Perceived Stress and Suicidal Ideation among the Farmers : A Cross Sectional Study from the Rural Field Practice Area of a Medical College in Karnataka

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Abstract:

Introduction: Psychological Stress and other mental health problems are highly neglected in Indian farming Community. Changing climatic, weather and environmental conditions affected the growth of crops and yield. This has resulted in various stressful conditions faced by the farmers. The psychological stress leads to tensions in the family relationship, variations in their daily life, and poor operational decisions while farming and even may lead to farm accidents, suicides among them. **Objectives:** To study the Stress levels perceived by the farmers and the factors determining the stress among them and to study the suicidal ideation among farmers in the previous 6 months. **Method:** A Community based Cross sectional study was carried out in the villages of Kalghatagi taluk, among 324 marginal & small scale farmers of age group 18-60 years, using pretested semi-structured questionnaire comprising of socio-demographic details, occupational characteristics, perceived stress and the reasons for stress. The 4 item Perceived Stress Scale was used for the assessment of Stress levels. Higher Score indicates high levels of Stress. **Results:** Among 324 farmers, 69.8% of the farmers were males, majority of them belonged to 50-60 years, and most of them were small scale farmers. The mean perceived score was 6.29±4.38 SD. Majority of the farmers reported crop failure (35%) and debt (37%) as the reasons for stress. The major determinants of stress among farmers were crop failure, debt and family problems. Among 324 farmers 25.3% reported suicidal ideation in the previous 6 months. The Mean stress scores were high among those with suicidal ideation (12.69±1.12 SD). **Conclusion:** The study shows that stress levels were high among farmers and are related to the failure of crops, inability to pay the debts and other factors. The Mental health problems of the farmers should be addressed at early stages to reduce the burden of farmers' suicides. Primary mental health care should be made available to the rural population.

Keywords: Farmers, Mental health, Suicide

Introduction:

As per the 2011 census, 68.8% of India's population lives in rural areas. Two-thirds of the rural population depends on agriculture as their principal means of livelihood with the majority of them being small and marginal scale farmers.[1]

Farmers are exposed to wide variety of climatic, weather, and environmental conditions. Changing climatic, weather and environmental conditions not only affects the growth of crops and yield but also has effect on health of the farmers.[2] Farmers suffer from many occupational hazards, in addition to physical

hazards; they also suffer from psychological hazards ranging from stress, depression, anxiety, to Suicidal tendencies and Suicides.[2,3]

According to Flachs [4] (2002) farming is one of the 10 most stressful occupations. The psychological stress leads to tensions in the family relationship, variations in their daily life, and poor operational decisions while farming and even may lead to farm accidents, suicides among them. It is important to effectively to recognize symptoms and management of the stressful event.

Psychological stressors among farmers [2-5]

Farm-related factors : The weather and Rain, Drought and floods, Problems with machinery, livestock and crops, Government export policy, Farm accidents and injuries ,Balancing roles as a family member and farmer

Financial factors : Market prices for the crops/livestock, Taxes, Health care costs, High debt load, not enough money for day-to-day expenses, working with bankers and loan officers, Government farm price supports

Family and Social factors : Not enough time for family, Cost of health care, Distance from doctors or hospitals, Limited social interaction, Debt because of marriage in the family

These stressors affect the mental wellbeing of the farmers resulting in lack of concentration resulting in accidents, poor general well being, and lack of job satisfaction, suicidal tendencies.[3]

As per National crime record bureau, 2020, farmer's suicides (10,677) accounted for 7.0% 0f total suicide victims. [6]

Farmer's perception about mental health issues is like while working in the farm stress is common and they cannot avoid these and they should be handle all these situations on their own. Mental Health care seeking among farmers is poor with negative attitude towards its diagnosis and management.[3,5] Mental illness and psychological illness are often linked to unfortunate fate, wrath of god, and witchcraft especially in rural India. This leads to delay and deny in seeking care and treatment resulting in increase in suffering and decreased quality of life, Suicidal ideation and suicides.[7,8]

As the mental health problems, stress was least studied among the farmers, the present study helps in assessing the stressful conditions perceived by them and also the reasons for the stress.

Objectives:

1. To study the Stress levels perceived by the farmers.

2. To study the factors determining the stress levels.

3. To study the suicidal Ideation in the previous 6 months.

Method:

A community based cross sectional study was conducted among the marginal and small scale farmers aged 18-60 years residing in the field practice area of KIMS, Hubli during 2018-2019. Pregnant and lactating women and farmers with debilitating illness were excluded from the study. Total 12 Villages were selected using cluster sampling and study participants were selected using Systematic random sampling. Informed written consent was taken from the study participants. The study was approved by Institutional ethics committee, KIMS, Hubli. The present study was a part of major study.

Sample size: The sample size was calculated by reviewing the previous study among the farmers in Deepak Justine Viswanathan,[9] the suicidal ideation was reported by 60% of the farmers, with 95% confidence limits and 8% of allowable error; the sample size was calculated using the formula; $n=\dfrac{1.96^2 pq}{l^2}$ Assuming the design effect of 2 and 10% non response rate, the sample size of 324 was used for the study.

The predesigned semi structured piloted questionnaire consisting of socio-demographic

details, occupational characteristics and the perceived stress in the previous month and also Suicidal Ideation in the previous 6months was used for the data collection. House to House Survey was done; farmers were interviewed after obtaining the written consent in the regional language. For assessing Socio-economic classification Modified BG Prasad's Socio-economic classification for the year 2019[10] was used (Consumer Price Index during 2019: 307)

Perceived stress Scale 4 item [11, 12]**:** The Perceived Stress Scale (PSS) was developed by Cohen, Kamarck and Mermelstein to assess "the degree situations in one's life appraised as stressful". This questionnaire was designed to assess "the degree to which respondents found their life unpredictable, uncontrollable, and overloading"

Scoring : 5 point likert scale, for Item 1 and 4, 0-Never, 1-Almost never, 2-sometimes,3-fairly often,4 –very often ; Item 2 and 3: 4 = Never, 3 - Almost Never, 2 - Sometimes, 1 -Fairly Often, 0-very often; Lowest Score:0 and Highest Score: 16; Higher Score signifies high levels of Stress.

Data analysis : The data was entered in MS Excel and analyzed using SPSS v21, Suitable descriptive and inferential statistics were used for the study. Independent t test and ANOVA were used to assess the association between stress levels and factors determining stress. P level <0.05 is considered as significant.

Terms used in the study:

- **Farming/ Agriculture :** In the fourth report of the joint ILO/WHO Committee on occupational health, agriculture was taken as all forms of activities connected with growing, harvesting and primary processing of all types of crops, with breeding, raising and caring of animals and with nurturing the gardens and nurseries. "Farmer/ Agricultural worker means any person engaged either permanently or temporarily, in activities related to agriculture as defined above, irrespective of his/her legal status."[13] In India, Ministry of Labor includes ploughing, sowing, weeding, transplanting, harvesting, cultivation, forestry, plantation, fisheries, and others as principal agricultural operation.[14]

- **Agricultural laborer**[15]**:** Agricultural laborer means any person employed in agricultural crop production as a wage earner, whether in cash or kind, for his livelihood and includes a person engaged through a contractor or engaged as a self employed person.

- **Marginal scale farmer**[15] **:** Agricultural worker owning a land of less than 1.00 hectare (2.471~2.5 acres)

- **Small scale farmer**[15]**:** agricultural worker owning a land of 1.00-2.00 hectares [(2.471-4.941) ~ (2.5 to 5 acres)].

**Results:**

Socio-demographic details :

Majority of the farmer (69.8%) were males and 30.2% were females. Most of the farmers (39.8%) were in the age group of 50-60 years, only 11.1% of the farmers were in the age group of 18-30years, about 45.1% of the farmers were literates. Majority of the farmers (67%) belonged to lower middle class, 16.7% and 16.4% belonged to middle class and lower class according to modified BG Prasad SES classification respectively. Out of 324 farmers 51.2% of the farmers were small scale farmers, followed by marginal farmers (38.9%) and agricultural laborer (9.9%).

Perceived Stress and factors determining the stress:

Perceived Stress was assessed using 4 item Perceived stress Scale, the higher score indicates the higher levels of Stress. Mean perceived score reported was 6.29±4.38 SD, About 2.8% and 15.4% of the farmers felt that they were unable to control important things in their lives in the previous month

Table 1: Description of the Items of Perceived Stress Scale (perceived in the previous month)

Variables	Never	Almost never	Sometimes	Fairly often	Very often
Unable to control the important things in the life(ITEM 1)	78 (24.1%)	117(36.1%)	70(21.6%)	50(15.4%)	9(2.8%)
Difficulties were piling up so high that the individual could not overcome them (ITEM 4)	63(19.4%)	77(23.8%)	73(22.5%)	48(14.8%)	63(19.4%)
Variables	**Very often**	**Fairly often**	**Sometimes**	**Almost never**	**Never**
Confident about the ability to handle personal problems (ITEM 2)	106(32.7%)	92(28.4%)	24(7.4%)	26(8.0%)	76(23.5%)
Felt that things were going in their way (ITEM 3)	69(21.3%)	119(36.7%)	79(24.4%)	49(15.1%)	8(2.5%)

Figure 1: Reasons for Stress among Farmers
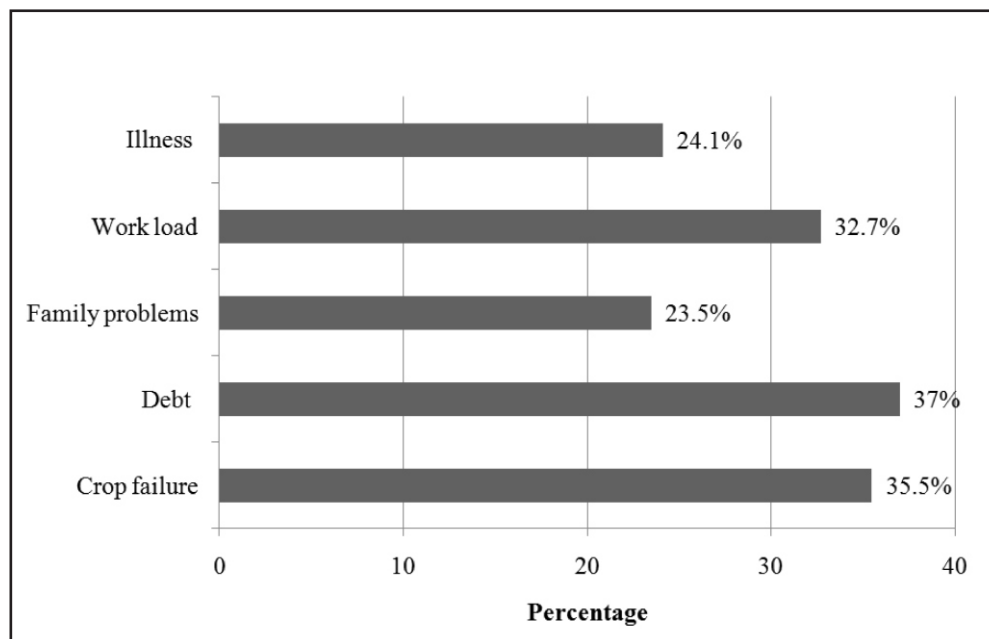
very often and fairly often respectively and about 19.4% and 14.8% of the farmers felt that the difficulties were piling up that they could not overcome them very often and fairly often respectively, 23.5% of the farmers never felt that they were confident about the ability to handle personal problems in the previous month. About 15.1 % and 2.5% of the farmers never felt that the things in their life were going in their way. (Table 1) The reliability analysis of PSS 4 in the present study was good with Cronbach's alpha of 0.867.

Reasons for stress :

Out of 324 farmers interviewed majority of the farmers reported debt (37%) and crop failure (35.5%) as the reasons of stress. (Figure 1) There was a significant difference among the stress levels and socio-economic status, the stress scores were high among farmers belonging to lower class when compared to the lower middle class and middle class($P <0.05$), the stress levels were significantly associated with the age, as age advanced, the stress

Table 2: Association between the Perceived Stress Scores and Socio demographic factors

Variables	Total Stress Score	N (%)	Mean ± Std. Deviation	t /F#	p Value
Gender	Male	226(69.8%)	6.11± 4.32	-1.158	0.248
	Female	98(30.2%)	6.75±4.51		
Socio-Economic Status	Middle	54(16.7%)	5.74± 3.64	9.402	0.0001*
	Lower Middle	217(67.0%)	5.86±4.57		
	Lower	53(16.4%)	8.62± 3.50		
Age	18-30years	36(11.1%)	4.58±3.44	3.397	0.018*
	30-40years	81(25.0%)	5.75±3.76		
	40-50years	78(24.1%)	6.55±4.92		
	50-60years	129(39.8%)	6.96± 4.51		
Land Owning	Small Scale Farmer	32(9.9%)	7.2±4.8	0.841	0.432
	Marginal Farmer	126(38.9%)	6.3±4.2		
	Agricultural Laborer	166(51.2%)	6.1±4.4		
Marital Status	Married	289(89.2%)	6.29±4.35	5.048	0.007*
	Unmarried	20(6.2%)	4.30±4.01		
	Widowed/Divorced	15(4.6%)	9.00±4.29		

#**Independent t- test and ANOVA were used,   *p value<0.05 : Significant**

Table 3: Association between the Perceived Stress Scores and reasons for stress

Total stress score		n (%)	Mean ± Std. Deviation	Independent t- test	p value
Crop failure	Yes	115(35.5%)	7.24 ± 4.89	2.727	0.007*
	No	209(64.5%)	5.78±3.99		
Debt	Yes	120(37.0%)	7.12±4.56	2.579	0.011*
	No	204(63.0%)	5.81± 4.21		
Family problems	Yes	99(30.6%)	6.42±4.28	0.348	0.728
	No	225(69.4%)	6.24± 4.44		
Workload	Yes	103(31.8%)	6.43±4.62	0.366	0.714
	No	221(68.2%)	6.23±4.27		
Illness	Yes	79(24.4%)	6.0±4.52	-0.690	0.491
	No	245(75.6%)	6.39±4.34		

Independent t- test was done * p<0.05: Significant

Table 4: Association between Suicidal Ideation and the reasons for stress

Total stress score		n (%)	Mean ± Std. Deviation	Independent t- test	p value
Crop failure	Yes	115(35.5%)	7.24 ± 4.89	2.727	0.007*
	No	209(64.5%)	5.78±3.99		
Debt	Yes	120(37.0%)	7.12±4.56	2.579	0.011*
	No	204(63.0%)	5.81± 4.21		
Family problems	Yes	99(30.6%)	6.42±4.28	0.348	0.728
	No	225(69.4%)	6.24± 4.44		
Workload	Yes	103(31.8%)	6.43±4.62	0.366	0.714
	No	221(68.2%)	6.23±4.27		
Illness	Yes	79(24.4%)	6.0±4.52	-0.690	0.491
	No	245(75.6%)	6.39±4.34		

Independent t- test was done * p<0.05: Significant

levels were high. (Table 2) Stress levels were high among widowed or divorced farmers when compared to married and unmarried farmers.

When Post Hoc tests were conducted the stress scores were high among the farmers belonging to Lower class, and among 50-60 years age group when compared to age group of 18-30 years (p<0.05). The mean stress scores were significantly high among those farmers who reported crop failure and debt in the previous year (p<0.05). (Table 3) Mean Scores were also high among those farmers with family problems and increased workload.

Suicidal Ideation:

Among 324 farmers 25.3% reported suicidal ideation in the previous 6 months. Suicidal ideation was associated with Crop failure and debt (Table 4). The Mean stress scores were high among those with suicidal ideation (12.69±1.12SD) when compared with those without suicidal ideation (4.14± 2.5SD) in previous 6 months with t value of -41.47 and p value of < 0.0001.

Discussion:

In India, mental health is not given much importance, especially rural farmers, it's a neglected entity. The mental health problems are least studied.

In spite of increase in suicides among farmers, early diagnosis and proper management of mental health problems is still not possible.

In a study conducted by Priyanka Bomble [8] in Maharashtra about half of the farmers reported mental ill health in the previous 2 weeks. In the present study among 324 farmers 25.3% reported suicidal ideation in the previous 6 months. Suicidal ideation was associated with Crop failure, debt and age of the farmers. Where as in a study conducted by Deepak Justine Viswanathan[9] in Tamil Nadu, showed higher percentage of suicidal ideation(60.3%). In the present study suicidal ideation was high among older age group (50-60years) which is in contrast to the study by Deepak Justine, which showed among younger age group.

In the present study major determinants for stress were debt, crop failure, and socio-economic stress. In a study conducted by Gregory D. Kearney[5] in North Carolina, majority of the farmers reported as concern about the weather (60.2%), concern over the future of the farm (29.7%), market prices for crops/livestock (45.3%), taxes (38.3%), health care costs (32.5%), were Very stressful.

In the present study the stress scores were high among the farmers with low socio-economic status,

advanced age, and widowed/divorced farmers, which indicate that for the psychological wellbeing of the person is dependent on socio-economic and familial factors.

As per NCRB report 2014[16] on farmers suicides the most common reasons for suicides was Bankruptcy or Indebtedness(21.5%) and Family Problems'(20%), Farming Related Issues(21.4%). In the present study the most common reason for suicidal ideation was crop failure (29.8%) and debt (33.1%).

Conclusion:

Farmers perceive significant levels of stress with the main reasons for stress being crop failure, debt, and workload. Stress levels were high among older farmers, and those belonging to lower socio-economic status. Suicidal Ideation is common among farmers. There is a need to provide primary mental health care to the rural population. The government should support the farmers by providing economical support for them.

Recommendations:

Primary Mental health care centers with the facilities for diagnosis, management and counseling services for mental illness should be provided at the Village level or taluk level. Community awareness about mental illness and early help seeking behavior minimizes the burden and also suicidal ideation and suicides.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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