

## Original Research Article

# Assessment of occupational stress among farmers in Aurangabad district, Maharashtra

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## ABSTRACT

**Background:** Since many years Indian farming community, especially farmers from drought prone areas have been under constant occupational stress. This research study was conducted in Aurangabad district of Maharashtra, which has witnessed a sizeable number of farmer's deaths in recent years, to find out which component of stress was contributing more and affecting the lives of the farmers.

**Methods:** A community based descriptive cross-sectional study was conducted during 2016 in two most affected blocks of Aurangabad where the highest incidence of farmer suicide attempt cases occurred. A stratified random sample of 120 farmers from three strata viz. small, medium and large, from six most affected villages of two Blocks were interviewed with a standard, duly modified, pre-tested farm stress inventory questionnaire which includes questions on various stress related factors such as financial stress, farming hassles, weather stress, work overload and other people as stressor.

**Results:** The results of study revealed that while farming occupation encompasses all types of stresses to farmers, the study area farmers were experiencing unpredictable weather and financial problems as major stress factors. The study also revealed that the differences of stress levels on various factors were statistically significant when compared to size of landholding of the farmers - small farmers were most susceptible.

**Conclusions:** The present study concluded that weather and financial stresses were the most significant as compared to other components of stress for farmers. Weather fluctuations and unpredictability leads to significant effects on the production of crop and which is directly related to the annual income of the farmers, hence policy makers, agricultural scientists, marketing and financial experts create a suitable environment for farmers to overcome these stressors.

**Keywords:** Farmer, Stress, Financial, Weather, Workload

## INTRODUCTION

It is assumption in non-farming communities that, forming Community living joyful life along with natural beauty, enjoying their life without any stress as during risk free work at farm on day and coming back to home by leaving stress this happens in day to day life, but on the factual way this concept has been not enjoyed by these people and facing lots of stress for surviving to family. They are under influence of the chain of physical,

financial, weather, over work load stress and unable to leave from these due to the different circumstances while doing farming now days. These people are in distress due to engulf by different kind of stresses like financial stress, workload, weather stress, other people as stressors. Generally every people work with positive energy by self-confidence for achieving goals this is 'Eustress' but in distress they do not have other ways for survival and with known border they doing still same and they unable to withdrawn from burden as they predicted that, these all

happening is life partner and they will be remain till the last inspiration of life. These crucial condition arises due to change in an environment, demand, opportunities, threat, constraints & farming practice still date as per the old concept and resources etc.

Beehr and Newman, gives definition of occupational stress, as a condition arising from the interaction of people and their jobs and characterized by changes within people that force them to develop from their normal functioning.<sup>2</sup> occupation stress is combination of different factors at workplace which develop negative effects on the individual and imbalance between occupational demand and ability to performs. Now a day's farming occupation leading most hazardous effects on farmers due to facing different circumstance in day to day operations like -unpredictability of weather, changes in family needs, continuous fluctuating nature of environment, unpredictability of raining, lack of knowledge about ideal farming as per present situation, generation to generation same methods of harvesting, lack of skilled equipment for more productivity, less output as per concern input, entire family members engage in farming causes deterioration in family quality, taking in multidimensional development, lack of weather rationalization for growth of crop, continues degradation of soil due to different causes which leads unproductively, lack of knowledge of market price and proper market for getting reasonable price for crops etc.

For the present study, financial stress work over load Stress, weather stress, farming hassles, and other people as stresses those categories' have been identified as stress factors which discussed as follows.

### ***Financial stress***

Farming communities facing lots of stress of selected financial concern, indebtedness occurred over a period of time, over load of loan, insufficient regular cash flow, rising expenses for farming, operation and inadequate minimum support price declare by government, low price for crop, stringent bank norms for loan causing ineligibility, dependency on private money lenders, harassment from money lenders or bank staff, non-receipt of financial assistance declared by Government, not having enough money for education, entertainment, inability to decide to sell produces.

### ***Farming hassles***

Farming hassles stressors are production loss due to diseases or pests, poor quality of seeds, dependency on genetically modified seeds, loss due to over use of fertilizers, significant reduction in size of farm, problems regarding weeds or insects, problem related to soil quality, maintaining nutrition of soil, breeding or reproductively of livestock, use of hazardous chemicals, farming accident.

### ***Weather stress***

Unpredictability of weather is always stress towards farming communities, delay in planting or harvesting due to bad weather and rainfall, crop loss due to weather hail, not enough rain, excessive rain, frost etc. prolonged bad weather or repeated drought cycle, worriers about un predictability of weather.

### ***Work overload stress***

These stressors are long and continues working hours, problem in balancing work and family responsibilities, increase work load at peak time, having to travel long distance for services, pressure in having too much to do in too little time, difficulty in cropping with new technology, not enough time to spend with family, personal illness during planting or harvesting not able to take holidays from work for relaxation, feeling isolated in farm.

### ***Other people as stress***

These stressors not being considered or consulted by family members on farm operation, no or less respect to the farming profession by relatives or society problems in farm operating agreements with relatives, problems with partnership, problem in getting farm labour when required, trouble with parents or in laws, conflict with spouse over spending priorities, dealing with sales people of seeds, fertilizer. Major decision being made without my knowledge or input having to wear too many hats etc.

## **METHODS**

### ***Type of study***

Community based descriptive cross sectional study.

### ***Study population***

Patients admitted in Government Medical College and Hospital (GHATI) Aurangabad with an attempted suicide (due to consumption of OP poisoning, drowning, hanging etc.) during the year of 2014 and 2015. Aurangabad was one of the drought prone districts in Maharashtra. Hence, this study attempted to find out the possible factors which may act as stressors in farming community. The total number of Patients admitted in GHATI with an attempt to commit suicide during period of 2014 & 2015 were counted. This was followed by listing out the attempt to suicide patients of Aurangabad district followed by categorization as per taluka wise and purposive sampling for selection of talukas was done.

Since the main objective of the study was to find out the stress levels of farmers of Marathwada region, two talukas namely Aurangabad and Kannad, which recorded highest number of farmer's suicidal attempt cases

admitted during 2014 and 2015 in the largest referral hospital of the region- Government Medical College Hospital, Aurangabad, were selected.

### **Sampling methodology**

Subsequently from each of the selected taluka six highest incidence villages were selected from which all the farmers were grouped into three strata's as per their size of land holding- small (<2 hectares), medium (2-5 hectares) and large farmers (>5 hectares). Then 120 farmers were selected from the three categories following proportionate probability sampling method, for the survey.

### **Data collection tool**

The modified farm stress inventory - questionnaire of pierrette desrosiere (Farm stress inventory created by James & Lilly Walker, Newsletter of Centre for Agricultural Medicine, University of Saskatchewan) was used to evaluate the stress related factors. And stressors classified into five factors as financial stressors, farming hassles, weather stressors, work overload stressors, and other people as stressors.

The questionnaire consisted of 60 issues reflecting the above five stress causing factors for selection of level of stress the opinion of the farmers was recorded by using a five point scale (low stress 1-2-3-4-5-high stress). The score for each factor the summation of the answers of the issues of that particular factor. And if score were below 24 it was considered as low level stress. Score in between 24-36, medium level stress and score 36-60, high stress level of that particular factor.<sup>3</sup>

### **Inclusion criteria**

Farmers who were ready to participate in the study with minimum 10 years of experience in farming.

### **Exclusion criteria**

Farmers who were not willing to take part in study.

### **Ethical approval**

Taken informed consent from the research subjects in local language (Marathi) before actual start of study.

### **Statistical analysis**

Data analysis was done by using descriptive statistical tools such as mean, SD and percentages. In order to determine the association between the various stress factors and type of farmer (land holding) chi-square test was applied. A p value less than 0.05 were considered as statistically significant.

## **RESULTS**

### **Socio demographic background of farmers**

The gender distribution of the farmers in the present study has proved the national trend of male dominance in this occupation as 95.8% of the respondent farmers were male (Table 1).

**Table 1: Gender-wise distribution of farmers.**

Gender	Frequency	Percentage (%)
Male	115	95.8
Female	05	4.2
Total	120	100

$\chi^2=61.52$ , df=1,  $p<0.0001$ .

Age-wise distribution of farmers reveals that it ranges from 30 to 62 years and majority i.e., 32 or 26.7% were in the age group 41-45 years, followed by 36-40 years 28 (23.3%) and 51-55 years 28 (23.3%) and only 2 (2%) respondents was of above the age group of 60 years and same for age group of 31-35 (2%) (Table 2). The average age of farmers was  $46.8\pm 6.7$  years.

**Table 2: Distribution of farmers by age.**

Age (years)	Frequency	Percentage (%)
31-35	2	1.7
36-40	28	23.3
41-45	32	26.7
46-50	19	15.8
51-55	28	23.3
56-60	9	7.5
>60	2	1.7
Total	120	100.0

The distribution of farmers by their size of land holding reveals that 50% were small farmers having less than 2 hectares of land, while 30% were medium farmers with 2-5 hectares of land holding. Only 20% farmers had more than 5 hectares of land. Another interesting fact revealed by the study was all the 50% small farmers, who were doing farming on leased land.

**Table 3: Distribution of farmers by size of holding.**

Owned land	Frequency	Percentage (%)
<2 hectare	60	50
2-5 hectare	36	30
>5 hectare	24	20
Total	120	100

### **Evaluation of stress levels as per identified stressors**

#### **Financial stress**

The study has revealed that nearly 50% of the respondents have medium (28.3%) to high (20.8%) level

stress due to financial factors, while the remaining 50% had low level financial stress. The study has also implied that all 120 respondents having financial stress.

The distribution of size of land holding of farmers by their financial stress levels revealed that all big and

medium level farmers relatively have low levels of financial stress, while 95% of small farmers have medium or high level stress (Table 5). Further the study has revealed that the association between the levels of financial stress and the size of land holding of farmers were statistically highly significant ( $p < 0.0001$ ).

**Table 4: Financial stress.**

Financial stress	Frequency	Percentage (%)
Low	61	50.8
Medium	34	28.3
High	25	20.8
Total	120	100.0

**Table 5: Association between size of land holding of farmer and financial stresses.**

Financial stresses	Size of land holding of farmer (%)			Total
	Small	Medium	Big	
Low	3 (5)	34 (94)	24 (100)	61
Medium	32 (53)	2 (6)	0	34
High	25 (42)	0	0	25
Total	60	36	24	120

$\chi^2=101.3$ ,  $df=4$ ,  $p < 0.0001$ .

#### *Farming hassles as stress*

All most all the farmers interviewed i.e., 98.3% felt that the farming hassles such as travel to long distances for seeds, fertilizers, spraying pesticides/insecticides, sickness of cattle etc attributes to only a low level stress to them, as they were all used to that kind of work in the farming operations, they never felt it was a stressful job.

Almost all big and medium sized farmers belongs to low farming hassles stress (100%), whereas more small type of farmers belongs to low farming hassle (97%) as compared to medium farming hassle (3%). A study of association between the size of land holding of farmers and Farming Hassles as stress levels, it is revealed that there was no significant difference ( $p=0.49$ ).

**Table 6: Farming hassles as stress.**

Farming hassles	Frequency	Percentage (%)
Low	118	98.3
Medium	2	1.7
Total	120	100.0

**Table 7: Association between types of farmers and farming hassle.**

Farming hassle	Type of farmer (%)			Total
	Small	Medium	Big	
Low	58 (97)	36 (100)	24 (100)	118
Medium	2 (3)	0	0	2
Total	60	36	24	120

$\chi^2=0.51$ ,  $df=1$ ,  $p=0.49$ .

#### *Weather as stress*

The study has revealed that more than a 59% of the farmers interviewed experienced high or medium levels of stress due to unpredictable weather conditions. While remaining 41% farmers had low level stress due to

weather conditions. It means that weather conditions have been the stress factor from low to high level for all farmers.

Weather conditions have posed high stress levels to small farmers compared to big farmers, as over 38% small

farmers and 13% big farmers have experienced high levels of stress due weather, while 75% big farmers and 22% small farmers have experienced low levels of weather stress. Besides, 50% medium farmers have experienced high (14%) or Medium (36%) level stress due to weather. Means small farmers having much more

stress as compared to others and among the small farmers medium level of stress was more as compared to high level of stress. There was statistically highly significant association between type of farmer and weather stress ( $p < 0.0001$ ).

**Table 8: Weather as stress.**

Weather as stress	Number of farmers	Percentage (%)
<b>Low</b>	49	40.8
<b>Medium</b>	40	33.3
<b>High</b>	31	25.8
<b>Total</b>	120	100.0

**Table 9: Association between types of farmers and weather stresses.**

Weather stresses	Type of farmer (%)			Total
	Small	Medium	Big	
<b>Low</b>	13 (22)	18 (50)	18 (75)	49
<b>Medium</b>	24 (40)	13 (36)	3 (13)	40
<b>High</b>	23 (38)	5 (14)	3 (13)	31
<b>Total</b>	60	36	24	120

$\chi^2=24.28$ ,  $df=4$ ,  $p < 0.0001$ .

#### *Work overload stress*

Majority i.e., 70% of the farmers felt that work overload as a low level stress factor, while 27.5% farmers felt that it gives medium level stress. Only 2.5% farmers opined that work over load gives high level stress. Nearly 98% respondents had low and medium level of stress of work over load, as they are used to that kind of hard work in the farm.

A study of association between work overload stress levels and size of land holding of the farmer reveals that small and medium size farmers experience relatively higher level (medium and high) stress, compared to big farmers, where all of them (100%) have low level stress (Table 11). There was statistically highly significant association between type of farmer and work overload stress ( $p < 0.0001$ ).

**Table 10: Work overload stress.**

Work overload stress	Frequency	Percentage (%)
<b>Low</b>	84	70.0
<b>Medium</b>	33	27.5
<b>High</b>	3	2.5
<b>Total</b>	120	100.0

**Table 11: Association between types of farmers and work overload stresses.**

Work overload stresses	Type of farmer (%)			Total
	Small	Medium	Big	
<b>Low</b>	26 (43)	34 (94)	24 (100)	84
<b>Medium</b>	31 (52)	2 (6)	0	33
<b>High</b>	3 (5)	0	0	3
<b>Total</b>	60	36	24	120

$\chi^2=39.64$ ,  $df=1$ ,  $p < 0.0001$ .

**Table 12: Other people as stresses.**

Other people as stresses	Frequency	Percentage (%)
<b>Low</b>	120	100.0
<b>Total</b>	120	100.0



### *Other people as stress*

All the farmers interviewed have expressed low level stress for other people as stress (Table 12).

## **DISCUSSION**

A study conducted by Ramesh et al on occupational stress among farming people in India which followed the same stress factors reported that highest stress factor was financial followed by weather, work overload, farming hassles and other people as stressors, in that order, while our study financial stress was secondary to weather stress.<sup>3</sup> A cross sectional study by Kearney and colleagues on stressors among farmers in East North Carolina, a similar finding was reported as the present study, that is weather is the most dominant stress factor for farmers compared to others. It concerns over the future of farm, market prices for their crops and livestock, outsiders not understanding nature of farming and problems with machinery, these stressors play an important role in farmers' life.<sup>2</sup> A study conducted by Bin in New Zealand farmers about occupation stress, stresses of economic factors concern over government subsidy lacking, adjusting to government regulations, labour shortage, effect of trade globalisation, climatic conditions, size of farm, in result found that, farmers actually demonstrate low strain from impact of stressors, these are partly the function of low government regulatory pressures and free outbreak of diseases or incidents of prolong bad weather in New Zealand.<sup>5</sup>

A study conducted by Ghatul, Maharashtra, India, studied on constraints and stress level of farmers reported that almost all farmers were exposed to the varying degree of the constraints as well as stress levels.<sup>6</sup> Various constraints – personal, natural, economical and technical of major concern, farmers were exposed to, include low farm holding and bad habits, unpredictable weather conditions, salinity of land, non-availability of water for irrigation, technical concern over lack of awareness of modern technology and different schemes, non-availability of quality insecticide, pesticides, and economical concern over low price for farm produce and market availability. Surprisingly, highest number of respondents had medium level of constraint as like present study.

A recent study (2017) by California University, USA on Indian farmers, reported that, impact of drought as a major concern over climate change, increase in temperature causes increase in number of suicides. Clearly drought conditions precipitate the situation of farmers and lead to adverse economic impact, leading to farmer's suicides which are a matter of great concern in India. The effect of damaging climate variation on the worsening income levels of farmers and its relation to suicide rates is unknown. Many previous studies of income variability affecting suicide are mostly anecdotal or qualitative and do not attempt to identify and

synthesise quantitative relationships between climate, crops and suicides. Daunting task concern Indian agriculture continuing to be dependent on timely rains, land holding being small, and farmers struggling for finances the challenge to face the consequences of the growing impact of climate change in indeed daunting.

A study conducted by Behere on farmers suicides across countries and cultures, studied in India, Sri Lanka, USA, Canada, England and Australia have identified farming as one of the most dangerous industries associated with a high rate of suicide than in general population.<sup>7</sup> In India farmers suicides had been reported from various states viz. Punjab, Maharashtra, Andhra Pradesh, Kerala and various other states, in Vidarbha region of Maharashtra has associated with indebtedness and deterioration in economic status, unpredictability of weather and drought condition as major risk status and same in other states also. Most of the findings of this study coincided with the present study.

A study conducted by Welke, in South Dakota, UN found that, the top most three stressors among farmers surveyed were market prices for crops and livestock, the weather and health care costs. These were most burning problems which accelerate the stress on farmers.<sup>8</sup>

As farmers undergo lot of challenges in day to day activities, so strong policy framework, developmental, implementation support should be strengthened, which ultimately provide confidence in them to fight against the upcoming stressors.

## **CONCLUSION**

Internationally agricultural sector is facing lot of changes due to climate change and affecting the future of farming community leading to significant and unexpected fluctuations in the price for food production in farming. Research findings concerning the prevalence of stress components among the farming community have been vary from study to study. In a study within European countries revealed that stress symptoms among different occupational sectors were highest among the agricultural and fishery communities one third of whom were stressed and the prevalence of stress components was more in small farmers as compared to medium and large farmers.

In the present study it was found that in all farming community weather stress was more considerable as compared to other components of stress. Weather fluctuations and unpredictability leads to significant effects on the production of crop and which is directly related to the annual income of the farmers.

Financial stress was long lasting component of stress for all farmers and more so for small farmers. Frequent borrowing of money from private money lenders leads to more deterioration in the economic health of farmers. Due to unavailability of financial resources and facilities

since long time, farmers unable to manage and fulfil the farming needs and financial issues faced since long time.

According to study it was found that, small farmers were facing a lot of problems in all components of stress as compared to other farmers (medium and large farmers), which leads mental depression and anxiety in mind about the future of family about children's education, health, fulfilment of daily needs, which was major issue in the farming families.

Farmers were facing very much stress about the farm product price in the market which was very less as compared to the efforts taken and hence farmers were at risk of suicide. Farming had very low income as compared to other occupations so they are unable to fulfil the happy life criteria.

Weather stress was much more affecting all farming group as repeated crop failures lead to financial crisis in the farmers which leads to borrowing. This in turn made them prone to increase in debt load. Financial issue faced by long time,

Work over load stress due to continuous activity in farm related activities and increases work load at peak time causes stress. There were problems in balancing farm work and family responsibilities, not able to give time for children; not getting time for relaxation from daily activities causes much more stress.

Farmers were engaged in farm for the whole day and they were not trained in any other skills so they were unable to do any another occupation or business so there were no effective alternate sources of income for running the family.

Unfavourable weather, lack of fulfilment of needs and absence of institutional finance had left the farmers alone causes high stress.

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