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A Descriptive Study to Assess the Knowledge regarding Prevention of Farmer's Lung among Farmers from Selected Rural Areas

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Abstract: ***Aim of the study: The study aims to assess the knowledge regarding prevention of farmer's lung among farmers from selected rural areas. Problem statement: A descriptive study to assess the knowledge regarding prevention of farmer's lung among farmers from selected rural areas. Primary objective: To assess the knowledge regarding prevention of farmer's lung among farmers from selected rural areas. Secondary objectives : 1) To associate the knowledge regarding prevention of farmer's lung among farmers with their age. 2) To associate the knowledge regarding prevention of farmer's lung among farmers with gender. 3) To associate the knowledge regarding prevention of farmer's lung among farmers with their educational status. 4) To associate the knowledge regarding prevention of farmer's lung among farmers with duration of work. Method: A non-experimental research design with non-probability convenient sampling technique was used to assess the knowledge regarding prevention of farmer's lung among farmers from selected rural areas among 106 farmers. The data was collected by using Structured knowledge questionnaire. Results: The findings of the study revealed that the distribution of subjects in relation to their demographic characteristics. In the present study the distribution of subjects in relation to their age in year, 28.30% of the subjects were in the age group of 20-25 years and 71.70% of them were in the age group of 25-30 years. In relation to their gender 47.20% of the subjects were males and 52.80% of them were females. In relation to their educational status 17.90% of the subjects were educated up to primary standard, each 40.60% of them were educated up to secondary, 40.60% of them were educated up to higher secondary standard and 0.90% of them were graduates. In relation to their duration of work 8.50% of them had less than one year, 38.70% of them had 1-5 years, 26.40% of the subjects were having duration of work of 5-10 years and 26.40% of the subjects were having duration of work of 10 years and above. Out of 106 samples 100% of the subjects did not attend any workshop/seminar regarding farmer's lung disease. Assessment of level of knowledge regarding prevention of farmer's lung among subjects from selected rural areas. The level of knowledge score was divided under following heading of poor, average, good and excellent. 8.5% of the subjects had poor level of knowledge, 38.7% had average level of knowledge and 26.4% of them had good and excellent level of knowledge. Interpretation and conclusion: After the detailed analysis, this study leads to following conclusion, that among all subjects 8.5% of the subjects had poor level of knowledge, 38.7% had average level of knowledge and 26.4% of them had good and 26.4% of them had excellent level of knowledge regarding prevention of farmer's lung among subjects working in farm. The demographic variables of subjects were statistically not associated with their knowledge score. The finding should be used to design awareness strategy for prevention of farmer's lung, thereby decreasing burden of farmer's lung disease as well as respiratory illnesses among farmers.***

Keywords: FLD (Farmer's lung disease) HP (Hypersensitive pneumonitis) COPD (Chronic obstructive pulmonary disease) PPE (Personal protective equipment)RPE (Respiratory protective equipment) ILD (Interstitial lung disease) HBM (Health belief model) APP (Acute pesticide poisoning) FEV (Forced expiratory volume) FVC (Forced vital capacity) ARI (Acute respiratory infection) OR (Odds ratio) LSD (Least significant difference)

1. Introduction

Farmer's lung disease (FLD) is a form of hypersensitivity pneumonitis which is caused by inhalation of microorganisms from dust, hay or grains stored in conditions of high humidity in the agricultural workplace. The most common antigens are usually thermophilic actinomycetes, moulds and fungi. The clinical manifestations are differentiated as, the chronic (exposure to lower concentrations of the antigen over a longer period time) and the acute forms (after exposure to high concentrations of the antigen). There is no possible treatment for farmer's lung only the best treatment is to avoid the antigen, so it is necessary to educate patients on preventive measures.[1]

Farmer's lung is a disease caused by an allergy to the mold in certain crops. Farmers are more prone to get it because they work in agriculture sector and it's usually caused by inhalation of dust from hay, corn, grass for animal feed, grains, tobacco, or some pesticides. It's also known as extrinsic allergic alveolitis, hypersensitivity alveolitis, or hypersensitivity pneumonitis. Hypersensitivity pneumonitis is a disease condition which is also called as extrinsic allergic alveolitis. It is a respiratory syndrome, due to a delayed allergic reaction it involves the lung parenchyma and specifically the alveoli, terminal bronchiole, and alveolar interstitium, such reactions are secondary to a recurrent and prolonged inhalation of different types of organic dusts, hay or other substances to which the patient is exposed and hyper responsive, primarily consisting of organic dusts, dust from stored grains or vegetable origin, more rarely from chemicals.[3]Agriculture involves a wide range of different types of machines, animals, plants and products, working in both inside and outside of the environments under various geographic and climatic conditions. Thus, agriculture becomes one of the most hazardous of all sectors and many agricultural workers suffer from various occupational accidents and illnesses. One of the most important related causes of such ill health are exposure to dust and other organic substances such as pesticides and fertilizers, dust, chemicals, and infectious agents.

Pesticides are the chemicals are mainly involved in regard to health and safety in agriculture. Dust brings out through the production of various grains, legumes and other agriculture crops. To prevent hazards, it is necessary to use of personal protective equipment. wearing PPE can generally reduce the risk of exposure of dermal, inhalation, eye, and oral, it does not necessarily eliminate it but significantly reduce the chances of a pesticide poisoning. Respirators protect from inhalation of pesticides, contaminated air, dust.[4]

Need for the Study

Agricultural areas have potentially remarkable sources of exposure to respiratory irritants and allergens which are related with respiratory diseases. From an occupational and environmental perspective on a global scale, exposures to organic and inorganic dusts, biological material such as endotoxin and mould, pesticides, and chemicals are prevalent in agriculture and are associated with a wide variety of respiratory symptoms and diseases. Another interstitial lung disease recently related with agricultural exposures is pneumoconiosis. Characterized by inflammation and fibrosis, occupational pneumoconiosis is caused by the inhalation of inorganic dusts, which settle in the lungs and lead to alveolar inflammation and lung tissue remoulding.[7]The hypersensitivity pneumonitis is also called as extrinsic allergic alveolitis. It is an immunologically mediated inflammatory disease of the lung which involves the terminal airways. The condition is related with intense or recurrent exposure to inhaled biologic dusts. Many studies have revealed the most important evidence for farmer's lung is the exposure to dust from mouldy hay or other mouldy crops and the development of signs and symptoms. Farmers are getting more affected due to farmer's lung disease. Many farmers are suffering from various respiratory disease because of always come in contact with dust, crops, pollens as well as by inhaling microorganisms from hay or grain stored in conditions of high humidity in the agricultural workplace.

2. Review of Literature

Review of literature was carried out on recent and ongoing research relevant to the present study. After thorough review, investigator has classified the literature based on variables which support aims and objectives of study.

The literature as follows –

1) Review of literature related to incidence and prevalence regarding lung diseases.
2) Review of literature related lung disease among farmers.
3) Review of literature related to preventive measures among farmers.

Assumptions

The study assumes that, subjects working in selected rural areas have inadequate knowledge regarding prevention of farmer's lung disease.

Limitation

The study is limited to the subjects working in farm.

Hypothesis

No hypothesis is stated in this study hence this study is hypothesis generating study.

3. Methodology

Research approach

A quantitative research approach was used for the study

Research design

A non-experimental descriptive research design.

Variables under study:

- Research variable:-knowledge regarding prevention of farmer's lung among farmers.
- Demographic variable:-Age, Gender, Marital status, duration of work

Accessible population-Farmers working in farm and those who fulfils the inclusion criteria.

Sample and sampling technique

Sample: Farmers working in farms.

Sample size: Sample size was 106 however. It was calculated by using Cochran formula.

Sampling technique: non-probability convenient sampling technique was used.

Inclusion criteria:

- Those present at the time of data collection.
- Those who were willing to participate in the study.
- Those who can read and write Marathi

Exclusion criteria:

- Those who had attended educational program regarding prevention of farmer's lung.
- Those having Farmer's lung disease.

Tool Preparation

Development of tool: A tool is an instrument or equipment used to collect data. Reviews from various resources like textbooks, journals, periodicals, magazines, published thesis, newsletter etc. The investigator developed the tool after updating theoretical knowledge regarding prevention of farmer's lung, the investigators own experience, theoretical knowledge and guidance from the experts along with the review of literature helped in developing the tool necessary for the study.

After such deliberations, the investigator has constructed Structured knowledge questionnaires.

Description of Tools:

Structured knowledge questionnaires

Data collection tool used for the study consisted of two sections

Section A-Demographic data: It consisted of demographic characteristics i.e. age, gender, educational status, and duration of work.

Section B-Structured knowledge questionnaire
The investigator constructed 24 multiple choice questions to assess the knowledge regarding prevention of farmer's lung.

Tool Validity
To ensure content validity of the tool, structured knowledge questionnaire was submitted to 9 experts from the field of Medical Surgical Nursing (n= 5) field of Community Health Nursing (n=1) and department of Medicine (n= 1). It was also given to a statistician (n=1) to for analysing appropriateness of the tool and drawing reasonable conclusions. For correcting the errors in the language and to translate tools in Marathi the tool was validated by the language (n=1) expert. Content validated tools were received from the expert with their valuable suggestion and comments. Their suggestions were taken into consideration and necessary modification were incorporated in the final preparation of the structured knowledge questionnaires.

Tool Reliability
The structured knowledge questionnaire was used to assess the knowledge regarding prevention of farmer' lung among 11 subjects from selected rural areas. Reliability of structured knowledge questionnaire was established by Guttmann's split half method using Karl Pearson's correlation coefficient formula. The correlation coefficient 'r' of the questionnaire was found 0.82, which indicate reliability of the instrument.

Pilot Study
The investigator has conducted pilot study on dated 21-01-2021 on 11 subjects by using non probability convenient sampling technique. Findings of the pilot study showed that it is feasible to conduct final study with the present tool. The subjects who were included in the pilot study were excluded in the main study.

Plan for Data Analysis
The data was analyzed by using descriptive and inferential statistics on the basis of objectives of the study. To compute the data, master data sheet was prepared and analysed.

4. Results

Section A: Distribution of subjects with regards to their demographic variables.

Fig 3:depicted the distribution of subjects in relation to their age in year, 28.30% of the subjects were in the age group of 20-25 years and 71.70% of them were in the age group of 25-30 years.

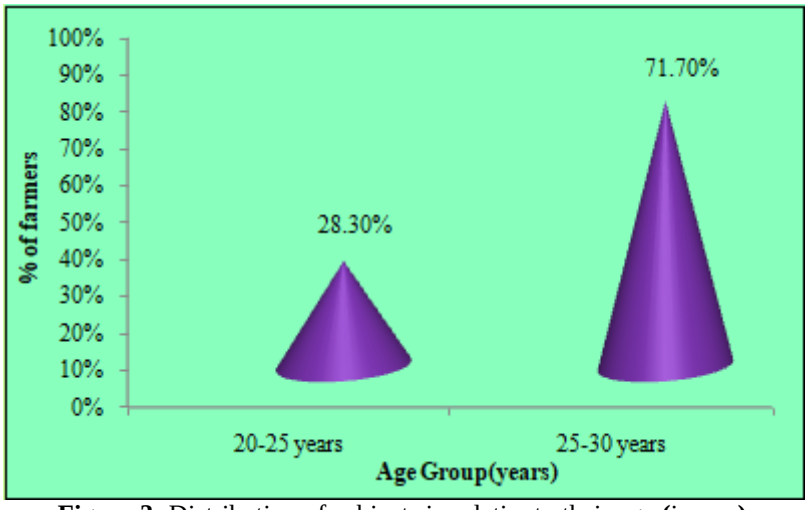

Figure 3: Distribution of subjects in relationto their age **(**in yrs**.)**

Fig 4: depicted the relation to gender 47.20% of the subjects were males and 52.80% of them were females.

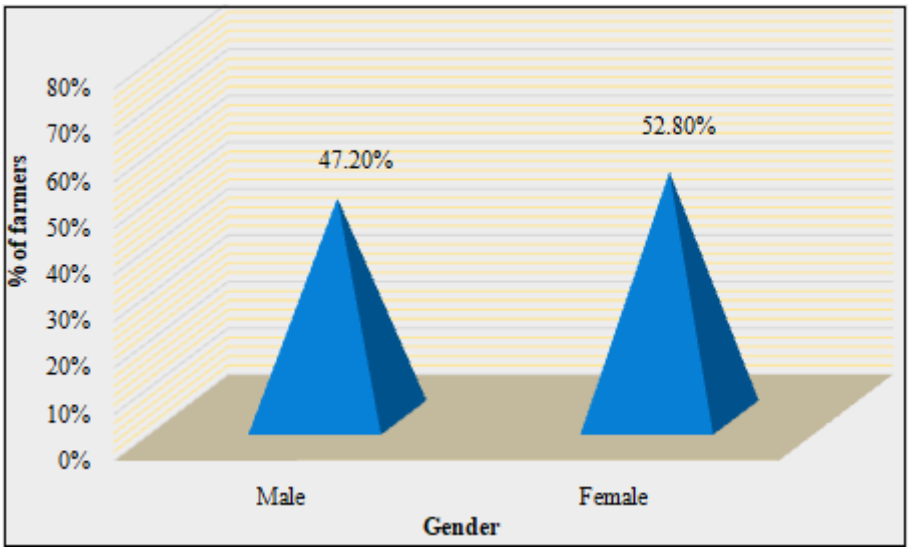

Figure 4: Distribution of subjects in relationto gender

Fig 5:depicted the relation to their educational status 17.90% of the subjects were educated up to primary standard, 40.60% of them were educated up to secondary standard, 40.60% of them were educated up to higher secondary standard and 0.90% of them was graduate.

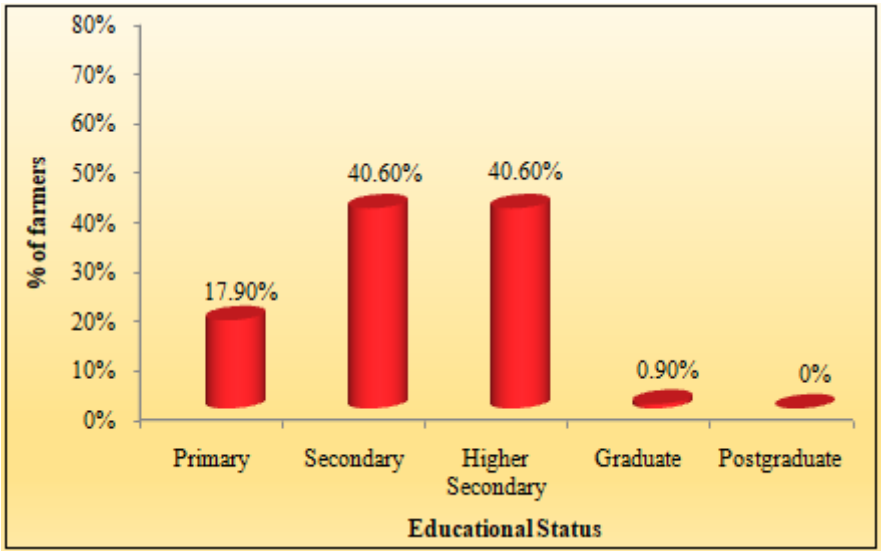

Figure 5: Distribution of subjects in relation to their educational status**.**

Fig 6: depicted the relation to their duration of work 8.50% of them had less than one year, 38.70% of them had 1-5 years, 26.40% of the subjects were having duration of work of 5-10 years and 26.40% of the subjects were having duration of work of 10 years and above.

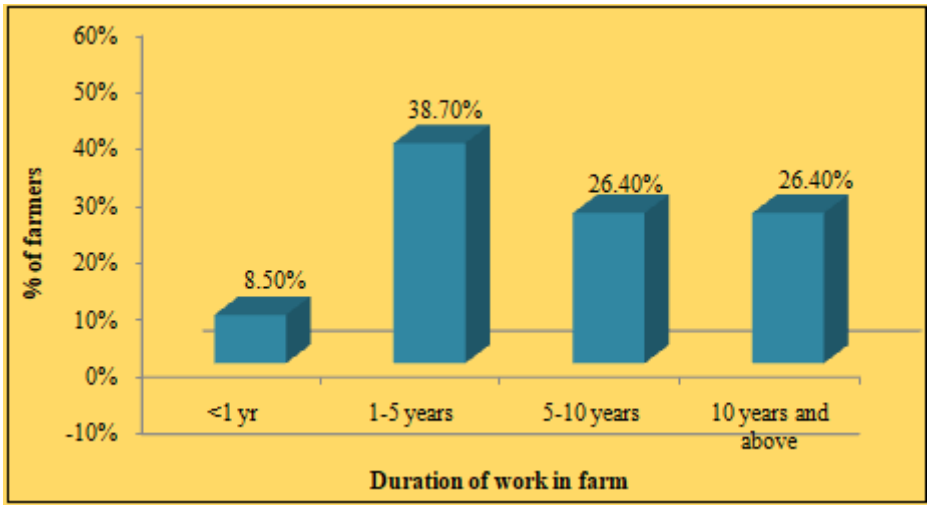

Figure 6: Distribution of subjects in relation to their duration of work in farm**.**

Section B-Assessment of level of knowledge regarding prevention of farmer's lung among subjects from selected rural areas.

This section deals with the assessment of level of knowledge regarding prevention of farmer's lung among subjects from selected rural areas. The level of knowledge score is divided under following heading of poor, average, good and excellent.

Table 2: Assessment of level of knowledge regarding prevention of farmer's lung among subjects from rural areas n=106

Level of knowledge	Score Range	Level of Knowledge	
		No. of subjects	Percentage
Poor	< 25% (0-6)	9	8.5%
Average	26-50% (7-12)	41	38.7%
Good	51-75% (13-18)	28	26.4%
Excellent	> 75% (19-24)	28	26.4%
Minimum score		0	
Maximum score		21	
Mean knowledge score		6.72 ± 3.78	
Mean % Knowledge Score		28.02 ± 15.77	

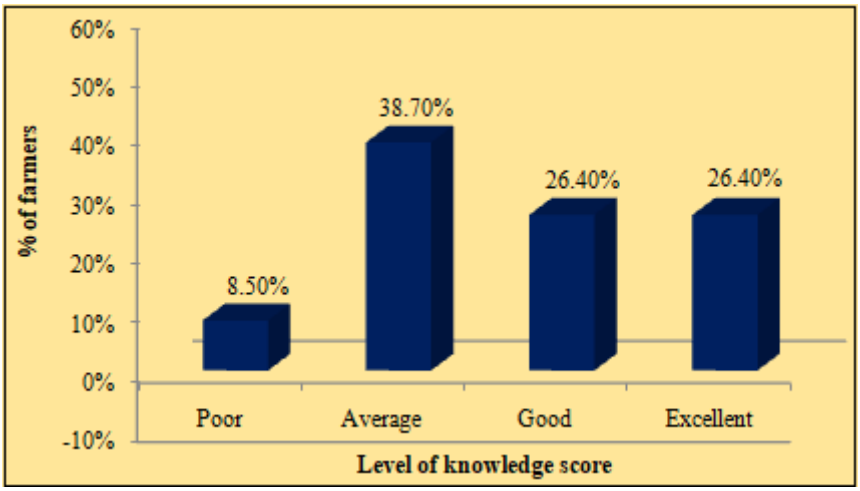

Figure 7: Assessment of level of knowledge regarding prevention of farmer's lung among subjects from selected rural areas.

Section C
Association of level of knowledge regarding prevention of farmer's lung among subjects in relation to demographic variables.

Table 3: Association of level of knowledge regarding prevention of farmer's lung among subjects in relation to age (in yrs.), n=106

Age (yrs.)	No. of farmers	Level of knowledge				χ^2value
		Poor	Average	Good	Excellent	
20-25 years	30	19	9	2	0	1.12 P=0.77 NS,p>0.05
25-30 years	76	48	23	3	2	

The above table no. 3 depicted the association of knowledge score with age in years of subjects regarding prevention of farmer's lung. The tabulated 'χ^2' value was7.82(df=3) which was much higher than the calculated 'χ^2' i.e.1.12at 5% level of significance. Also, the calculated 'p'=0.77 was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it was interpreted that age in years of subjects was statistically not associated with their knowledge score.

Table 4: Association of level of knowledge regarding prevention of farmer's lung among subjects in relation to gender n=106

Gender	No. of farmers	Level of knowledge				χ^2-value
		Poor	Average	Good	Excellent	
Male	50	30	16	3	1	0.59 p=0.89 NS, p>0.05
Female	56	37	16	2	1	

The above table no. 4 depicted that the association of knowledge score with gender of subjects regarding prevention of farmer's lung. The tabulated 'χ^2' value was 7.82(df=3) which was much higher than the calculated 'χ^2' i.e.0.59at 5% level of significance. Also, the calculated 'p'=0.89 was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that gender of subjects was statistically not associated with their knowledge score.

Table 5: Association of level of knowledge regarding prevention of farmer's lung among farmers in relation to educational status, n=106

Education	No. of farmers	Level of Knowledge				χ2-value
		Poor	Average	Good	Excellent	
Primary	19	14	5	0	0	8.12 p=0.52 NS,p>0.05
Secondary	43	29	11	3	0	
Higher secondary	43	24	15	2	2	
Graduate	1	0	1	0	0	
Postgraduate	0	0	0	0	0	

This table no. 5 shows the association of knowledge score with educational level of farmers regarding prevention of farmer's lung. The tabulated 'χ^2' value was 16.92(df=9) which was much higher than the calculated 'χ2' i.e.8.12at 5% level of significance. Also, the calculated 'p'=0.52 was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it was interpreted that educational status of farmers was statistically not associated with their knowledge score.

Table 6: Association of level of knowledge regarding prevention of farmer's lung among subjects in relation to duration of work in the farm, n=106

Duration of work in farm	No. of farmers	Level of knowledge				ϰ2-value
		Poor	Average	Good	Excellent	
< 1 yr.	9	6	2	1	0	10.16 p=0.33 NS,p>0.05
1-5 years	41	25	13	3	0	
5-10 years	28	21	7	0	0	
10 years and above	28	15	10	1	2	

This table no. 6 showed the association of knowledge score with duration of work in the farm(years) of subjects regarding prevention of farmer's lung. The tabulated 'ϰ^2' value was 16.92(df=9) which was much higher than the calculated 'ϰ2' i.e.10.16at 5% level of significance. Also, the calculated 'p'=0.33was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it was interpreted that duration of work in the farm (years) of subjects was statistically not associated with their knowledge score.

5. Summary

The study was undertaken to assess the knowledge regarding prevention of farmer's lung among farmers from selected rural areas. A quantitative approach with non-experimental descriptive research design was used to collect data among 106farmers drawn with non-probability convenient sampling technique using inclusion and exclusion criteria.

6. Conclusion

From the findings of present study, it was concluded that the Exposure to the mouldy hay, dust and exposure to some pesticides in the agriculture setting was most common among farmers. Most of these inhalational exposure incidences can be prevented by using of preventive measures i.e. personal protective equipment, and can prevent farmer's lung diseases. The investigator concluded that the written prepared material by the investigator in the form of questionnaire would help to assess their knowledge regarding prevention of farmer's lung.

7. Recommendations

- Health awareness programs should be conducted regarding prevention of farmer's lung.
- The study can be replicated on large subjects; and in various setting, so that findings can be generalized to a large population.
- Experimental studies can be conducted with recommendations.
- Such studies can be carried out using teaching strategies like planned teaching, video-assisted instructions on prevention farmer's lung.

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