Estimating Mental Hygiene of Farm Women: The Socio-Ecological and Psychological Interpretation

Swagata Ghoshal[1*] and S. K. Acharya[1]

[1]*Department of Agricultural Extension, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, 741252, India.*

Authors' contributions

This work was carried out in collaboration between two authors. Author SG collected data, performed the statistical analysis, managed the literature searches and wrote the first draft of the manuscript. Author SKA designed the study, managed the interpretation of the analyses and supervised the work. Both the authors read and approved the final manuscript.

Original Research Article

ABSTRACT

The health-ecology and ecosystem has become very much vulnerable due to constant pollution, extortion, ground water depletion, arsenic and heavy metal contaminated water. This study dealt with health ecosystem and health dynamics of farm women so that they can combat various ecological and occupational problems as they are provider of food. This study was conducted with objectives to generate classified information on the mental hygiene of farm women. A survey was carried out at Kotulpur Block in Bankura district of West Bengal with one hundred farm women as respondents and they were selected randomly. The data were collected through pilot study, structured interview and focused group interview. The statistical tools used for data analysis were correlation analysis, multiple regression and step-down regression analysis, path analysis, factor analysis and artificial neural network analysis. Twenty independent variables were selected for this study i.e. functional literacy, per capita income, menstrual hygiene, status of drinking water etc. Distance of work place from residence ($x7$), duration of employment ($x9$), per capita income ($x12$), per capita expenditure ($x13$), dizziness ($x17$) and status of drinking water ($x19$) are some of those variables which have made a significant impact on the mental hygiene of farm women. Among those variables, per capita income ($x12$) is the most important factor as it has exerted the highest indirect effect on as many as 13 exogenous variables to characterize the mental hygiene of farm women (y) in path analysis.

Corresponding author: E-mail: swagataghoshal47@gmail.com;

*Keywords: Health; ecology; stress; mental hygiene; income.*

1. INTRODUCTION

Indian peasantry, the largest body of surviving small farmers in the world, today faces a crisis of extinction. Two thirds of India makes its living from the land. The earth is the most generous employer in this country that has farmed this land for more than 5000 years. However, as farming is delinked from the earth, the soil, the biodiversity, the climate are linked to global corporations and global markets, and the generosity of the earth is replaced by the greed of corporations; the viability of small farmers is destroyed.

Agriculture has undergone profound changes and farmers are facing a wide range of stressors. Both male and female farmers have high level of depression than the general working population but the levels of anxiety symptoms don't differ. The differences between farmers and the general-working population in depression symptom levels have increased with age [1]. People from non-farm communities often make assumption that farming communities are living joyful life along with natural beauty without stress, enjoying their risk-free work at farm on day and coming back to home. But in reality, this concept has not been enjoyed by farm-community. These people are facing lots of stress to survive. They are under influence of physical, financial, weather, over work load stress and unable to get rid of these due to various circumstances. This community is engulfed by different kind of stressors. In general, every people work with positive energy and self-confidence for achieving ultimate goal but in distress they are incompetent to remove the burden with limited ability. These crucial conditions arise due to change in opportunities, demand, climate, environment, threat, constrains and old farming practices [2]. Disconnected, asocial behavior, obsessive worries, inability to perform daily tasks or sleep or eat well have become recognized signs of failing mental health for the farmers [3].

Financial worries included irregular and uncertain income and financial debt. Other worries were compliance with new government regulations. Some farmers opted for additional jobs outside the farm to supplement their family income rather than selling the farm which was running at a loss [4]. The financial condition of farming community provides a serious source of stress to them. Farmers often get caught in the price-cost squeeze. Their financial viability is always under serious threat. Prices of the commodities play an important role in income of the farmers as well as technology and associated packages. Market prices for several agricultural commodities are lower than minimum support price (MSP). Low commodity prices, high expenses, high debt, lack of regular cash flow, lack of proper demand-supply chain and not enough money for necessities are the major factors which lead to stress among farming communities.
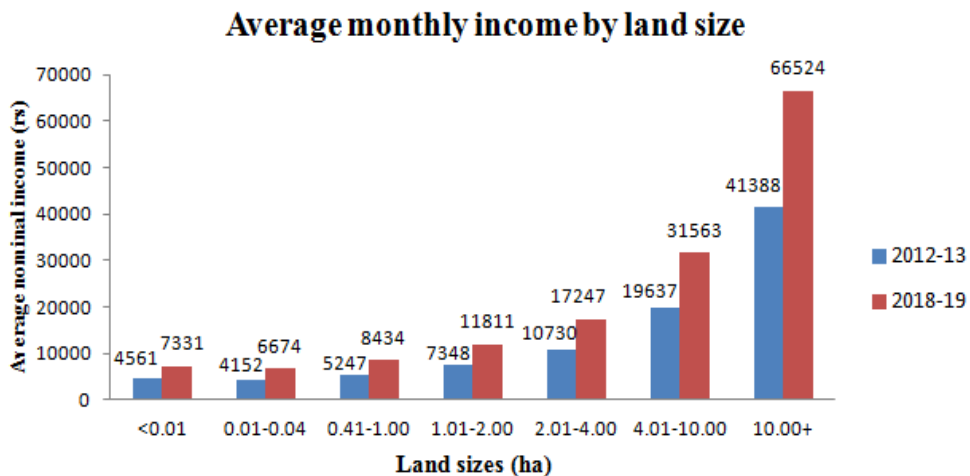
Fig. 1. Average monthly income of farmer in India by land size

In 2016, National Sample Survey Office (NSSO) published a report which showed annual income of farmers in India between July 2012 and June 2013. According to that report, an average agricultural household earned Rs 6,426 per month or Rs 77,112 per year in India. There were significant differences in this amount according to land-ownership. Farmers, owning between 0.01-0.4 ha of land, were reported to earn Rs 4,152 per month, while those owning 10 hectares or more had an income of Rs 41,388 per month [5].

Until 2013-14, minimum support prices (MSP) for different farm products were hiked significantly for five consecutive years. As a result, the "terms of trade" was tilted in favor of agriculture vis-à-vis industry. But, farmers got a limited share of the improvement in the terms of trade. Bulk of the retail prices was retained by middlemen operating in the agricultural value chain. Despite improvement in the terms of trade, investment in agriculture continued to remain negligible. Large hikes in MSP seem to have raised retail prices rather than pushed up farm investment. Within the limited arable land in the country, year-to-year variations in the cropping pattern indicated farmers' helplessness in shuttling between cash crops and food grains depending on market prices of farm products rather than doing something credible to improve productivity.

According to 59th National Sample Survey (NSS 2005), about 40 per cent of farmers wanted to give up agriculture as it has become a highly unviable occupation [6]. 70th National Sample Survey (NSS 2014) reveals worsening of the situation [5]. In case of about two thirds farmers, consumption expenditure was higher than the net income received by these households. This suggests that large numbers of farmers are managing their farming activities by borrowing. This has also adversely affected capital

formation in agriculture. Rising cost of cultivation, particularly labor cost and cost of inputs like fertilizers etc. are the main reason for the non-viability of cultivation (Economic Survey 2015) [7]. In case of farm women, a better understanding of potential women-work environment interactions related to psycho-social hazards and mental health is seriously needed to save the future workforce of agriculture [8].

2. METHODS

2.1 Respondents

The respondents in the study are 100 farm women of Kotulpur block in West Bengal. Some of them work on the family farm and some as hired agricultural labors.

2.2 Research Locale

Four gram panchayat namely Sihar, Deshra Koalpara, Lowgram and Kotulpur of the Kotulpur block of Bankura district in West Bengal was purposively selected for the study. Twenty four villages were selected by random sampling. The area had been selected for the experienced, well versed and venturesome respondents.

2.3 Sampling Design

Inclusive approach as well as multistage random sampling techniques were adopted for this study. For selection of state, district, block and gram panchayat purposive sampling techniques were adopted because the area was ideal for Health and Stress related study, convenient for researcher and it had the infrastructural facilities. In case of selection of villages and respondents simple random sampling technique was taken up.

Table 1. Sampling technique and sampling design

Step	Items	Level	Approach
1	State	West Bengal	Purposive
2	District	Bankura	Purposive
3	Subdivision	Bishnupur	Purposive
4	Block	Kotulpur	Purposive
5	Gram Panchayat	1) Sihar	Purposive
		2) Deshra Koalpara	
		3) Lowgram	
		4) Kotulpur	
6	Respondents	50	Random
Total number of respondents: 100			

2.4 Pilot Study

Before taking up actual fieldwork a pilot study was conducted to understand the area, its people, institution, communication and extension system and the knowledge, perception and attitude of the people towards health and stress related issues. An outline of the socio-economic background of the farmers of the concerned villages, their opinion towards different types of technologies, socialization process, natural resources, ecology, health problems, stress related issues, drudgery, nutritional aspects, gender discrimination, conflict and confusion helped in the construction of reformative working tools.

2.5 Preparation of Interview Schedule

On the basis of the findings of pilot study a preliminary interview schedule was formed with the help of literature and by the assistance of Chairman of Advisory Committee. The interview schedule consisted of three major parts according to the specific objectives of the study.

2.6 Techniques of Field Data Collection

The respondents were personally interviewed from April 2019 to October 2019. The items were asked in Bengali version in simple terms so that the respondents could understand easily. The entries were done in the schedule by student investigator herself at the time of interview.

2.7 Variables and their Measurements

Several researchers pointed out that the behavior of an individual could be understood more in depth if one has the knowledge of some variables, which comprised the constructed world of reality within which an individual received the stimuli and acts. The socio personal, agro economic, socio-psychological and communication variables are such type of variables, which determine the behavior of an individual. Appropriate operation and measurement of the variables help the researcher to land upon the accurate conclusion. Therefore, the selected variables for this study had been operated and measured in following manner.

Variables in the present study have been categorized into two main categories.

  1) Independent variable
  2) Dependent variable

2.7.1 Independent variables

Age (x_1), functional literacy (x_2), no of children (x_3), family size (x_4), no of farm activities (x_5), working hour per day (x_6), distance of work place from residence (x_7), wages received (x_8), duration of employment (x_9), no of animals reared (x_{10}), size of holding (x_{11}), per capita income (x_{12}), per capita expenditure (x_{13}), per capita debt (x_{14}), deviation of blood pressure (x_{15}), pulse rate (x_{16}), dizziness (x_{17}), menstrual problem (x_{18}), status of drinking water (x_{19}), menstrual hygiene (x_{20}).

2.7.2 Dependent variable

2.7.2.1 Mental hygiene of farm women (y)

Mental hygiene or mental health is the level of psychological well-being or an absence of mental illness. According to World Health Organization (WHO) mental health includes subjective well-being; perceived self-efficiency; autonomy, competence, inter generational dependence, and self-actualization of one's intellectual and emotional potential, among others. It is the state of functioning at a satisfactory level of emotional and behavioral adjustment of an individual. In the present study it is calculated as follows:

Mental hygiene of farm women = [(a+b+c)/3]

Whereas, a = Mental pressure, b = Anxiety, c = Awareness about hygiene

The judgments of a, b, c were given on a 10-point scale.

3. RESULTS AND DISCUSSION

The qualitative data is quantified by using specific numerical procedure. Then the quantified data were put under five statistical analysis i.e. correlation analysis, multiple regression and step-down regression analysis, path analysis, factor analysis and artificial neural network analysis. The findings and the revelations are discussed below-
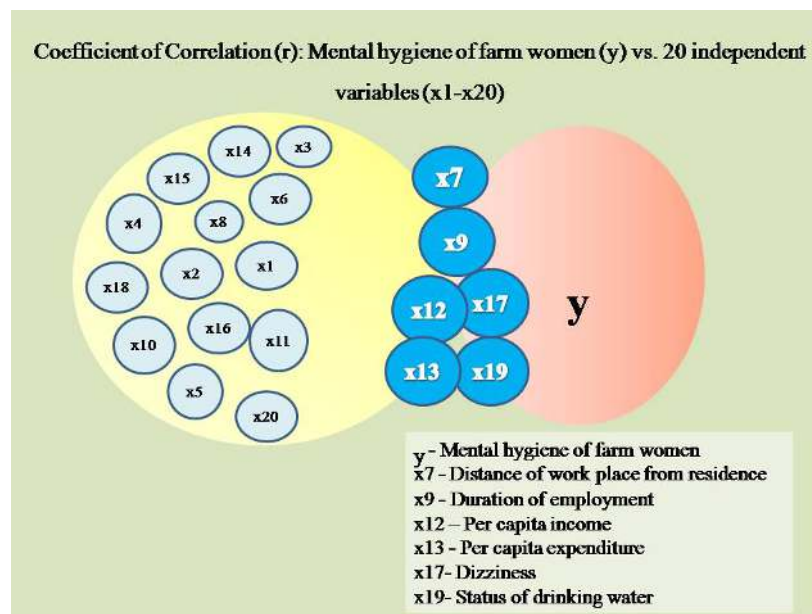
3.1 Correlation Analysis

3.1.1 Results

Table 2 presents the coefficient of correlations between mental hygiene of farm women (y) and 20 independent variables (x_1-x_{20}). It has been found that the variables distance of work place

from residence (x7), duration of employment (x9), per capita income (x12), per capita expenditure (x13), dizziness (x17) and status of drinking water (x19) have recorded significant correlations with the dependent variable mental hygiene of farm women (y).

Table 2. Co-efficient of correlation (r): Mental hygiene of farm women (y) vs. 20 independent variables (x1-x20)

Sl. no.	Variables	r value	Remarks **: significant at 0.01 level *: significant at 0.05 level
1.	Age (x1)	.076	
2.	Functional literacy (x2)	-.065	
3.	No of children (x3)	.216	
4.	Family size (x4)	-.011	
5.	No of farm activities (x5)	-.152	
6.	Working hour per day (x6)	-.063	
7.	Distance of work place from residence (x7)	.325	*
8.	Wages received (x8)	-.018	
9.	Duration of employment (x9)	-.281	*
10.	No of animals reared (x10)	-.095	
11.	Size of holding (x11)	-.198	
12.	Per capita income (x12)	-.326	*
13.	Per capita expenditure (x13)	-.324	*
14.	Per capita debt (x14)	-.116	
15.	Deviation of blood pressure (x15)	.017	
16.	Pulse rate (x16)	-.040	
17.	Dizziness (x17)	.390	**
18.	Menstrual problem (x18)	.016	
19.	Status of drinking water (x19)	.355	*
20.	Menstrual hygiene (x20)	.032	

Revelation

Fig. 2. Correlation analysis among mental hygiene of farm women and 20 independent variables

The variable distance of work place from residence (x7) has recorded a positive and significant correlation with mental hygiene of farm women (y). It implies that the farm women, whose distance of work place from residence is high, they are under immense anxiety and mental pressure. Another variable duration of employment (x9) has recorded a negative but significant correlation with mental hygiene of farm women (y) which implies that the farm women, who are having more working days in a year, are with less anxiety and mental pressure as they are earning more money. So, duration of employment can be a better estimator for predicting status of mental hygiene for farm women under study. Per capita income (x12) has recorded a negative but significant correlation with predicted variable. This indicates that farm women, whose per capita income is high, their anxiety and mental pressure are less as they are earning more money. The variable per capita expenditure (x13) has recorded a negative but significant correlation with mental hygiene of farm women (y). Another variable dizziness (x17) has recorded a positive and significant correlation with mental hygiene of farm women (y). It implies that farm women, who are suffering from dizziness, are also getting trouble from

stress and anxiety due to drudgery. The variable status of drinking water (x19) has recorded a positive and significant correlation with dependent variable. This indicates that farm women, who take drinking water from protected sources like tube well, deep tube well, spout, supplied water etc, have better awareness about hygiene than those farm women who take drinking water from surface and unprotected sources like pond, mud well etc. Drinking water always plays a central role in hygiene. So status of drinking water is a good estimator of awareness about hygiene of farm women.

3.2 Regression Analysis

3.2.1 Results

Table 3 presents the multiple regression analysis where in 20 causal variables have been regressed against the consequent variable mental hygiene of farm women (y) to estimate the functional impact of 20 causal variables on the consequent variable mental hygiene of farm women (y). The R square value is 62.4 per cent, which implies that by the conglomeration of 20 causal variables, 62.4 per cent of variance in the consequent variable, mental hygiene of farm

Table 3. Multiple regression analysis: Mental hygiene of farm women (y) vs. 20 causal variables (x1-x20)

Sl. no.	Variables	Regression coefficient B	S. E. B	Beta	t value
1.	Age (x1)	.008	.039	.075	.210
2.	Functional literacy (x2)	.158	.132	.257	1.199
3.	No of children (x3)	.187	.203	.149	.920
4.	Family size (x4)	-.194	.153	-.270	-1.269
5.	No of farm activities (x5)	-.323	.173	-.278	-1.868
6.	Working hour per day (x6)	.088	.104	.147	.847
7.	Distance of work place from residence (x7)	.221	.134	.263	1.645
8.	Wages received (x8)	.001	.014	.016	.091
9.	Duration of employment (x9)	.000	.003	-.028	-.161
10.	No of animals reared (x10)	.026	.029	.144	.911
11.	Size of holding (x11)	-.008	.009	-.166	-.835
12.	Per capita income (x12)	.000	.000	-1.188	-1.407
13.	Per capita expenditure (x13)	.000	.000	.716	.895
14.	Per capita debt (x14)	.000	.000	-.204	-.999
15.	Deviation of blood pressure (x15)	-.006	.040	-.027	-.160
16.	Pulse rate (x16)	-.043	.056	-.103	-.754
17.	Dizziness (x17)	.210	.108	.398	1.936
18.	Menstrual problem (x18)	.022	.118	.033	.189
19.	Status of drinking water (x19)	.375	.163	.333	2.298
20.	Menstrual hygiene (x20)	-.031	.110	-.055	-.281

R square: 62.4 per cent
Standard error of the estimate: .922

Table 4. Stepwise regression analysis: Mental hygiene of farm women (y) vs. 4 causal variables (x17, x12, x19, x7)

| SI. no.	Variables	Regression coefficient B	S. E. B	Beta	t value
1.	Dizziness (x17)	.184	.060	.349	3.087
2.	No of farm activities (x5)	-.323	.173	-.278	-1.868
3.	Status of drinking water (x19)	.388	.129	.344	3.012
4.	Distance of work place from residence (x7)	.254	.092	.303	2.769

R square: 48.1 per cent
Standard error of the estimate: 0.870

women (y) has been explained. In other side, per unit change in distance of work place from residence, duration of employment, per capita income, per capita expenditure, dizziness and status of drinking water, positively or negatively, have a reciprocal impact of (+0.221), (+0.001), (+0.001), (+0.001), (+0.210) and (+0.375) unit of change in mental hygiene of farm women.

Table 4 presents the stepwise regression analysis to isolate the variables from 20 causal variables, having dominance of effect on consequent variable, mental hygiene of farm women (y). In stepwise regression analysis 4 causal variables have been retained in the last step which implies their critical and efficient contribution to the resultant behavior of the variable mental hygiene of farm women (y). So, these 4 causal variables are as important as in optimum resource allocation or strategic importance in management of mental hygiene of farm women.

From Table 4 it has been found that 4 variables dizziness (x17), no of farm activities (x5), status of drinking water (x19) and distance of work place from residence (x7) has been the most dominant contributor in estimation of mental hygiene of farm women (y). These 4 causal variables together explained 48.1 per cent of the variables from 20 causal variables. Dizziness (x17) here has been retained as a causal variable. It is quite obvious that dizziness has impact on stress and anxiety of farm women. So it can be a good predictor of mental hygiene status of farm women. No of farm activities (x5) here also has been retained as a causal variable. When no of farm activities increases, stress, drudgery and mental pressure will enhance. In that socio-economic condition, mental hygiene of farm women will worsen. Status of drinking water (x19) been retained as a causal variable. Surely status of drinking water is an indicator of awareness about hygiene. A person, who takes drinking water from like protected well or piped

Revelation
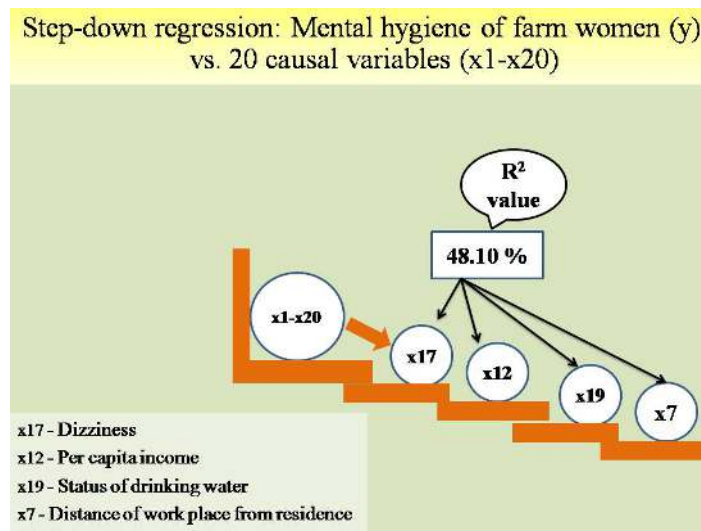
Fig. 3. Step-down regression analysis among mental hygiene of farm women and 20 independent variables

Table 5. Mental hygiene of farm women (y) vs. 20 exogenous variables (x1-x20)

Sl. no.	Variables	Total effects	Direct effects	Indirect effects	Highest indirect effects
1.	Age (x1)	0.07602	0.079	-0.00298	-0.45297 (x12)
2.	Functional literacy (x2)	-0.06499	0.256	-0.32099	0.28459 (x12)
3.	No of children (x3)	0.21601	0.149	0.06701	0.15164 (x17)
4.	Family size (x4)	-0.01102	-0.27	0.25898	0.57866 (x12)
5.	No of farm activities (x5)	-0.15201	-0.278	0.12599	0.24071 (x12)
6.	Working hour per day (x6)	-0.063	0.147	-0.21	0.18735 (x12)
7.	Distance of work place from residence (x7)	0.32501	0.261	0.06401	0.21226 (x12)
8.	Wages received (x8)	-0.01798	0.015	-0.03298	-0.0827 (x7)
9.	Duration of employment (x9)	-0.28099	-0.027	-0.25399	-0.16352 (x17)
10.	No of animals reared (x10)	-0.095	0.143	-0.238	-0.09146 (x17)
11.	Size of holding (x11)	-0.198	-0.167	-0.031	-0.13278 (x7)
12.	Per capita income (x12)	-0.32601	-1.186	0.85999	0.69955 (x13)
13.	Per capita expenditure (x13)	-0.324	0.714	-1.038	-1.16207 (x12)
14.	Per capita debt (x14)	-0.11598	-0.205	0.08902	-0.31542 (x12)
15.	Deviation of blood pressure (x15)	0.01699	-0.027	0.04399	-0.37827 (x12)
16.	Pulse rate (x16)	-0.04002	-0.103	0.06298	-0.09012 (x12)
17.	Dizziness (x17)	0.39	0.396	-0.006	-0.14724 (x2)
18.	Menstrual problem (x18)	0.01598	0.031	-0.01502	-0.26087 (x12)
19.	Status of drinking water (x19)	0.35499	0.334	0.02099	-0.22293 (x12)
20.	Menstrual hygiene (x20)	0.03204	-0.053	0.08504	0.434 (x12)

Residual effect: 37.632 per cent

water, has higher awareness about hygiene than that person who rely upon sources like surface water, unprotected and contaminated water. Distance of work place from residence (x7) here also has been retained as a causal variable. It can be exerted from the result that farm women's stress and anxiety will increase if distance of work place from residence increases due to drudgery.

3.3 Path Analysis (Decomposition of Total Effects into Direct, Indirect and Residual Effect)

3.3.1 Results

Table 5 presents the path analysis where in co-efficient of correlation(r) are being decomposed into the direct, indirect and residual effect. The result reveals that variable per capita income (x12) has exerted the highest direct effect and per capita expenditure (x13) has exerted the highest indirect effect. So, the functional and operational contribution of per capita income and per capita expenditure has been the highest on mental hygiene of farm women (y).

Per capita income (x12) has also exerted the highest indirect effect on as many as 13 exogenous variables to characterize the mental

hygiene of farm women (y). So, no matter how important and effective are the four variables i.e. Distance of work place from residence (x7), duration of employment (x9), dizziness (x17) and status of drinking water (x19); per capita income (x12) and per capita expenditure (x13) are coming up both directly and indirectly as prime determinant of farm women's mental hygiene status. It is quite easy to depict that earnings and expenditure has tremendous effect on mental hygiene i.e. Stress and anxiety. High income can reduce mental pressure. For these reason, per capita income (x12) and per capita expenditure (x13) have come up both directly and indirectly as prime determinant of farm women's mental hygiene status.

In path analysis, it has exerted that per capita income (x12) has the highest indirect effect on the exogenous variable distance of work place from residence (x7) which has recorded significant correlations with the dependent variable mental hygiene of farm women (y). Dizziness (x17) has the highest indirect effect on another exogenous variable duration of employment (x9) which has recorded significant correlations with the dependent variable mental hygiene of farm women (y). So it can be implied that not only duration of employment but dizziness also has impact on mental hygiene of

farm women. Per capita expenditure (x13) has the highest indirect effect on exogenous variable per capita income (x12) and per capita income (x12) has the highest indirect effect on exogenous variable per capita expenditure (x13).

Per capita income (x12) also has the highest indirect effect on the exogenous variable status of drinking water (x19) which has recorded significant correlations with the dependent variable mental hygiene of farm women (y).

Revelation
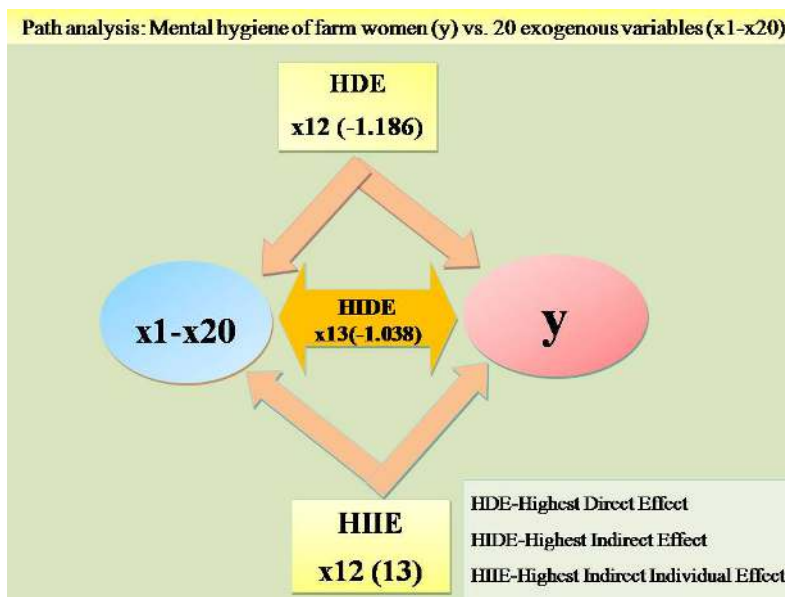
Fig. 4. Path analysis among mental hygiene of farm women and 20 independent variables

Table 6. Strategic conglomeration of variables into factors

Factors	Variables	Factor loading	% of variance	Cumulative %	Factor renamed
Factor-1	Age (x1)	.818	20.402	20.402	**Health ecology**
	Functional literacy (x2)	-.756			
	No of farm activities (x5)	-.594			
	Deviation of blood pressure (x15)	.580			
	Menstrual problem (x18)	.860			
	Menstrual hygiene (x20)	-.641			
Factor-2	Per capita income (x12)	.976	12.453	32.855	**Economic behavior**
	Per capita expenditure (x13)	.982			
Factor-3	Family size (x4)	.522	11.484	44.339	**Family competency**
	Wages received (x8)	.719			
	Per capita debt (x14)	-.796			
Factor-4	Status of drinking water (x19)	-.858	7.858	52.196	**Psychosocial factor**
	Mental hygiene of farm women (y)	-.642			
Factor-5	Distance of work place from residence (x7)	.551	6.779	58.976	**Geo-somatic behavior**
	Pulse rate (x16)	.758			
Factor-6	Working hour per day (x6)	.784	5.945	64.921	**Wage ecology**
	Duration of employment (x9)	.711			
Factor-7	No of children (x3)	.848	5.042	69.963	**No of children**
Factor-8	No of farm activities (x5)	-.916	4.552	74.515	**No of farm activities**

The residual effect being 37.632 per cent, it is to conclude that even with a combination of 20 exogenous variables, 37.632 per cent of variance in consequent variable mental hygiene of farm women (y) could not be explained.

3.4 Factor Analysis

3.4.1 Results

Factor analysis is a data reduction analysis and it helps in functional conglomeration of the different variables into a common functional variable. It reduces the information in a model by deducting the dimensions of the observations. This analysis has multiple purposes. It can be used for minimizing the cost, resource rationalization, policy promulgation and simplification of data i.e. reducing the number of variables in predictive regression models. If factor analysis is used for these purposes, most often factors are rotated after extraction.

Table 6 presents the factor analysis for the conglomeration of apparently different 24 variables into 8 numbers of factors based on factor loading. Renaming of the factors has been done based on nature and homogeneity of performing variables.

3.4.2 Revelation

It has been found that factor-1 accommodates six variables together viz. age (x1), functional literacy (x2), no of farm activities (x5), deviation of blood pressure (x15), menstrual problem (x18) and menstrual hygiene (x20) with 20.402 per cent of variance. This factor has been renamed as health ecology. Factor-2 has accommodated two variables together viz. per capita income (x12) and per capita expenditure (x13) with 12.453 per cent of variance. This factor has been renamed as economic behavior. Factor-3 has accommodated three variables together viz. family size (x4), wages received (x8) and per capita debt (x14) with 11.484 per cent of variance. This factor has been renamed as family competency. Factor-4 has accommodated two variables together viz. status of drinking water (x19) and mental hygiene of farm women (y) with 7.858 per cent of variance. This factor has been renamed as psychosocial factor. Factor-5 has accommodated two variables together viz. distance of work place from residence (x7) and pulse rate (x16) with 6.779 per cent of variance.

Model 1. Mental hygiene of farm women (y) vs. 23 input variables
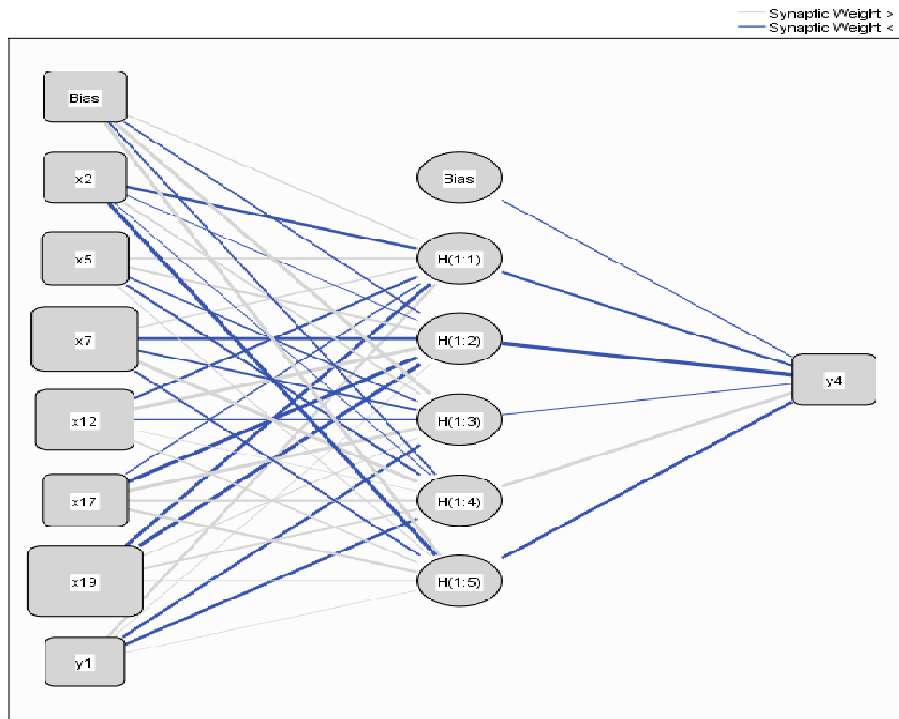
Hidden layer activation function: Hyperbolic tangent
Output layer activation function: Identity

This factor has been renamed as geo-somatic behavior. Factor-6 has accommodated two variables together viz. working hour per day (x6) and duration of employment (x9) with 5.945 per cent of variance. This factor has been renamed as wage ecology. Factor-7 has accommodated only one variable viz. no of children (x3) with 5.042 per cent of variance. This factor has not been renamed. Factor-8 has accommodated only one variable viz. no of farm activities (x5) with 4.552 per cent of variance. This name of the factor has not been changed.

3.5 Artificial Neural Network Analysis

3.5.1 Results

Model-1 depicts the artificial neural network analysis of mental hygiene of farm women. (y) vs. 23 input variables. Here seven input variables functional literacy (x2), no of farm activities (x5), distance of work place from residence (x7), per capita income (x12), dizziness (x17), status of drinking water (x19) are passed through the hidden layers and after been activated mental hygiene of farm women (y).

3.5.2 Revelation

Functional literacy (x2) has been found out as one of the dominant input to characterize output mental hygiene of farm women (y4). Similarly, no of farm activities (x5), distance of work place from residence (x7), per capita income (x12), dizziness (x17), status of drinking water (x19) have been identified as strongest determinants to characterize output mental hygiene of farm women (y).

4. CONCLUSION

Agriculture has one of the worst records for high incidence of occupational ill health, injuries and work-related fatalities after construction industry [9]. In various countries, health investment, health education, community mobilization etc are in very fragile condition, so farming community is losing their stability. Everyday farmers are exposing themselves to the contaminated environment, accepting the risks and getting themselves well-vulnerable to the socio-ecological condition. Work-related stress is a major source of psychosocial hazards that has not been prioritized in the agricultural sector of most developing nations. Physical, psychological or social stressors could be originated probably due to the intricate way agriculture is carries out

in the developing countries [10]. Their inbuilt immunity is diminishing day by day due to constant pollution, extortion, ground water depletion, arsenic and heavy metal contaminated water. They must be protected by improving the health-ecosystem, building the herd immunity among them and making the ecosystem healthier and more agile. In this time of pandemic situation, so long and until this day, mankind has to live with virus by building own immunity which can be gained by adapting safe food, safe water and healthy practices. It is very much relevant to the context of agro-ecosystem as farmers are the provider of food for millions of people across the world. The whole civilization can survive only if they survive. If the farmers fall victim to this kind of humongous apocalyptic disaster, then the entire civilization will face extinction. So this is the high time to protect our farming community.

CONSENT

As per international standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Torske MO, Hilt B, Glasscock D, Lundqvist P, Krokstad S. Anxiety and depression symptoms among farmers: The hunt study, Norway. Journal of Agromedicine. Taylor & Francis. 2016;21(1):24-33.
2. Kureshi JS, Somasundaram KV. Assessment of occupational stress among farmers in Aurangabad district, Maharashtra. International Journal of Community Medicine and Public Health. 2018;5(4):1434-1440.
3. Wal A. The Maharashtra government's efforts to provide mental-health care amid rising farmer suicides. National Institute of Mental Health and Neurosciences; 2020.
4. Fraser C, Smith K, Judd F, Humphreys L, Fragar L, Henderson A. Farming and mental health problems and mental illness. International Journal of Social Psychiatry. 2005;51:340-349.
5. National Sample Survey Organization: Key indicators of debit and investment in India; 2014.

6.   National Sample Survey Organization: Key indicators of situation of agricultural households in India (NSS 59th Round); 2005.
7.   Government of India, Economic Survey; 2014-15 and 2015-16.
8.   Chatterjee R, Acharya SK. Psychological stress and health hazards of farm women: The social ecology and inflicting functions.

Journal of Education, Society and Behavioral Science. 2020;33(4):21-32.
9.   Chris I. Pastoral care. Safety health practitioner magazine. Borehamwood, London: United Media; 2008.
10.   Olowogbon TS. Stress management: An abandoned work-ethic in agriculture. African Newsletter on Occupational Health and Safety. 2014;24:9-11.