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COMPARATIVE IMPACT OF DAIRY FARMING ON THE HEALTH STATUS OF DAIRY FARMERS AND NON FARMERS OF LAHORE

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ABSTRACT

Pakistan is an agriculture country and most of its economy depends on this sector. The contribution of agriculture in the GDP is 21% and that of livestock sector is 11.7%. Livestock is the major contributor subsector of agriculture. Farmer's health is a major issue in Pakistan. Very few studies focused on this issue and no study found to estimate disease trend among farmers and non-farmers. Purpose of study is the estimation of disease trend among farm workers and non-farm workers, so that health policies can be given accordingly. The data was collected by using a validated and pretested questionnaire. Interviews were taken according to questionnaire. Data was analyzed through SPSS. Chi square test was applied. Cross tabulation was done to check association. Results Most of the respondents were illiterate (41.6%), married (77.1%), male (90%) and above age 36 years (40.3%). Most of the respondents were resident of semi urban areas (44.2%). Obesity is more common among farmers than non-farmers. Farm workers claimed more injuries, musculoskeletal disorders, skin infections, depression as compared with non-farm workers. But the occurrence of asthma is more frequent among non-farmers. The poor literacy rate, lack of knowledge about health parameters, ignorant behavior are more common reasons of farmers to have a different disease trend compared with non-farmers.
Keywords: Dairy Farming, Health, Farmers, Non-Farmers

INTRODUCTION

Pakistan is an agriculture country and agriculture is contributing 21% of total GDP and employing 45% of Pakistan's total labor force. For the development of an agriculture country its livestock sector plays important role. It is among the most important subsectors of agriculture as it shares 55.1% of agriculture and contributes 11.7% in total GDP of Pakistan (Pakistan economic Survey 2009). For the sake of progress in livestock sector, healthy professionals are required. Health is a state of physical, mental and social comfort of individual (WHO, 2011). It can be affected by social, physical, economic environment and person's behavior. Health as an asset can either improve or reduce the productive ability. Occupation has its effect on health of workers because it require mental, physical and in some cases social involvement. Some occupations have somewhat negative effects on health, among them farming is found to be the most risky occupation together with mining and construction.

As in dairy farming the workers has to treat with animals they suffer from injuries. So, dairy workers have been considered at major risk for injuries. A twofold increase in injury rate (166 injuries/1000 workers/year) has been estimated (McCurdy et al 2000). Machinery usage and working with large animals is the major cause of fatal accidents (Sprince NL et al 2003).

Farmers have a remarkable higher scarcity in mortality due to heart disease, cancers like lung cancer and a number of other diseases if compared with general population. Increased mortality due to accidents, respiratory conditions, and a few cancers has been reported. Contact with dust, engine exhaust and chemicals may results in increased rates of respiratory diseases among dairy farm workers (Hoppin et al 2002).

We can minimize the disease burden among farm workers by evaluating the health problems that will be the first step to prevention. In order to prevent, one should have the tools to report on the health status of the target group and also be able to monitor the effect of the intervention by measuring its impact (Kouimintzis et al. 2007). The lack of coordination between policymakers and agriculture workers for policymaking about health may effects the efforts to manage the health problems of poor farmers which in turn give short shrift to

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agriculture's role in lessening many of the serious health problems. The agricultural efficiency and poverty has direct relation. In agricultural poor health results in reduced income and productivity which in turn decrease worker's ability to tackle poor health and restraining economy (Hawkes et al 2006).

MATERIAL AND METHODS

The study was conducted among different farm workers and non-farm workers of Lahore. Farmers were selected randomly after random selection of four different Dairy farms of Lahore, non-farm workers were selected randomly from nearby areas of farms. A questionnaire was developed by studying the literature related to topic and was pretested by conducting a pilot study among farmers and non-farmers. The questionnaire contained following section:

- Demographic information
- Occupational information
- Questions related to having different diseases or not.
- General questions about their health.

Then that validated and pretested questionnaire was used for the interview of farm workers as well as non-farm workers. The data collected was tested by using SPPS version 20.0. Chi square test was used and cross tabulation was done to compare the results. Quantitative data is presented in the form of descriptive statistics. Analysis of data was carried out by making tables and graphs and association was determined among different variables under study using cross tabulations.

Table 1: Frequency of Age and Gender among Respondents

Parameters	Age				Education Status			
	21-25	**26-30**	**31-35**	**36 & above**	**Illiterate**	**Primary-matric**	**Intermediate**	**Graduation & above**
Frequency	71	72	84	153	158	98	76	48
Percent	18.7	18.9	22.1	40.3	41.6	25.8	20	12.6

Table 2: Frequency of gender, occupation and marital status among respondents

Parameter	Gender		Occupation		Marital status	
	Male	**female**	**Farm worker**	**Non-farm worker**	**Single**	**Married**
Frequency	340	40	178	202	87	293
Percent	90	10	46.8	53.2	22.9	77.1

Table 3: Frequency of Residence and BMI among respondents

Parameter	Residence			BMI			
	In the farm	**Urban**	**Semi urban**	**Under weight**	**Normal**	**Over weight**	**Obese**
Frequency	48	160	168	44	208	100	28
Percent	12.6	42.1	44.2	11.6	54.7	26.3	7.4

Table 4: Comparison of BMI among Farmers and non-farmers

Occupation	BMI				Total	p-value
	Under Weight	Normal	Over weight	Obese		
Dairy Farmer	17	90	53	18	178	0.066
Non-Dairy Farmer	27	118	47	10	202	

Table 5: Claim of depression among farm workers and non-farm workers

Occupation	Depression during work		Total	p-value
	Yes	No		
Dairy Farmer	58 (32.5%)	120 (67.4%)	178	0.74
Non- Dairy Farmer	69 (34.1%)	133 (65.8%)	202	

Table 6: Work load in relation to Occupation

Occupation	Work Load		Total	p-value
	Yes	No		
Dairy Farmer	61 (32.4%)	117 (65.7%)	178	0.001
Non- Dairy Farmer	38 (18.8%)	164 (81.18%)	202	

RESULTS

A random sample of one hundred and seventy eight farm workers and two hundred and two non-farm workers was taken from randomly selected Dairy farms and their adjacent areas of Lahore. This study was conducted in order to check the health status of farm workers and non-farm workers and estimating the disease trend among them. Respondents were classified according to their age groups, occupation and duration of work, educational status and body mass index (BMI) (results shown in table 1, 2 and 3). The data represents that most of the respondents were illiterate (41.6%), married (77.1%), male (90%) and above age 36 (40.3%). Most of the respondents were resident of semi urban areas (44.2%).

The results showed that duration of work is the important factor for having injuries and musculoskeletal disorders. BMI is another risk factor of having musculoskeletal disorders beside occupation. BMI difference among farmers and non-farmers is not much evident. The percentage of underweight farmers was 9.5 in comparison with non-farmers i.e. 13.3%, normal weight farmers were 50.6% compared with 58.4% non-farmers, dairy farmers were 29.7% in comparison with 23.4% non-farmers. The difference in occurrence of obesity is somewhat clear that is farmers were 10.11% obese whereas non-farmers were only 4.9 % obese (Shown in table 4).

More non-farmers (34.1%) claimed the problem of depression than farmers (32.5%) although the difference is not significant (table 5). Farming is a heavy duty as in this field worker has to deal with animals and machinery and have long working hours. More farmers (32.4%) claimed about heavy work load as

compared to non-farmers (18.8%). This difference shows that dairy farm work is more tiring than any other job (table 6).

Blood pressure is another claim that was made by more farmers than non-farmers. 53.9% of farmers claimed about blood pressure whereas only 37.6% non-farmers claimed such problem (table 7).

The farm workers have more cases of hip osteoarthritis compared to non-farm workers although the total number of cases among farmers and non-farmers are very less (p-value 0.002). Knee osteoarthritis was also more in farmers than in non-farmers although overall number of cases was very less. Back pain could be the sign of work load or stress. The number of back pain cases was more among farmers than in non-farmers.

DISCUSSION

Previously there were not enough studies showing the diseases trend among farmers and also no studies available showing the impact of dairy farming occupation on the health status of the farm workers. The present study is an attempt to evaluate the impact of farming on health status of farm workers and its comparison with nonfarm worker's health status. The present study had evaluated the major health related problems among farmers due to impact of dairy farming.

Pakistan is an agriculture country and the contribution of agriculture in GDP is 21%. The major contribution is of livestock sector and it contributes 55.1% in agriculture and 11.7% in GDP of Pakistan. Majority of Pakistani depends on this occupation for their livelihood. It is estimated that more than 35 million Pakistanis are involved in dairy farming and earn 30-40% of their earning through this occupation (Pakistan economic survey, 2009).

As Pakistan is an agriculture country so for the development of country it is necessary that its agriculture and dairy sector should progress and for the progress of these sectors healthy workers are required. It is necessary to know the health status of farmers so that better facilities should be given. It is also necessary to know which specific health problems farm workers has to face which other workers has not faced.Agriculture is among the most risky industries. An important cause of mortality and morbidity for agriculture workers is injury (Stephen et al 2000). Farm related health problems include injuries; chemical poisoning and respiratory, musculoskeletal, skin, and infectious diseases (Lee and Lim, 2008). 33% of all farmers experience a work-related injury each year in China (Xiang et al., 2000). A major hurdle in prevention of agriculture injuries is lack of knowledge about risks related to occurrence of injuries and magnitude of problems (Gerberich et al., 2001). In general animals were the most common cause of non-machinery related injuries i.e. 37%, involving crushing or being stuck by animals, for females 65% caused by horses and 30% by cows whereas in males 38% caused by horses and 56% by cows (Dimich-Ward et al. 2004). The major activities involved in animal related injuries are moving, herding, feeding, riding and working with animals (Erkal et al. 2008).

The results of the present study showed almost the same trend. By comparing the data it was evaluated that the incidence of the occurrence of injuries is more common among farm workers as compared to the non-farm workers. The risks for the injuries among farm worker in present study were found manual handling of animals. Results of several studies showed that cancer of all sites is less common in farmers than the general population. The total death rates were relatively higher among livestock farmers compared with crop farmer but overall significance is low (Lee et al. 2002). In the present study number of cases of cancer was very less and these few were mostly non-farm workers. The results are however not significant. As it is a limited study and results could not be applied all over the country more studies are needed to confirm the risk.

Working in agriculture represents a major risk for the occurrence of respiratory disorders. Dust, bacteria, moulds, endotoxin and ammonia are main elements in the daily exposure and these substances have often been related to respiratory health. . Besides these elements, exposure to animal derived stuff like dander, hair and bristle can be related to increased risk of respiratory diseases (Omland. 2002). The degree of risk associated with the onset of respiratory disorders depends mainly on type and method of production. Exposure to endotoxin, has been consistently associated with low atopic sensitization (Heederik and Sigsgaard 2005). A lower risk of asthma is seen among livestock farmers in comparison with general population. Residing a farm is a protective factor for asthma compared with

rural residence (Dimich-Ward et al. 2006). Farmers in general are at reduced risk for asthma than the general population both atopic and non-atopic (Eduard et al. 2004). But the data of the present study showed that farmers are at more risk of respiratory disorder like asthma than non-farmers. This study supports the fact that exposure to farm environment may increase the risk of having asthma. But as it is a limited study and the results of study could not be applied all over the country so further studies are needed to cover the gaps.

Farmers have to handle heavy objects, frequently in uncomfortable postures, just as other industrial worker has to do, which may lead to occupation related musculoskeletal disorder like back pain. Farmers are at higher risk of musculoskeletal disorders due to the physical demand of their work, their involvement with machinery and animals. In Netherlands almost 61% of the sick leaves by farmers were due to a musculoskeletal injury or disease (Hartman et al. 2003).

Being a Female is a risk factor for shoulder, feet and hand pain where being above median age is a risk of having knee and feet symptoms and regular milking cause elbow pain/ symptoms. Being male and having excess body weight causes persistence of symptoms (Pinzke 2003). In a study 31% dairy farm workers compared with the 18.7% non-farm workers claimed daily back pain (Park et al. 2001). Low back pain among farmers is as common as other heavy-duty professions. Positive risk factors for sick leave due to back pain are elderly, more BMI and former pain (Hartman et al. 2006). Back pain has many etiological factors among them heavy work load, bad posture and handling with animals are more common. The results of the data obtained from different farms and other work areas has shown that farm workers claims more about back pain than non-farm workers.

Hip osteoarthritis among farm workers is considered as another important health risk with relative risk of 2- 3. Milking animals regularly and duration of employment as farmer can be considered as major risk factors for hip osteoarthritis (Walker-Bone and Palmer 2002). The similar results were found during this study. Manual milking of animals on regular basis was found to be a major cause of this disease. Another problem more prevalent among farmers than non-farmers was knee osteoarthritis, although the results were not much significant as the study was limited, however, the available data showed that both hip and knee osteoarthritis were common among farmers than non-farmers.

Risk factors for the occurrence of psychiatric disorders are bureaucracy, isolation, extreme physical activities and hazards like decrease in margin of profit, increase in production cost and unexpected loss due to the spread of any fatal hazard like zoonotic diseases. Suicide attempts among farmers are increasing from last few years (Gregoire 2002).). Female farmers are generally at higher risk of depression and anxiety (Judd et al. 2006). The results of our study showed no significant difference of having psychiatric disorders like depression and anxiety. As it is a limited study confined to Lahore only so further studies are needed to know the facts.

History of allergy and being female could be the cause of hand dermatitis among farmers (Park et al. 2001). Skin infections caused by bacteria like *Streptococci*, *Stephlococci* etc, viruses like herpes, Paravaccinia virus etc and fungi like Dermatophytes are frequent among farm workers (Harries and Lear 2004).

Pesticides have been considered as a cause for contact dermatitis, both irritant and allergic, among crop farmers (Spiewak 2001). Plant (38%) and animal allergens (36%) are the most important causes of occupational dermatitis (Spiewak 2003).

Livestock farmers use chemical and different complex formulations to disinfect facilities and equipment frequently which become cause of hand dermatitis (Kiec-Swierczynska et al. 2001). The results of the present study showed that farm workers are more frequently affected by hand dermatitis as compared to non-farm workers. The reason for this difference might be more exposure to pesticides and biological factor like exposure to bacteria, viruses etc. during farm related duties.

CONCLUSION

Dairy farming is a major contributor of GDP of Pakistan so it gains importance when we talk about progress of country. But there is not much study about the health and disease pattern of dairy farm workers. There is no separate system to analyze the difference in disease trend among farm workers and non-farm workers. This study is an attempt to point out the prevalence of disease among farm workers

and non-farm workers so that disease trend can be identified. The results showed that some diseases are more common among farmers. Musculoskeletal disorders and injuries are more common. The reasons of problem may be the lower literacy rate that leads to poor knowledge of self-safety and disease prevention. But as it is a limited study so clear picture can't be made, further studies are needed to know the exact conditions a farmer has to undergo.

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