



Prevalence of Depression among the Farmers and its Determinants: A Cross Sectional Study

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ABSTRACT

Context: India being an agrarian country, where agriculture plays a vital role in ensuring food security and poverty alleviation. Farmers who are completely involved in agriculture face a number of unique occupational stressors such as physical environment, family structure, farm economy. These stressors have resulted in various psychiatric disorders such as depression, anxiety resulting in high rates of suicides among farmers.

Aim: To assess the prevalence of depression among farmers and its determinants in selected villages of Bangalore rural district.

Materials and Methods: A cross sectional study was conducted among 570 farmers in 12 selected villages of Nelamangala in Bangalore rural district. The level of depression was assessed using Centre for Epidemiological studies- Depression scale. Data analysis was done using descriptive statistics and chi-square.

Results: The overall prevalence of depression was found to be 33.9% among the farmers. About 46.5% of study subjects were not literates and majority (47.9%) were from lower middle class.

Conclusion: The prevalence of depression was found to be high among farmers compared to the general population. Various factors like loan from multiple sources with high interest, have implicated in high incidence of depression. Hence measures should be planned to help the farming community to overcome this psychosocial distress and to lead a productive life.

Key words: Depression, Farmers, Prevalence, Determinants

INTRODUCTION

India is an agrarian country with agriculture, an important sector that provides livelihood for almost two-thirds of India's population. It is characterized by diversities in soil, rainfall, temperature, and cropping system. Agriculture plays a pivotal role in ensuring food security and poverty alleviation.¹

Agriculture plays a significant role in India's economy with 58% of the rural households depend on agriculture as their principal means of livelihood.² It has been estimated that agriculture export constitutes 10% of India's export and accounts for fourth largest exported principal commodity. Agro industry itself is a big industry with many

branches such as canned, dairy, processed, frozen food to fisheries, meat, poultry, and food grains.

A farmer is one who owns or manages a farm.³ A person who is engaged to take all the necessary steps required for proper nourishment of the items, he grow and sells the same to the purchasers. In the ancient times, farming was considered to be the best and peaceful occupation with a healthy way to lead a life. But in the recent years due to profound structural and economic changes in the field of agriculture, farmers who are completely involved in agriculture face a number of unique occupational stressors such as physical environment, family structure, farm economy, bureaucracy, and other uncertainties which will have a devastating effect on mental health of farmers.⁴

Depression is a major contributor to the global burden of disease and affects people in all communities across the world.⁵ Significant association is found between working environment and onset of depression. Depressive symptoms are more prevalent among workers with job stress low-skill work and lower job status. High job demands, low social support in the workplace, high effort-reward imbalance, employment status, exposure to workplace trauma and job dissatisfaction contributes for depression.⁶

Long working hours, exposure to physical hazards such as high and low temperatures, exposure to dust and fumes, carrying heavy loads, tiring or painful postures, prolonged walking or standing, musculoskeletal disorders, involving as migrant workers in other's land at low wages have contributed to high prevalence of depression in farmers. Almost 12000 farmers have committed suicide in 2015 alone and many have quit farming completely due to uncertainties prevailing in farming.⁷ Therefore this study was conducted as a small attempt to assess the prevalence of depression among farmers and various factors leading to depression in farming community.

OBJECTIVES

The study was conducted to assess the prevalence of depression among farmers in selected villages of Bangalore rural district and also to assess the determinants of depression in farmers.

METHODOLOGY

A rural field based cross sectional study was conducted in randomly selected villages of Nelamangala, the rural field practice area of Bangalore Medical College and Research Institute. Study period was from November 2015 to May 2017. Study participants were farmers who is head of family and whose main occupation is cultivation of land with or without livestock rearing. As per the study done by Grover SD et al⁸ the overall prevalence of depression in general population of which farmers are also a part was found to be 15.1%, with 20% allowable error, the sample size was estimated to be 570. Ethical clearance was obtained by the institution. A multi stage random sampling method was used to collect the data. Out of the 3 Raita Samparka Kendra's (Kasaba, Thyamagondlu and Sompura) of Nelamangala taluk with 10, 8 and 6 grama panchayats respectively, 3 from Kasaba, 2 from Thyamagondlu and 1 from Sompura were selected by Lottery method. Thus a total of 12 villages were included in the study, 2 from each gram panchayat randomly by lottery method. Approximately 48

farmers from each village were included in the study. Study subjects were interviewed in the local language (Kannada) after taking consent for the study. A pre-tested, semi-structured and self-designed questionnaire was used to collect data. CES-D scale was used to assess depression in local language (Kannada).⁹ Data was entered in excel sheet.

Statistics: Descriptive statistics. Data was presented using tables and graphs. Chi-square test and Fisher Exact probability test of significance was used to find the association between variables.

RESULTS

About 570 farmers were involved in the study those were selected from 12 villages that come under the 3 Raita samparka Kendra's of Nelamangala taluk. The mean age of study participants is 52.38 +11.75. Majority of study participants are in the age group of 41-60 years. The prevalence of depression among farmers in the present study was found to be 33.9% (193/570). Most of the farmers, i.e. 54.70% had availed loan. Among them 32.3% had taken loan from co-operative societies. Around 26% of farmers in the study had mortgaged their items (mostly gold) to overcome their financial constraints. About 69.8% (398) of the farmers in this study were dependent on monsoon as the main source of irrigation for farming. In the present study, most of the farmers, i.e. 96.50% (550/570) has reported crop failure. Lack or failure of monsoon was the most common reason (90.71% of farmers) cited for crop failure.

Table 1: Distribution of study subjects according to age and socio-economic status

Variables	Subjects (n=570) (%)
Age in Years	
21-40	109 (19.1)
41-60	330 (57.9)
>= 61	131 (23)
Socio economic class	
Upper Class	2 (0.4)
Upper Middle	16 (2.8)
Middle	187 (32.8)
Lower Middle	273 (47.9)
Lower Class	92 (16.1)

Most of the farmers in the study (72.5%) were using personal protective devices during pesticide application. Farmers with own land were found to be less depressed (29.7%) as compared to farmers without their own land (82.2%) which compelled them to work in others land with low daily wages. In the present study, there was no association found between farmers having loan and depres-

sion but the prevalence of depression was high among those farmers who had loan from multiple sources, i.e. 58.1% followed by private money lenders, i.e. 38.5%. In our study, a significant association was found between farmers who had mortgaged their items, i.e. 48.6% than those who have

not mortgaged. There was no association found between crop failure, usage of pesticides and depression. The farmers who do not use personal protective devices while handling pesticides were found to be more depressed, i.e. 60.7%.

Table 2: Illustrating the association between depression and its determinants

Variables	No Depression (%)	Depression (%)	Total -100%	(p-value)*
Own Land				
Yes	369 (70.3)	156 (29.7)	525	(<0.001)
No	8 (17.8)	37 (82.2)	45	
Loan				
Yes	203 (65.1)	109 (34.9)	312	-0.594
No	174 (67.4)	84 (32.6)	258	
Mortgage				
Yes	76 (51.4)	72 (48.6)	148	(<0.001)
No	301 (71.3)	121 (28.7)	422	
Crop failure				
Yes	361 (65.6)	189 (34.4)	550	-0.182
No	16 (80.0)	4 (20.0)	20	
Personal protective devices				
Yes	290 (70.2)	123 (29.80)	413	(<0.001)
No	24 (39.3)	37 (60.7)	61	

*Chi-square test: P-value <0.05 is significant, # degree of freedom

Table 3: Association between source of loan and depression

Loan source	No Depression	Depression	Total
Nationalized Bank	65 (77.4)	19 (22.6)	84
Cooperative Society	117 (63.6)	67 (36.4)	184
Private Money Lender	8 (61.5)	5 (38.5)	13
Multiple Sources	13 (41.9)	18 (58.1)	31
Total	203 (65.1)	109 (34.9)	312

Chi-square value 13.149; p-value 0.004; df 3
Figure in parenthesis indicate percentage

DISCUSSION

In our study, the overall prevalence of depression in farmers was found to be 33.9% which is high compared to general population. A similar finding was found in a study done by Torske M. O. et al The Hunt study in Norway where farmers found to have high level of depression symptoms than general population.⁴ another study done by Sanne .B et al from Hordaland health study, also found that farmers had significantly higher prevalence of depression than non-farmers.¹⁰ In this study, no association was found between having debt and depression but farmers who had loan from multiple sources and mortgaged their items were found to be more depressed. Study done by Rao T. S. et al regarding prevention of farm suicides also stated that farmers who are caught in high debt traps are prone to mental health problems and suicides.¹⁶

Study done by Bhise M. C. et al in central rural India found that economic risk factors among farmers such as procurement of debt especially from multiple sources and for non-agricultural reasons and leasing out of farms has led to increased farmer's suicide.¹¹ In a study done by Shidhaye R. et al in vidharbha among rural population found that depression was double in those who were in debt.¹² Study done by Dongre A R et al on farmer's suicide in the vidharbha of Maharashtra found that debt, increased cost of cultivation, private money lenders has resulted in increased farmers suicides.¹⁴

In the present study, no association was found between crop failure and depression in farmers, but in a study done by Bhise M. C. et al in central rural India found that crop failure was one of the significant stressful events in farmers increasing the risk of suicide.¹¹ However a study done by Das A on farmers suicide in India has stated that crop failure has accounted for 41% of suicides in farmers.¹⁵

In our study, there was no association between frequencies of usage of pesticides and depression but depression was high among those farmers who were not using personal protective equipments while spraying pesticides. In a study done by Obiare E, et al on modifiable risk factors for depressed mood among farmers in northwestern Iowa found that farmers with pesticide exposure had 1.27 times risk of depression than non exposed farmers.¹³ In an another study done by Medina A.S,

et al on neuropsychiatric disorders in farmers also found that 31.4% of the exposed participants had a diagnosis of major depression with suicidal risk.¹⁷ A similar finding was found in a study done by Weisskopf M. G, et al on pesticide exposure and depression among agricultural workers, which stated that there was an increased hazard ratio for depression among farmers who use herbicides.¹⁸

CONCLUSION

The prevalence of depression was found to be high among farmers compared to the general population. Various factors like loan from multiple sources with high interest, small and marginal farmers without land compelling them to work in others land for low daily wages, lack of usage of personal protective devices during application of pesticides have implicated in high incidence of depression among farmers leading to high rate of suicides. Hence measures such as creation of more self help groups to small and marginal farmers, encouraging for crop rotation techniques and cultivation of multiple crops, regular usage of personal protective devices during pesticide exposure should be planned to help the farming community to overcome this psycho-social distress and to lead a productive life.

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