Original Article

Morbidity Pattern among the Farm House Residents in Vijayapur District, Karnataka — A Cross Sectional Study

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Background : Agriculture Workers have a multitude of health problems, a fact which is often forgotten because of widespread misconception that occupational health is mainly concerned with industry and industrialized countries. The health problems of workers in agricultural field may be accidents (Snake and insect bites), toxic hazards (chemical exposure and insecticide poisoning), physical hazards (extreme conditions and solar radiation) and respiratory problems (farmer's lung and occupational asthma).

Objectives : To study the morbidity pattern among the Farm house residents.

Material and Methods : A cross sectional study was conducted among the farm house residents in rural areas of Vijayapura district. A Sample of 450 farm house residents were interviewed by pre-structured proferma containing information regarding Socio demographic profile, present and past six months morbidities. In each Taluka, the selection of households was done by considering villages as the Primary Sampling Unit (PSU). PSUs were selected with probability proportional to size sampling and 5 households in a selected PSU were selected by random sampling.All characteristics were summarized descriptively, Chi-square (χ^2) test was employed to determine the significance of differences between groups for categorical data.

Results : The findings of the present study among Farm dwellers in the rural area of vijayapura district revealed that majority at the time of study were having Anaemia followed by Respiratory Infection and majority of Farm dwellers in past six months were having Dental carries as a morbidity followed by Respiratory infection.

Conclusion : The present study concludes that overall majority of the Farm house residents presently suffering from Non-communicable Diseases (54%) followed by Communicable Diseases (46%).

Agriculture is an art/practice of cultivating land. Agriculture sector occupies a key position in our Country. It provides employment to about 65% of the working population of India. Agricultural Workers constitute by far the largest segment in the unorganized sector. Agriculture workers constitute the most neglected classes in the Indian Rural structure. Their income is low and irregular. They do not possess any skill and training and have no alternate employment opportunities[1].

Agriculture is essential for good health as it produces food, fibre and materials for shelter along with medicinal plants. It is also an important source of livelihood in many of the middle and lower income countries[2]. Agriculture as an occupation differs from another occupation in that, workers work in the open fields, exposing themselves to extremes of climates and also there are no 'Labour laws' in practice. The

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> **Editor's Comment :**
> ■ Agriculture is the backbone of the country as Agriculture sector occupies a key position in our country so farm house residents health is utmost important.

health problems of workers in agricultural field may be accidents (Snake and insect bites), toxic hazards (chemical exposure and insecticide poisoning), physical hazards (extreme conditions and solar radiation) and respiratory problems (farmer's lung and occupational asthma)[3].

According to the Karnataka Land Revenue (Amendment) Act, 2015 :

"Farm Buildings" or "Farm house" means a house attached to a farm and constructed in a portion of an agricultural land, used for the residence of the agriculturist or used for the purpose of keeping Agricultural equipment's and tethering cattle. The house shall be used by a farmer for his own use and it shall not be let out for commercial activities to any individual or agency. "Amendment of section 95.- Inside section 95 of the principal Act, - (a) after sub-section (1) state Farm building or Farm house so erected shall

not be more than ten percent of his holding subject to a maximum of such extent of land as may be prescribed[4]. The Farm house workers are so remotely dispersed in Rural area that the health services may not reach them. Data regarding morbidity pattern among Farm house dwellers is very sparse. Community based study can only reflect the true picture of morbidity pattern in a given Community. Hence the present study was undertaken to explore the morbidity pattern among the Farm house residents of Vijayapura District.

MATERIALS AND METHODS

This was a descriptive cross-sectional study conducted among the Farm house residents of Vijayapura District. The study was done over a period of one year (June, 2017 – May, 2018).

After obtaining ethical clearance from the Institutional Ethical Committee the study was conducted in Vijayapura District. Geographically Vijayapura District has been divided into five Talukas, namely Vijayapur, Indi, Sindgi, Basavana Bagevadi and Muddebihal. Within each Taluka, the selection of households was done in different stages considering villages as the Primary Sampling Unit (PSU)[5]. Villages, where the number of households was less than 5 were not considered in the selection of samples and removed from the list. Allocation of the total sample population of 384 (~400) in Farm households is done in proportion to their population. Households have been selected in two stages. PSUs were selected with Probability Proportional to Size (PPS) sampling and 5 households in a selected PSU were selected by random sampling.

The List of Households Staying in Farm was taken from the Government Primary Health Centre and chits containing the head of the family were made. Total 5 chits from each village were selected randomly and included in the study.

From each household four participants randomly were interviewed regarding morbidity pattern. If any selected household did not contain 4 participants, was excluded and new household was selected randomly. The Household members were reached with the help of ASHA / Health worker of PHC which helped to develop rapport with people staying in the household. The purpose and overview of the study was explained at the time of the interview and interviewers were informed that their participation was entirely voluntary, their anonymity would be assured and consent was taken.

Distribution of Sample :

Mean number of person per household (HH) = 4(on the basis of pilot observation in a nearby village)

Hence, Total number of HH in Farm houses = 400/ 4 = 100

Mean number of HH in farm houses per village = 4.7 (~ 5) (on the basis of pilot observation in a nearby village)

Total number of PSU (Villages) = 100/4.7 = 21

The sample size was calculated based on the formula. **n= z²pq/d².** Due to lack of information on morbidity among the farm house residents in the study area, the calculation was based on the assumption of prevalence to be 50%. Assuming a confidence level of 95% and at a precision of 5%, the total sample size was 384 farm house residents. A round of sample of 384 (~400) was taken for the study, but the collected sample size was 450. The Study was conducted in Vijayapura District, situated in the Northern part of Karnataka. Farming and agriculture related business is the main occupation for many people in the district. People residing in Farm houses for less than 6 months were excluded from the study. Investigation like Haemoglobin estimation by using Mission HB instrument And Blood Sugar Estimation by Using Accu-Chek Active Glucometer. All characteristics were summarized descriptively, Chi-square (χ^2) test was employed to determine the significance of differences between groups for categorical data. Data were analysed using SPSS software v.23.0.

RESULTS

A total of 450 were the study participants, majority of male participants belonged to age group of 41-50 (21.4%) years and female participants belonged to age group of 11-20 (21.7%) years. The major proportion of males (97.8%) and female participants (96.8%) belonged to Hindu religion. 58.1% of male and 62.9% female participants belonged to nuclear family followed by 29.7% male and 25.8% female participants belonged to joint family. The majority of male (49.8%) and female (48.9%) participants were illiterates. More than 50% of the participants belonged to class V Socio-economic status (Table 1).

Among Study participants (n=450), 66% were presently suffering from various diseases, Among which majority of the participants 54% were having Non Communicable Diseases like Anaemia, Hypertension, Diabetes Mellitus, Accidents, Arthritis and 46% were having Communicable Diseases like Gastro-enteritis, Respiratory infections, Dental caries, Fever.

Majority of participants 58% in the last six months had suffered from various diseases, Among which majority of the participants 57% were having Communicable Diseases like Gastro-enteritis, Respiratory infections, Dental caries and Fever. 43%

| Table 1 — *Distribution of respondents according to Socio-demographic variables*						
Parameters	Male		Female		Total	
	N	%	N	%	N	%
Age :						
≤10	19	8.3	31	14.0	50	11.1
11-20	36	15.7	48	21.7	84	18.7
21-30	41	17.9	31	14.0	72	16.0
31-40	40	17.5	46	20.8	86	19.1
41-50	49	21.4	39	17.6	88	19.6
51-60	23	10.0	19	8.6	42	9.3
61-70	9	3.9	7	3.2	16	3.6
>70	12	5.2	0	0.0	12	2.7
Religion :						
Hindus	224	97.8	214	96.8	438	97.3
Muslims	5	2.2	7	3.2	12	2.7
Type of family :						
Nuclear	133	58.1	139	62.9	272	60.4
Joint	68	29.7	57	25.8	125	27.8
Three Generation	28	12.2	25	11.3	53	11.8
Educational Status :						
Illiterate	114	49.8	108	48.9	222	49.3
Primary	81	35.4	80	36.2	161	35.8
Secondary	31	13.5	30	13.6	61	13.6
PUC And Above	3	1.3	3	1.4	6	1.3
Occupation :						
Student	43	18.8	69	31.2	112	24.9
Labour	10	4.4	9	4.1	19	4.2
Household Activities	6	2.6	18	8.1	24	5.3
Farmer	170	74.2	125	56.6	295	65.6
SE-Status :						
Class Iv	111	48.5	101	45.7	212	47.1
Class V	118	51.5	120	54.3	238	52.9
Total	229	100.0	221	100.0	450	100.0
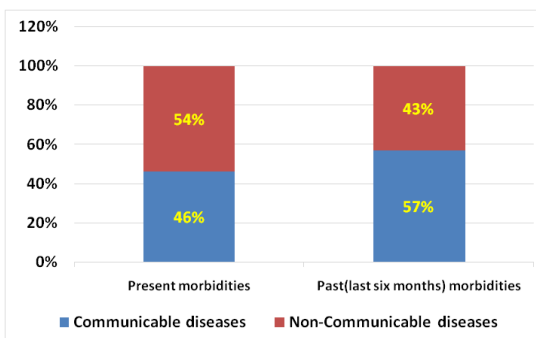
Fig 1 — Proportion of present and past morbidities (last six months) among study participants

Fever (18). Non-communicable was the commonest condition associated with the participants of 41-50 years age group who were illiterate and lived in nuclear families. The statistically significant association was observed between present morbid conditions with related to age, sex, type of family, educational status, occupation (Table 2).

In our study, we recorded past 6 month morbid condition also, 18.6 % of the female participants and 13.5% of male participants reported Dental caries. H/o known case of Hypertension was present among 4.3% and 1.3% of male and female participants respectively. Similarly H/o of Diabetes Mellitus was present among 3.7% and 1.3% of male and female participantsrespectively. Scorpion bite (7.7%) and Snake bite (4.1%) were having Non Communicable Diseases like Hypertension, Diabetes Mellitus, Accidents, Arthritis, Scorpion bite, Snake bite,Cataract, Corneal scar, Hearing loss, Skin diseases (Fig 1).

We observed current morbidity status of participants, majority of the male participants (54.7%) and female participants (15.9%) were diagnosed as anaemia. Respiratory infection in 7.9% of males and 10.9 % females' participants.Accidents were reported among 3.9% of male participants only (Fig 2).

The maximum proportion of participants were suffering presently from Non-communicable Diseases like Anaemia (127) arthritis (18), Accidents (9), Hypertension (5) and Diabetes mellitus (2) followed by Communicable disease like Respiratory infection (49), Gastro-intestinal infection (40), Dental caries (29),
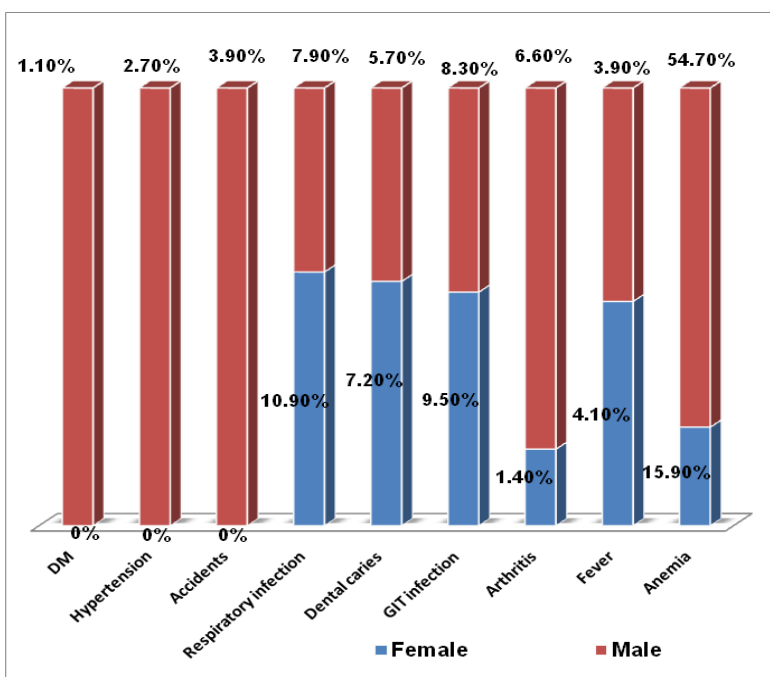

Fig 2 — Gender-wise distribution of present morbid status of the respondents

Table 2 — *Association of socio-demographic variables with present morbid conditions (in numbers)*			
Parameters	Communicable diseases	Non-Communicable diseases	X² & P Valve
Age :			
≤10	19	3	37.289
10-20	27	11	< 0.0001
21-30	21	24	
31-40	27	29	
41-50	23	46	
51-60	9	24	
61-70	4	12	
>70	6	12	
Sex :			
Male	62	132	43.119
Female	74	29	< 0.0001
Religion :			
Hindus	129	158	2.443
Muslims	7	3	0.1180.
Type of Family :			
Nuclear	88	81	8.137
Joint	38	54	0.0171.
Third Generation	10	26	
Education :			
Illiterate	81	98	10.696
Primary	33	53	0.0135.
Secondary	20	7	
Puc and Above	2	3	
Occupation :			
Student	37	7	41.994
Labour	12	8	<0.0001
Household Activities	8	2	
Farmer	79	144	
Se Status :			
Class Iv	72	67	3.799
Class V	64	94	0.0513
TOTAL	136	161	
Note: *significant at 5% level of significance (p<0.05)			

reported more among females compared to male participants (Fig 3).

During last six months morbid condition, the majority of participants had Communicable disease like Dental caries (72) followed by Respiratory infection (49), Gastro-intestinal infection (19) fever (9) followed by Non-Communicable disease like Accidents (20), Scorpion bite (27), Snake bite (12), Arthritis (12), Hypertension (10), Diabetes Mellitus (9), Cataract (9), Skin Disease (9), Corneal Ulcer (3), Hearing Loss (3).

Communicable Diseases were the commonest condition associated with the participants of 31-40 years of age group who were illiterate and were farmers living in nuclear families and maximum number of females suffered from Communicable Diseases compared to male's participants. This statistically significant association was observed between last six months morbid conditions and Age, Sex, Education,

Occupation & Socio-economic status (Table 3).

DISCUSSION

Farming is a lifelong occupation. The farmers live near the Farm land and are often exposed to the environmental hazard throughout their life. Agricultural work tends to be a family occupation and all members of a family are involved in field activities. Rapid technological development in the Agricultural Sector has tremendously improved in last 25 years. The new innovations have increased production. They have also given rise to new variety of problems related to safety and health. Broadest and most extensive exposure to injury, diseases are suffered by Agricultural Workers.

In present Study, Maximum proportion of participants had Anaemia (36.9%) followed by Respiratory infection (9.3%), Gastrointestinal infection (8.9%), Dental caries (6.4%), Fever (4%), Arthritis (4%), Accidents (2%), Hypertension (1.5%), Diabetes Mellitus (0.6%). Majority of male participants (54.7%)

Table 3 — *Association of socio-demographic variables with past morbid conditions (in numbers)*			
Parameters	CD	NCD	X² & P value
Age:			
≤10	14	10	33.079
10-20	31	13	<0.0001
21-30	24	5	
31-40	36	28	
41-50	34	26	
51-60	7	14	
61-70	3	8	
>70	0	10	
Sex :			
Male	69	70	5.906
Female	80	44	0.0151
Religion :			
Hindus	144	112	0.6392
Muslims	5	2	0.4240
Type of Family :			
Nuclear	98	69	0.9239
Joint	37	31	0.63.1
Third Generation	14	14	
Educational status :			
Illiterate	80	67	10.801
Primary	38	39	0.0128
Secondary	28	8	
Puc And Above	3	0	
Occupation :			
Student	39	23	13.545
Labour	12	0	0.0036
Household Activities	5	9	
Farmer	93	82	
SE Status :			
Class Iv	65	68	6.635
Class V	84	46	0.01
TOTAL	149	114	
Note : *significant at 5% level of significance (p<0.05)			
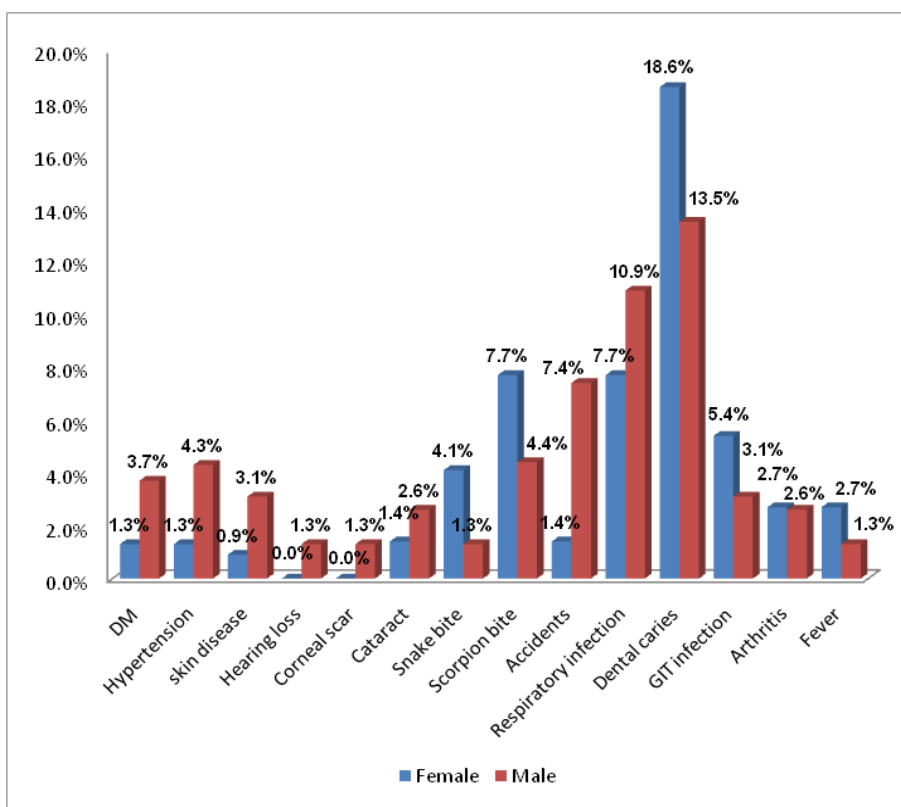
Fig 3 — Gender-wise distribution of past (last six months) morbid status of the respondents

of morbidity in Rural area was mainly injury (3.4%), acute illness (5.7%) and chronic illness (5.3%)[8]. Gupta SK, *et al,* in Rural area of Madhya Pradesh found that the prevalence of Anaemia was 42%. However, the prevalence of Anaemia was high in females (82%) compared to males (18%)[9].

The proportion of Anaemia was more in males compared to female participants probably due to walking barefoot in field area may leads to worm infestations. The percentage of females suffering from Respiratory infection was more compared to male participants would be due to use of smoke forming challahs in Farm house. Accidents were reported among the male participants probably due to use of farming tools & machineries.

reported with Anaemia compared to female participants (15.9%) and maximum number of females suffered from Respiratory infection compared to males participants respectively. Accidents were reported among 3.9% of male participants only. Verma V, *et al,* in Rural area of Allahabad District of Uttar Pradesh observed that Overall, most prevalent diseases were linked to Ocular, Musculoskeletal, Psychological system, Gastrointestinal System and Dental Disorder affecting 274 (68.5%), 239 (59.75%), 119 (29.75%), 100 (25%), 94 (23.5%), of elderly respectively. The prevalence of Anaemia (43%), Under-nutrition (38.5%) and Respiratory problems (16%) were more in Rural aged[6]. Sharma D, *et al*, in Rural area of north India reported the morbid condition like Musculoskeletal problems (56.5%), Hypertension (25%0, Cataract (37%), Dental problems (33%), Asthma (4%), Corneal opacity (1.5%) and a significantly higher proportion of women suffered from Musculoskeletal problems (females: 66.7% *versus* males: 42.7%), Hypertension (females: 48% *versus* males: 32.7%), Diabetes (females: 7.8% *versus* males: 3.6%), while chronic Obstructive Pulmonary Disease (males: 14.3% *versus* females: 0.4%) was observed more in men[7]. According to DLHS IV survey Karnataka, reported that prevalence

Among Last six months morbidity condition, majority of participants had Dental caries(16%) followed by Respiratory infection (9.3%), Accidents (4.4%), Scorpion bite (6%), Gastrointestinal infection (4.2%), Snake bite (2.7%), Fever (2%), Arthritis (2.7%), Hypertension (2.9%), Diabetes Mellitus (2.6%), Cataract (2%), Skin Disease (2%), Corneal Ulcer (0.7%), Hearing Loss (0.7%). A study done by Rahman SJ, *et al* in a Rural block of Jorhat District, Assam revealed that, (54.25%) of the farmers suffering from Respiratory Tract Infections followed by Musculoskeletal problems (23.25%) and Gastrointestinal Tract Ailments (11.75%)[10]. According to Hameed S, *et al* Study reported that the proportion of Arthritis, Anaemia and Obesity were significantly higher among females than among male participants[11].

Ahmeed SM, *et al* in his study showed, there was significant association found between Fever, Skin, Eye, Ear problems with Age and Gender[12]. A study done by Kulkarni RR, *et al* in a Rural area of Belgaum District observed majority of Agriculture Workers were having Dental caries (25.50%), Dental stains (21.75%), followed by Musculoskeletal System (21.75%) and Respiratory System (19%)[13]. Kansal S, *et al*, in Rural community of Eastern Uttar Pradesh revealed that

Respiratory diseases (18%) followed by Fever (15.4%), GIT Diseases (11.4%), Bone and Joint problems contributed the principle cause of morbidity in the study population[14].

CONCLUSION AND RECOMMENDATIONS

The Farm house workers are a special group, who are remotely dispersed in Rural areas which makes that the health services may not accessible to them. The present study concludes that overall majority of the Farm house residents presently suffering from Non-communicable Diseases (54%) followed by communicable Diseases (46%). Among last –six months morbidity status, majority suffered from Communicable Diseases (57%) followed by Non-communicable Diseases (43%).

Farmers should be advised regarding use of protective measures like using masks for protection from hazards of fertilizers and pesticides, by wearing gloves while handling manure, by wearing long boots while walking in the fields. Also training for the use of agricultural equipment, as per instruction manuals.

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