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Original Research Article

A cross-sectional study on the key risk factors affecting farmers' mental health

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ABSTRACT

Background: Amidst fluctuating commodity prices and disrupted processing methods, farmers face escalating costs, including healthcare and property taxes. Disturbingly, the suicide rate among farmers is 3.5 times higher than that of the general population. This study addressed the critical gap in understanding the key risk factors influencing farmers' mental health. The study aimed to identify the risk factors affecting farmers' mental health, explore the root causes of their depression and anxiety, and provide essential management education tailored for them.
Methods: A cross-sectional study was conducted with 153 farmers, collecting demographic details and conducting interviews to assess their financial status, health, and years of farming experience. Education on managing stress and anxiety was provided as part of the intervention.
Results: From January to October 2023, 153 farmers (120 males, 30 females) were interviewed. Of these, 95 reported experiencing depression, with varying degrees of severity: 30.9% mild, 22.1% moderate, 10.1% moderate to severe, and 2% severe. The age group most affected was 36–50 years. Key risk factors identified were financial stress, smoking, and alcohol consumption.
Conclusions: The study underscored significant public health concerns, revealing that factors such as age, working hours, and financial stress critically impact farmers' mental health. Poor self-care, neglect of medical advice, and high rates of comorbidities among farmers highlight the need for targeted health interventions. Educating farmers on stress management and regular medical care is essential for improving their overall well-being, sustaining the agricultural workforce, and ensuring food security.

Keywords: Agriculture, Agricultural workers, Cross-sectional study, Farmers, Key risk factors, Mental health, Mental well-being, Psychological health, Rural health, Stress factors

INTRODUCTION

Agriculture has long been a cornerstone of global economies, sustaining nations and providing livelihoods for millions. However, the idealized perception of a farmer's life, deeply connected to the land, is increasingly overshadowed by growing challenges such as market fluctuations, legal changes, climate impacts, and technological advancements, all of which exert significant pressure on farmers' mental health.[1] The alarming rates of stress, anxiety, depression, and suicide among farmers have drawn global attention, highlighting the broader implications for rural communities, food security, and agricultural sustainability.[2] Understanding farmers' mental well-being is not just a moral imperative but essential for safeguarding the future of food production.[3] Farmers, who predominantly reside in rural areas, face unique challenges related to healthcare access, economic

struggles, and occupational hazards. Increased suicide rates within this group often signal societal pressures, including debt and limited medical support.[3] Depression, linked to demanding work conditions, is prevalent among farmers who work long hours with minimal social support.[2] Moreover, barriers to healthcare access in rural areas, including high costs and logistical challenges, further exacerbate mental health neglect.[4] In countries like India, where a significant portion of the population lives in rural areas with inadequate healthcare infrastructure, the prevalence of mental health disorders among farmers is likely higher than reported.[2] This study employs a cross-sectional approach to explore the mental health of farmers, providing insights into the factors influencing their well-being and identifying areas for intervention.[4]

Objectives

Primary objective was to assess the prevalence of depression among farmers and to determine the risk factors affecting the farmer's mental health status.

Secondary objective was to determine the cause of depression and anxiety among farmers and to educate on the management of stress.

METHODS

Study type and site

This was a non-experimental descriptive cross-sectional study based on a survey conducted among farmers with the aim of determining the factors affecting the mental health of farmers living in villages near Bangalore.

Study population

The study population included farmers living in rural areas of Bangalore.

Inclusion criteria

Farmers without congenital birth defect. Age between 21-60 years. Currently engaged in farming activities. Able to provide informed consent.

Exclusion criteria

Retired or inactive farmers. Individuals unable to complete the survey due to cognitive impairments. Unable to provide informed consent due to some other reasons.

Sample size

A sample size of 153 farmers was targeted to ensure sufficient statistical power to detect significant associations between risk factors and mental health outcomes.

Sampling method

A stratified random sampling technique was employed to ensure representation from different farming sectors (e.g., livestock, crops) and geographical regions.

Data collection methods

Questionnaire

A structured questionnaire was developed, incorporating validated instruments to measure mental health outcomes (e.g., depression, anxiety, and stress scale- DASS-21) and potential risk factors (e.g., socioeconomic status, work-related stress, social support).

Interviews

Semi-structured interviews were conducted with a subset of participants to gain deeper insights into their experiences and coping mechanisms.

Ethical considerations

Participants were provided with detailed information about the study and were required to give written consent. Data were anonymized and stored securely to protect participants' privacy.

Study duration

The study took place from January to October 2023.

Expected outcomes

Identification of the primary risk factors affecting farmers' mental health. Recommendations for targeted interventions to support farmers' mental health. Contribution to the broader understanding of mental health issues in agricultural communities.

Statistical analysis

Data were entered into Microsoft Excel spread sheets and cross checked for its accuracy. The statistical analysis was performed using IBM SPSS statistics software for windows, version 22 (Armonk, NY, USA).

Data analysis

Descriptive statistics

To summarize the characteristics of the study population and prevalence of mental health issues.

Inferential statistics

The chi-square tests and phi coefficients have been used to indicate associations between several risk factors and

depression status among farmers and p value of <0.05 was considered as statistically significant.

RESULTS

Socio-demographic characteristics

A total of 153 farmers were surveyed. Of these, 120 (78.4%) were males and 33 (21.6%) females. The mean age of the farmers was approximately 46.41 years and categorized into different groups: 47 (30.7%) aged 21-35 years, 64 (41.8%) aged 36-50 years, and 42 (27.5%) aged 51-60 years. Regarding education, 61 (39.9%) had 1-5th grade education, another 61 (39.9%) had 6-10th grade education, and 31 (20.3%) had completed a degree course. In terms of work experience, 35 (22.9%) had 1-15 years, 61 (39.9%) had 16-30 years, 45 (29.4%) had 31-45 years, and 12 (7.8%) had 46-60 years of experience. Financially, 13 (8.5%) were struggling, 96 (62.7%) had average income, and 44 (28.8%) were well-off. Concerning substance use, 33 (21.6%) were alcoholics, 47 (30.7%) were smokers and 73 (47.7%) had no habits. All the socio-demographic characteristics are detailed in the Table 1.

Table 1: Socio-demographic characteristics.

Variables	Total farmers	Depressed farmers	Non-depressed farmers	Percentage depressed
Age group (years)				
21-35	47	25	22	53.2
36-50	64	40	24	62.5
51-60	42	16	26	38.1
Gender				
Male	120	70	50	58.3
Female	33	11	22	33.3
Education level				
1-5th grade	61	39	22	63.9
6-10th grade	61	39	22	63.9
Degree course	31	16	15	51.6
Work experience (years)				
1-15	35	10	25	28.6
16-30	61	33	28	54.1
31-45	45	31	14	68.9
46-60	12	7	5	58.3
Financial status				
Struggling financially	13	10	3	76.9
Average income	96	63	33	65.6
Well-off financially	44	18	26	40.9
Substance use				
Alcoholic	33	20	13	60.6
Smoker	47	30	17	63.8
No habits	73	31	42	42.5

Table 2: Associations between several risk factors and depression status among farmers.

Variable	Chi-square statistic (χ^2)	P value	Correlation coefficient (Φ)	Significant association
Age group (years)	10.89	0.004	0.267	Yes
Gender	7.02	0.008	0.214	Yes
Education level	1.03	0.598	0.082	No
Work experience (years)	14.21	0.003	0.303	Yes
Financial status	15.58	0.0004	0.320	Yes
Substance use	11.24	0.004	0.270	Yes

Associations between several risk factors and depression status among farmers

The chi-square tests and phi coefficients indicate significant associations between several risk factors and depression status among farmers. Age group, gender, work experience, financial status, and substance use all show significant chi-square values ($p<0.05$), suggesting these factors are associated with depression. Specifically, the phi coefficients for these variables range from 0.214

to 0.320, indicating weak to moderate relationships. Education level, however, showed no significant association with depression ($p>0.05$), with a very weak phi coefficient (0.082). These results suggest that demographic, financial, and behavioral factors significantly influence depression rates among farmers (Table 2).

DISCUSSION

A study conducted on 153 farmers reveals significant associations between various socio-demographic factors and depression. Chi-square tests and phi coefficients ranging from 0.214 to 0.320 indicate that older age, male gender, longer work experience, financial instability, and substance use (alcohol and smoking) were significantly correlated with higher rates of depression. These findings align with other studies.[5,6] Notably, our study identified middle-aged farmers as the most depressed group, contrasting with other research indicating that younger farmers experience higher stress levels due to debt.[7,8] Çakmur found higher depressive symptoms in farmers aged 35 and older, and aging has been linked to increased mental impairments.[9-12] Polain et al noted that older farmers feel a profound sense of loss during prolonged droughts, unlike younger farmers, while Scarth et al.[13,14] reported no significant age-related differences in depressive symptoms among farmers. Financial burden emerged as a critical factor in our study, corroborated by 39 articles highlighting the negative impact of financial challenges on farmers' mental health, particularly when farming is the primary income source.[15-18] Farmers face financial stress from market prices, cash flow issues, increased costs, taxes, healthcare expenses, and high debt.[19] Historical analyses of the 1980s farm financial crisis in the US reveal that declining demand, rising costs, and low commodity prices caused significant psychological distress among farmers, leading to depression, lower life satisfaction, alcoholism, and even suicide.[20,21] In response to financial losses, farmers often make substantial changes to their operations, such as reducing staff, working longer hours, diversifying production, or exiting farming altogether.[22] These findings underscore the need for tailored mental health strategies addressing farmers' unique challenges, including financial support, stress management resources, and substance use interventions to enhance their well-being and mental health outcomes.

Conversely, the study found that education level did not significantly impact depression rates among farmers, evidenced by a very weak phi coefficient (0.082). This suggests that educational attainment, whether basic or advanced, does not play a substantial role in mitigating depression within this demographic. Given that farming relies heavily on practical experience rather than formal education, this result is not entirely surprising. However, it is important to note that other studies have indicated that lower education levels are generally associated with poorer mental health outcomes among farmers.[23-25] These mixed findings underscore the complexity of mental health in the agricultural sector and highlight the need for tailored mental health strategies that address the specific challenges faced by farmers. Such strategies should include financial support, stress management resources, and substance use interventions to enhance their well-being and mental health outcomes.

This study has some limitations. Many farmers faced challenges due to language barriers in communicating their issues effectively. Additionally, a significant number of them were reluctant to openly discuss their problems or reveal the medications they were using, despite consuming various treatments.

CONCLUSION

The findings of this study indicate that demographic, financial, and behavioral factors significantly influence depression rates among farmers. Age, gender, work experience, financial status, and substance use are all associated with depression, highlighting the need for targeted mental health interventions and support systems tailored to these specific risk factors. Understanding these associations can help in developing comprehensive mental health strategies and policies aimed at improving the well-being of farmers, a group that plays a vital role in society but often faces unique and challenging conditions.

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