



Identification of Correlation among Field Farmers' Work Ability Index, Occupational Stress Level and Practiced Coping Mechanism in a Selected Rural Area, West Bengal

Indrakshi Basu^{1*}, Rajadurai Premavathy² and Smritikana Mani³

¹Doctoral Research Scholar, Department of Nursing, Rani Meyyammai College of Nursing, Annamalai University, Chidambaram – 608002, Tamil Nadu, India; indacademic2020@gmail.com

²Assistant Professor, Department of Nursing, Rani Meyyammai College of Nursing, Annamalai University, Chidambaram – 608002, Tamil Nadu, India

³Dean (Nursing), The Neotia University, Sarisha - 743368, West Bengal, India

Abstract

Background: Occupational stress is common among field farmers. Evidence suggests altered mental health issues following farming. **Methods and Material:** A cross-sectional study was performed among purposively selected 248 field farmers in a rural area of West Bengal in the span of July to September month, 2022. Four sections were included in the research tool. **Results:** Results found that 98% were small-field farmers. 79.84% of farmers had a moderate work ability index and it was associated with age, marital status, caste, and annual income. Elements of the brief COPE inventory were not associated with the Work Ability Index. The occupational stress factors were presented in the frequency of low to high-level experiences. **Conclusions:** This study demonstrated the association between the Work Ability Index and demographic variables. Occupational stress factors of agricultural, financial and family-related domains were identified.

Keywords: Coping, Field Farmers, Occupational Stress, Work Ability Index

1. Introduction

Occupation is one of the health determinants¹. India's agrarian community covers 58% population on the basis of occupation. Indian farmers are witnessing evolution in farming culture. Primitive and sustenance farming has emerged with the concepts of commercial and plantation farming. The occupational effect on farmer's health has recognised several preventable health problems that need maintenance of life skills i.e. musculoskeletal problems, skin problems, abundant pesticide usage, stress and depression, addiction to substances etc². Sustainable Developmental Goals (2015-2030) guides the expansion of public health boosting the maximisation of benefits of individual from all possible domains alike occupational health³.

The National Health Policy (2017) of India suggests free comprehensive primary health care services for all age groups including occupational diseases. The promotion of mental hygiene in the workplace is mentioned as a cross-sectional health goal. Agricultural workers' occupational injury was

targeted to make half from the level of 334 per lakh farmers by 2020. In such aspect, the present study was framed to identify potential stress factors and coping mechanisms of Farmers¹.

Work ability index is an indicator used for the assessment of occupational health status and resources by a series of questions related to occupational exposure, and health effects⁴. Occupational stress were determined by problems faced by the Indian farmers alike climate change, socioeconomic change, and agricultural changes. Coping mechanisms for the stress factors are having shortfall of evidence⁵. The present study is intended to identify the relation among Work Ability Index, occupational stress factors and practised coping mechanisms. The present study was carried out to measure Work Ability Index and occupational stress level, and practised coping mechanisms used by field farmers. This study was intended to identify the relationship between Work Ability Index with occupational stress factors and practised coping mechanisms. It aimed to find out the association between demographic variables and the Work Ability Index.

*Author for correspondence

2. Subjects and Methods

2.1 Study Type and Setting

A descriptive cross-sectional survey was conducted in a selected rural community of Chakdah block, West Bengal over a period of three months from July 2022 to September 2022 and 248 field farmers participated in this study from Maheswarpur, Tentulberia, Jatrapur, Enayetpur moujas.

2.2 Study Participants and Sampling Technique

A purposive sampling technique was used to select study participants. The sample size was determined based on single population proportion formula with a 5% marginal error and 95% confidence interval by considering an 82% proportion prevalence of stress among farmers⁶. Besides this, by considering the correction formula and 10% non-response rate, a total of 248 farmers were included in this study⁶. The sample size calculation has been done by using the equation as follows:

$$N = z^2 \times p \times (1-p) / d$$

Here n is the sample size, Z is the statistic corresponding to the confidence level, p is the expected prevalence and d is the precision. Only the farmers working in the field, aged between 30 to 59 years were included in the study and the farmers who are deaf and dumb, having a history of diagnosed mental illness were excluded.

2.3 Study Instruments

Data collection was done by using a tool containing four sections on different variables as presented in the following table.

Among these, questionnaire for Work Ability Index⁴ and Brief Cope Inventory were standardised tools whereas questionnaires on background information and occupational stress were prepared by the researcher based on literature. The set of data collection tool was validated by five experts in the Medical and Nursing discipline. As per recommendation, a

few modifications in the data collection tool have been done. The reliability of self-prepared tools and Bengali-translated versions of the tools were tested for reliability by test-retest and the Correlation coefficient (r) ranged from 0.71 to 0.86.

2.4 Statistical Analysis

Data were coded and tabulated in Excel sheets. Data were analysed in SPSS version 27.

2.5 Ethical Consideration

Ethical approval for the study was gained from the institutional ethics committee of the College of Medicine, JNM Hospital, Kalyani, Nadia, West Bengal as per the Indian Council of Medical Research. Participation by field farmers was voluntary and informed consent was signed by the participants after listening to the research information sheet. During data collection and the whole research process, ethical principles were maintained.

3. Results

As per Table 2, among participating 248 field farmers 38.7% (96) belongs to the age group in the range of 50 to 59 years. The majority i.e. 97.2% (241) farmers were married, and 99.2% (246) were of general caste. In an aspect of educational status, 41.9% (104) farmers are class VIII pass and only 0.8% (2) are graduates. 69% (171) and 23.4% (58) of farmers respectively had annual incomes of up to Rs. 1 Lakh and 1.5 lahks. 99.6% had Governmental Health Insurance coverage. 27% (67) farmers had 25 to 30 years of farming experience and 21% (52) farmers used to work 30 to 35 hours weekly. The majority i.e. 98% farmers are small farmers. At most 60.9% (151) of farmers possess up to 0.25-acre land size. 99.6% of farmers are engaged in other occupations.

The pie diagram (Figure 1) depicts respectively 79.84% (198), 15.73% (39) and 4.43% (11) field farmers having moderate, poor and good Work Ability Index.

Table 1. Different variable wise data collection tool and techniques

Section	Variables	Tool	Technique
A	Background information on demography and Agricultural profile	Questionnaire	Question and Answer
B	Work Ability Index	Questionnaire	Question and Answering
C	Occupational stress	Rating scale	Self-report and rating
D	Practised coping mechanism	Brief COPE Inventory	Self-report

Table 2. Background information of field farmers

Variable		Frequency (N = 248)	Percent-age (%)
Age	<40	67	27.0
	40-50	85	34.3
	>50	96	38.7
Marital Status	Married	241	97.2
	Unmarried	7	2.8
Category	General	246	99.2
	SC	2	0.8
Education	Nil	8	3.2
	4th Pass	27	10.9
	5th Pass	27	10.9
	8th Pass	104	41.9
	10th Pass	57	23.0
	12th Pass	22	8.9
	Diploma	1	0.4
	Graduate	2	0.8
	Annual Income	Upto 1 Lakh	171
Upto 1.5 Lakh		58	23.4
Upto 2 Lakh		6	2.4
Upto 2.5 Lakh		6	2.4
Upto 3 Lakh		1	0.4
Up to 5 Lakh		6	2.4
Health Insurance	No	1	0.4
	Yes	247	99.6
Years Spent in Farming	1 to 5	5	2.0
	5 to 10	8	3.2
	10 to 15	37	14.9
	15 to 20	24	9.7
	20 to 25	57	23.0
	25 to 30	67	27.0
	30 to 35	24	9.7
	35 to 40	23	9.3
	40 to 45	3	1.2
Hours spent in farming (per week)	5 to 10	3	1.2
	10 to 15	27	10.9
	15 to 20	8	3.2
	20 to 25	69	27.8
	25 to 30	37	14.9
	30 to 35	52	21.0
	35 to 40	10	4.0
	40 to 45	42	16.9

Table 2. Continued

Variable		Frequency (N = 248)	Percent-age (%)
Type of Farmer	Small	243	98.0
	Medium	4	1.6
	Large	1	0.4
Land Area	Upto 0.25 Acre	151	60.9
	Upto 0.5 Acre	53	21.4
	Upto 0.75 Acre	17	6.9
	Upto 1 Acre	13	5.2
	Upto 1.5 Acre	7	2.8
	Upto 2 Acre	3	1.2
	Upto 2.5 Acre	2	0.8
Other Wages	No	1	0.4
	Yes	247	99.6

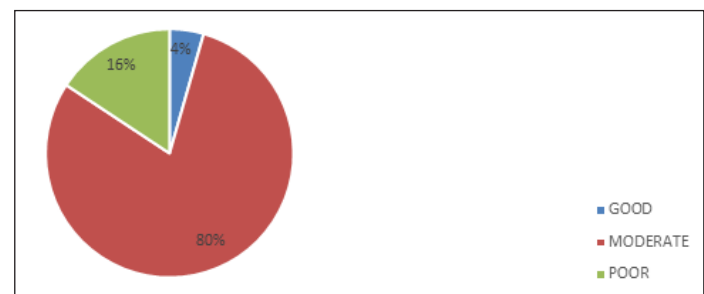


Figure 1. Pie Diagram showing levels of work ability of Field Farmers.

Among agricultural factors respectively very low stress, low stress, moderate stress level and high stress exhibited mostly due to farming injury and accidents (119, 47.98%), mal decision over work distribution (142, 57.26%), equally for Weather and Agricultural Laws and Policy (104, 41.94%), future of farming (25, 10.08%). None of the agricultural factors caused very high stress. Data infers respectively tax and GST (158, 63.71%), lack of earning in geriatric funds (162, 65.32%), lack of emergency funds (112, 45.16%), uncertainty of Governmental help (34, 13.71%) and lack of fund was most financial stress factors in levels of very low, low, moderate, high and very high. The most faced social stress factors show that relation with Panchayat members (111, 44.76%), distance from home to Health Centre (164, 66.13%), and inadequate time for family (125, 50.40%) respectively in the range of very low, low and high levels. In findings by Brief cope inventory, self-distraction was used on concentrating upon another work frequently by 3% and sometimes engaged in entertainment by 71.3% of participants.

Active coping was practised in terms of concentrating my efforts on doing something about the situation I'm in and taking action to try to make the situation better respectively sometimes (135, 54.43%) and seldom (150, 60.48%). Denial-based coping was seldom practised like not believing in truth (155, 62.5 %) and not believing in reality (190, 70.61%). 79% never but 21% of farmers seldom used substances like alcohol, drugs etc. For emotional support field farmers sometimes got help and advice from other people (50.805) and seldom tried to get advice or help from other people (56.04%). Coping by behavioural disengagement in terms of seldom giving up trying to deal with stress (68.55%) and giving up the attempt to cope (52.41%). Sometimes verbalisation to let the unpleasant feelings escape (58.47%) and expression of negative feelings (53.63%) yielded ventilation-related coping style.

There was a statistically significant association of work ability index score with age ($x^2 = 20.08$, $p < 0.001$), marital status ($x^2 = 47.49$, $p < 0.001$), caste ($x^2 = 9.97$, $p < 0.007$), annual income ($x^2 = 25.33$, $p < 0.005$), possession of health insurance ($x^2 = 21.63$, $p < 0.001$), years of farming ($x^2 = 45.93$, $p < 0.001$), possession of land areas ($x^2 = 33.15$, $p < 0.003$) and having other occupation with farming ($x^2 = 21.63$, $p < 0.001$) as calculated by chi-square test. There is a statistically significant correlation between of work ability index and stress related to weather conditions ($r = 0.117$, $p < 0.03$), future of Agriculture ($r = 0.139$, $p < 0.014$), expenditure of farm machinery ($r = 0.108$, $p < 0.045$), Change of workload with climate change ($r = 0.155$, $p < 0.0076$), out of pocket expenditure for health ($r = 0.123$, $p < 0.027$), lots of running daily expenditure ($r = 0.138$, $p < 0.015$) and inadequate time for family ($r = 0.153$, $p < 0.008$). There was no significant association between the Work Ability Index score and coping styles as per the brief COPE inventory calculated by the chi-square test.

4. Discussion

The current study aimed to illustrate the relationship between field farmers' Work Ability Index, occupational stress level and practised coping mechanisms in a selected rural area, in West Bengal. The moderate level of Work Ability Index of farmers mostly existed (80%) which was supported by the values obtained for WAI indicating almost half of the farmers (46.2%) had poor to moderate work ability. Work Ability Index score is associated with the age of farmers⁸.

In a cross-sectional survey personal, financial and time pressures were the sources of greatest concern for farmers which were associated with anxiety and depression⁹. The present study complies with such findings.

Evidence of coping mechanisms practised by farmers were not available in occupational aspects.

5. Recommendation

- Rural health infrastructure is under reform by National Health Mission and so follow-up studies may be done in the same setting.
- Interventional studies on stress management and periodic counselling can yield behaviour change and skill development of lifestyle management.
- Same study can be repeated at the national level and in other countries for comparative analysis.
- Not only stress and coping, occupational issues and their predictors can be researched in a collaborative view of health.
- A monitoring system for formal and informal Agrarian society is possible to develop and exercise in evidence-based practice.

6. Study Limitation

A probability sampling technique was not used which limited the generalisability of the result.

7. Conclusion

The research study identified that the work ability index of field farmers was significantly associated with age, marital status, caste, annual income, and possession of health insurance. This study concludes financial stress factors are correlated with the work ability index whereas coping mechanisms had no significant association.

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