table 7: Strategies for reducing the health hazards among the farm workers in operation of different agricultural activities**

Strategies for reducing the health hazards	%	Rank
Credit should be available on time	68.33%	II
Literature related to health hazards and their solution should be available in villages	25.00%	V
Awareness came should be organized on health hazards	54.16%	IV
Medical facilities should be available at village level	75.83%	I
Demonstration and training should be organized on improved agricultural technologies	62.50%	III

fourteen models, in which the first model contained all the 14 independent variables, second had 13, third had 12 and so on till the remaining most significant variables in the model. This was the sorting process of variables in the model. This sorting of variables from each model were done on the basis of their predication ability to health hazards in operations of different agricultural activities, from each model one least important variable was deleted. The entire fourteen models are explained in the Table 5 Model I consisted all the 14 independent variables which had 0.8245 R<sup>2</sup> value with 5 non-significant and 9 significant independent variables. The second model had 13 variables, this set of independent variables had 0.8123 R<sup>2</sup> value at 106 degree of freedom similarly the succeeding III to XIV model had 0.8115, 0.8097, 0.8078, 0.8069, 0.8061, 0.8057, 0.8015, 0.7901, 0.7842, 0.6904, 0.5854 and 0.5547 R<sup>2</sup> value, respectively (Table 6). The result confirms with the findings of Badodiya *et al.* (2013).

**Suggestions for reducing the health hazards among the farm women in operation of different agricultural activities :**

The data show in Table 7, majority 75.83 per cent farm women needed medical facilities for better treatment of health hazards at village level. Out of 120 farm women, 68.33 per cents of respondents suggested that financial facilities should be timely available. Majority (62.50%) of farm women needed demonstration and training on improved agriculture technologies, followed by more than half of the women suggested awareness camp should be organized on health hazards in operation of different agricultural activities and only 25.00 per cent of farm women suggested to provide the literature related to health hazards and their solution should be available in villages.

**Conclusion :**

This study concluded that the various health hazards involved in different operations were *viz.*, skin irritation and allergies, poisoning, cuts, wounds, injuries, congestion, breathing problems, swollen and sore hands and feet,

sun stroke, body ache, physical tiredness, eye irritation and bites of various poisonous animals and insects. Most of the operations having many of these health hazards were found to be mainly performed by women farmers. In most of the farm women (48.33%) frequently occurred the health hazards in operation of agricultural activities. Out of fourteen independent variables eleven variables were found negative significant relationship with health hazards and only age was found positive significant relationship with health hazards while family background and size of family were not significant co-relationship with health hazards.

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