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Occupational health hazards faced by tribal and non-tribal farm women of Telangana in cotton cultivation

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Abstract

This article explores the multifaceted issues of occupational hazards in cotton cultivation by tribal and non-tribal farm women. The research identifies the risks faced by farm women of Telangana state in cotton cultivation. An Ex -post facto research design was used for the study. The present study was conducted in six districts of Telangana state with sample 180 farm women in that 90 tribal and 90 non-tribal farm women as respondents those who engaged in cotton cultivation activities. Findings of study stated that majority of farm women experienced physiological health hazards very frequently (85.00%), half (50.56%) of the respondents experienced chemical health hazards at undecided level, majority (78.33%) of the respondents experienced mechanical health hazards at undecided level and more than half (52.22%) of the respondents experienced environmental health hazards frequently. The overall data reports, more than half (52.22%) of the respondents experienced occupational health hazards frequently.

Keywords: Occupational health hazards, tribal and non-tribal farm women, cotton cultivation.

Introduction

Agriculture is a crucial sector that underpins the country's economy and sustains the livelihoods of millions. Over 70 per cent of the population depend on agriculture as their principal means of livelihood and contribute 40-50 per cent to the national income. Women are the backbone of the agricultural workforce because they perform more than 80 per cent of farm activities (Sundhesha *et al*., 2018) [10]. Women's participation in agricultural work has become more visible over the last few decades. Women represent upwards of 40 per cent of the agricultural labour force globally and grow much of the food for their families and communities and yet they own less than 15 per cent of the land. (Mishra *et al.*, 2022) [7]. Women constitute 64.4 per cent of Indian agricultural workforce but only 6-10 per cent are employed in top agri and agri-related companies (Indian Institute of Management report (IIM), 2025). Telangana state is 11th largest state in the country in terms of area and 12th largest in population. Majority of the population in the state is in rural areas and mainly dependent on Agriculture for livelihood. Agriculture plays an important role not only in the economy of the Telangana state but also for achieving the food security for the state and also for the country. Agriculture and its allied activities are fundamental to Telangana development. Besides the fact that agriculture sector helps in ensuring food security, it also provides livelihoods to more than half of the state's workforce (Agriculture Action Plan, 2021-22).

Both rural and tribal women are extensively involved in agricultural activities compared to urban women. They involve in both farm and nonfarm activities tribal farm women play an important role and make significant contribution to small and medium sized farms (Mohanta, 2017) [8]. Ninety per cent of tribal women are engaged in agricultural activities. They play a major role in co-management of their natural, social, economic resources and agricultural development including crop production, livestock production, etc, but they remain backward due to illiteracy, superstition, traditional values and many other social and cultural factors. Non-tribal women constitute a significant portion of the agricultural workforce in India. They make up about 38 per cent of the agricultural labour force. Despite their substantial contribution, only around 13 per cent of women own land (Arya *et al*, 2019) [2].

Present status of cotton crop

Cotton is one of the most important fibre crops in India and the share of cotton is about 70 per cent in textile industry. Cotton thrives in temperatures between 21°C to 30°C. It requires at least 180 frost-free days for commercial cultivation,150-200 cm rainfall is required. Cotton plants need abundant sunlight for photosynthesis, well-drained, deep black soil, and fertile soils are ideal for cotton cultivation. Women play a crucial role in cotton picking and

their role in cotton farming operations is very significant they contribute about three-fourth of the total labour requirement in cotton cultivation.

Cotton scenario in India: Among the states, Maharashtra is leading in cotton acreage with 30.79 lakh ha followed by Gujarat (14 lakh ha), Telangana (12.42 lakh ha), Rajasthan (6.02 lakh ha) and Karnataka (4.67 lakh ha). (Cotton outlook, 2025).

Cotton scenario in Telangana: Telangana is the third highest in terms of cotton cultivation and production in India, after Maharashtra and Gujarat. Among the districts, Nalgonda stood first with 5,64,010 acres followed by Adilabad (4,25,300 acres), Sangareddy (3,48,775 acres), K.B. (Asifabad) (3,29,184 acres) and Nagarkurnool (2,65,965 acres). (Cotton outlook, 2025).

Occupational health hazards and their effects on health

Hazards are primarily associated with occupational health risks. Hazards are feelings of discomfort and trouble (both physically and mentally) while participating in various activities such as farm and household activities. Agriculture is one of the most hazardous sectors in India. However, hazards are sometimes classified by the combination of likelihood of the hazard turning into effect and by the seriousness of that effect. Some of them were physiological, chemical, mechanical and environmental.

Cotton crop demands intensive labour right from sowing to harvest of crop. Every work that is done by hand takes a lot of time, effort, and drudgery, which can lead to a number of health risks. The drudgery faced by women do not end after sowing, weeding again was a highly tiring and time-consuming task. Women weed for over 25-30 days at various points in time. Weeding drudgery had a "very high" on work demand and fatigue, followed by manual loading operational, perception of difficulty, perception of work load, and adopted posture, in that order. The total score for drudgery was 25.80 out of 30.

Likewise, the overall drudgery of cotton harvesting, which was once more a task dominated by women, was extremely high (27.83/30). The reasons for this were a high workload (4.80), fatigue (4.80), posture assumed (4.50), manual load (4.33), impression of difficulty (4.77), and work load perception (4.63). Sowing, weeding, and harvesting were therefore determined to be labour-intensive processes in cotton farming. Harvesting was the most drudgery-prone amongst the three.

Methodology

The present study was undertaken in Telangana state. Six districts were purposively selected for the study. One tribal and one non-tribal districts growing cotton crop from each agro-climatic zone of Telangana state was selected purposively. From the three agro-climatic zones, three tribal and three non-tribal districts was selected purposively. From each selected district one mandal growing cotton crop was selected purposively. From each selected mandal 30 farm women those who were actually engaged in cotton cultivation were selected. Hence a total of 180 respondents were selected for the study. The scale adopted from Rekha Vyas (2006) was used with suitable modification for the study. Data was collected by interview schedule. Data analysis was done using statistical tools i.e., frequency, percentage.

Results and Discussion

Physiological health hazards

Table 1: Distribution of the respondents according to their physiological health hazards

S. No	Physiological health hazards	Tribal farm women (n1=90)		Non-tribal farm women (n2=90)		Total (n=180)	
		F	%	F	%	F	%
1.	Very frequently (63-75)	78	86.67	75	83.33	153	85.00
2.	Frequently (51-62)	12	13.33	15	16.67	27	15.00
3.	Undecided (39-50)	0	0.00	0	0.00	0	0.00
4.	Sometimes (27-38)	0	0.00	0	0.00	0	0.00
5.	Rarely (15-26)	0	0.00	0	0.00	0	0.00
	Total	90	100.00	90	100.00	180	100.00

The table 1 indicated that among tribal farm women, majority (86.67%) of the respondents experienced physiological health hazards very frequently, while only 13.33 per cent reported frequently. Among non-tribal farm women, majority (83.33%) of the respondents experienced physiological health hazards very frequently, followed by 16.67 per cent reported frequently. The overall data observed that majority (85.00%) of the respondents experienced physiological health hazards very frequently, while only 15.00 per cent of them reported frequently. None of the respondents fell under the undecided, sometimes and rarely categories.

The possible reason might be women were sensitive to risks including repetitive tasks, uncomfortable postures, prolonged sitting or standing may cause physiological health hazards. These results were in accordance with Gupta *et al*. (2020) [4] revealed that 86.67 per cent of the respondents suffered from backaches, followed by joint pains (71.67%) and headaches with 55 per cent.

Chemical health hazards

Table 2: Distribution of the respondents according to their chemical health hazards

S. No.	Chemical health hazards	Tribal farm women (n1=90)		Non-tribal farm women (n2=90)		Total (n=180)	
		F	%	F	%	F	%
1.	Very frequently (63-75)	8	8.89	6	6.67	14	7.78
2.	Frequently (51-62)	24	26.67	18	20.00	42	23.33
3.	Undecided (39-50)	43	47.78	48	53.33	91	50.56
4.	Sometimes (27-38)	13	14.44	18	20.00	31	17.22
5.	Rarely (15-26)	2	2.22	0	0.00	2	1.11
Total		90	100.00	90	100.00	180	100.00

From table 2. it was found that among tribal farm women, majority (47.78%) of the respondents experienced chemical health hazards at undecided level, followed by frequently (26.67%), sometimes (14.44%), very frequently (8.89%) and very few number (2.22%) of the respondents reported rarely. Among non-tribal farm women, majority (53.33%) of the respondents experienced chemical health hazards at undecided level, followed by equal number (20.00%) of respondents reported frequently & sometimes, while less number reported very frequently (6.67%).The overall data reported that Half (50.56%) of the respondents experienced chemical health hazards at undecided level, frequently (23.33%), sometimes (17.22%), very frequently (7.78%) and very few number (1.11%) of respondents reported rarely.

The possible reason might be women frequently exposed to pesticides, lack of access to personal protective measures, No awareness & training. The results were supported by Kousse *et al*. (2023) [6].

Mechanical health hazards

Table 3: Distribution of the respondents according to their mechanical health hazards

S. No.	Mechanical health hazards	Tribal farm women (n1=90)		Non-tribal farm women (n2=90)		Total (n=180)	
		F	%	F	%	F	%
1.	Very frequently (48-60)	0	0.00	2	2.22	2	1.11
2.	Frequently (39-47)	22	24.44	12	13.34	34	18.89
3.	Undecided (30-38)	65	72.23	76	84.44	141	78.33
4.	Sometimes (21-29)	3	3.33	0	0.00	3	1.67
5.	Rarely (12-20)	0	0.00	0	0.00	0	0.00
Total		90	100.00	90	100.00	180	100.00

From table 3 among tribal farm women, majority (72.23%) of the respondents experienced mechanical health hazards at undecided level, followed by frequently (24.44%), and 3.33 per cent of them reported sometimes. Among non-tribal farm women majority (84.44%) of the respondents experienced mechanical health hazards at undecided level, followed by frequently (13.34%), and 2.22 per cent of them reported very frequently. Overall, majority (78.33%) of the respondents experienced mechanical health hazards at undecided level, followed by frequently (18.89%), sometimes (1.67%) and very frequently (1.11%). None of them were under rarely category.

The probable reason could be that men were mostly involved in machinery like operating threshers, pumps, tractors. Without proper protective measures women faced some of the hazards like cuts, wounds and fractures. Similar results were quoted by Pandey *et al*. (2020) [9].

Environmental health hazards

Table 4 Distribution of the respondents according to their environmental health hazards

S. No.	Environmental health hazards	Tribal farm women (n1=90)		Non-tribal farm women (n2=90)		Total (n=180)	
		F	%	F	%	F	%
1.	Very frequently (42-50)	0	0.00	0	0.00	0	0.00
2.	Frequently (34-41)	49	54.45	45	50.00	94	52.22
3.	Undecided (26-33)	21	23.33	30	33.33	51	28.33
4.	Sometimes (18-25)	20	22.22	15	16.67	35	19.45
5.	Rarely (10-17)	0	0.00	0	0.00	0	0.00
Total		90	100.00	90	100.00	180	100.00

The table 4. showed that among tribal farm women, more than half (54.45%) of the respondents experienced environmental health hazards frequently, followed by undecided (23.33%) and 22.22 per cent of them reported sometimes. Among non-tribal farm women half (50.00%) of the respondents experienced environmental health hazards frequently, followed by undecided (33.33%) and 16.67 per cent of them reported sometimes. The overall data pertaining to the environmental health hazards indicated that more than half (52.22%) of the respondents experienced frequently, followed by undecided (28.33%) and 19.45 per cent of them reported sometimes. None of them fell under very frequently and rarely. It might be due to greater exposure, extreme temperatures affect women, lack of protective measures.

Overall Occupational health hazards

Table 5: Distribution of the respondents according to their overall occupational health hazards

S. No.	Overall occupational health hazards	Tribal farm women (n1=90)		Non-tribal farm women (n2=90)		Total (n=180)	
		F	%	F	%	F	%
1.	Very frequently (218-260)	7	7.78	0	0.00	7	3.89
2.	Frequently (177-217)	54	60.00	42	46.67	94	52.22
3.	Undecided (135-176)	29	32.22	48	53.33	79	43.89
4.	Sometimes (93-134)	0	0.00	0	0.00	0	0.00
5.	Rarely (52-92)	0	0.00	0	0.00	0	0.00
Total		90	100.00	90	100.00	180	100.00

From table 5. the results stated that regarding the tribal farm women, a clear majority (60.00%) of respondents experienced overall occupational health hazards frequently, followed by undecided level (32.22%) and while 7.78 per cent of them reported very frequently. Among non-tribal farm women, majority (53.33%) of respondents experienced overall occupational health hazards at undecided level, while 46.67 per cent of them reported frequently. The overall data reports, more than half (52.22%) of the respondents experienced occupational health hazards frequently, undecided (43.89%) and very few (3.89%) of them reported very frequently. None of them were in the categories of sometimes and rarely. The probable reason might be their level of exposure and the intensity of risks are neither too high nor too low. Farm women in cotton cultivation face many hazards but use less chemical-intensive methods, their exposure to machinery and agrochemicals is relatively limited. The overall level remains medium due to partial protection. The results were supported by Kousse *et al*. (2023) [6].

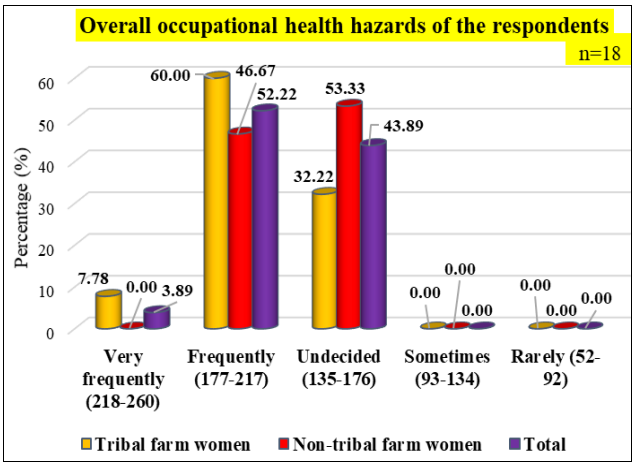

Fig 1: Distribution of the respondents according to their overall occupational health hazards

Conclusion

The overall distribution of data revealed that in tribal and non-tribal farm women, Majority (85.00%) of the respondents experienced physiological health hazards very frequently, while only 15.00 per cent of them reported frequently. Half (50.56%) of the respondents experienced chemical health hazards at undecided level. Majority (78.33%) of the respondents experienced mechanical health hazards at undecided level, followed by frequently (18.89%). More than half (52.22%) of the respondents experienced frequently, followed by undecided (28.33%) and 19.45 per cent of them reported sometimes. None of them fell under very frequently and rarely.

The overall data reports, more than half (52.22%) of the respondents experienced occupational health hazards frequently, undecided (43.89%) and very few (3.89%) of them reported very frequently. None of them were in the categories of sometimes and rarely.

So, from the present study we can conclude that, various types of occupational health hazards are the common in cotton cultivation activities which frequently found amongst the farm women. If the hazards are addressed correctly, can be prevented by protective measures.

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