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Dr. Katayani
Department of FRM, MAB College of Home Science, C.S.A.U.A. & T., Kanpur, Uttar Pradesh, India

Dr. Shalini Gupta
Department of ECM, MAB College of Home Science, C.S.A.U.A. & T., Kanpur, Uttar Pradesh, India

Dr. Aradhana Kushwaha
Department of FRM, MAB College of Home Science, C.S.A.U.A. & T., Kanpur, Uttar Pradesh, India

Dr. Rekha Dayal
Ex-Dean MAB College of Home Science, C.S.A.U.A. & T., Kanpur, Uttar Pradesh, India

Correspondence
Dr. Katayani
Department of FRM, MAB College of Home Science, C.S.A.U.A. & T., Kanpur, Uttar Pradesh, India

Occupational health hazards of potato cultivators in district Kannauj (U.P.)

Dr. Katayani, Dr. Shalini Gupta, Dr. Aradhana Kushwaha and Dr. Rekha Dayal

Abstract
The many occupational health hazards of agriculture. Health outcomes associated with these hazards range from relatively simple conditions like heat exhaustion to complex diseases like cancer. Exact data on levels of exposure and associated disease prevalence (or health effects) in the developing world are limited. Pesticide-related illnesses, for example, go largely underreported, though it is estimated that 2 to 5 million people every year suffer acute poisonings and that 40,000 die. Millions of injuries are known to occur, with at least 170,000 of these being fatal for agricultural workers each year. Unsafe equipment and conditions, inadequate training, and limited availability and use of personal protective equipment all contribute. Health and injury burdens depend on the type of farming activity, the type of worker, and the geographic location. Research in India suggests that agricultural workers using powered machinery are most at risk from fatal accidents, but that injuries are actually more common in less mechanized villages, probably owing to lower adherence to safety standards. Basic hazards like sharp tools and snake bites can also cause debilitating wounds and fatalities. Present study entitled "Occupational Health Hazards of Potato Cultivators In District Kannauj (U.P.)". Multistage purposive random sampling technique was followed to select the state, district, blocks and finally respondents. District Kannauj is purposively selected as this is one of the largest potato producer districts while two blocks namely Kannauj and Jalabad were randomly selected. Two villages from each selected block i.e. Basirapur and Mahmoadpur paith from Kannauj and, Badlepurwa and Kheda from Jalalabad, selected randomly. Forty farmers from each selected village, Total sample size 160 respondents were randomly selected for final data collection.

Keywords: Occupational health hazards, chronic diseases, potato cultivation activities

Introduction
Potato (Solanum tuberosum) is the third most important food crop worldwide after rice and wheat, with a total production of over 300 million metric tons, as stated by the International Potato Center (CIP). Average potato yield has been erratic across the world during the past decade, ranging between 16.3 to 19.4 t/ha from 2000 to 2011, though showing an overall slight increase. China and India are the largest potato producers: 88.35 and 42.33 MT, respectively. Over the last decade, changing food lifestyles reflected the consumers' growing interest in organic food, generally perceived as healthier and safer for humans and environment. The occupational health problems may be due to mainly two reasons, i.e., the use of harmful chemicals in the occupation and the biomechanical and postural demand of the workplace leading to musculoskeletal disorders. The musculoskeletal disorder is of very high concern of the Ergonomists. The risk of developing musculoskeletal problems is mainly due to the inconvenient work postures. This risk of musculoskeletal disorders may be higher in agricultural workers than in most other industries because of the longer working hours. Uncertainties of agricultural production make farming a relatively stressful job anyway, and then people employed in agriculture may be even more vulnerable to musculoskeletal disorders (O'Neill, 2004) [3]. Musculoskeletal disorder is the leading cause of the occupational ill health. An awkward and static posture has been recognized as a risk factor for work related musculoskeletal problems. Described the perceptions of environmental and occupational health issues among agricultural workers. Interviews were conducted with 389 agricultural workers in the Yakima Valley in central Washington State in the summers of 2004 and 2005. Undergraduate students from the community conducted interviews in Spanish or English. Environmental and occupational health issues were ranked by frequency of concern, and differences by demographic characteristics were evaluated using multivariate analyses. In both 2004 and 2005, agricultural workers expressed high levels of concern about working in hot weather, agricultural injuries, pesticides, and pediatric asthma. Perceptions of environmental and occupational health issues among agricultural workers differed by certain demographic characteristics, particularly age and ethnicity (Jonathan, 2009).

Research Methodology

Selection of Locale

District Kannauj (U.P.) was selected purposively for the present study because potato is one of the major crop of this district. This is selected because of investigators convenience.

Selection of Block

District Kannauj was divided into 8 blocks. Out of these 8 blocks only two blocks namely kannauj and Jalalabad were selected randomly.

Selection of Village

Two villages from each selected block i.e. Basirapur and Mahmoadpur paith from Kannaujand Badlepurwa and Kheda from Jalalabad block were randomly selected for the study.

Selection of Respondents

Forty potato growers were randomly selected from each village. Thus sample comprises of 80 respondents from each block. The total sample comprises of 160 respondents for the present study.

Sampling design

Multistage purposive random sampling design was followed for the selection of study area and respondents. The stages included selection of locale, selection of blocks, selection of village and selection of respondents for sampling design.

Selection of tool

An interview schedule was constructed after reviewing preceded related literature extensively. Interview schedule was found to be an appropriate tool which would gather the required information pertaining to research work due to following reasons.

a) To ensure that data is completely filled in data sheet.
b) To safe guard against non-return of data sheet.
c) To establish rapport in order to elicit correct response and to clarify the things.

Analysis of data

The data collected were processed and analyzed by appropriate statistical techniques, simple statistics like frequency, percentage, average and simple arithmetic mean and other complex multivariate techniques.

Statistical analysis

Data collected were analyzed statistically with the help of following statistical techniques.

1- Frequency

It was used to find out the numbers of the respondent in a particular cell.

Frequency: some of the respondents in a particular cell

2-Mean

$$\text{Arithmetic Mean (AM)} \bar{X} = \frac{\Sigma x}{N}$$

3-Percentage: It was used to make simple comparison.

$$\text{Percentage (P)} = \frac{Sum\ of\ all\ the\ respondents\ (F)}{Total\ number\ of\ respondents} \times 100$$

Result and Discussion

Table 1: Distribution of Respondents on the Basis of Occurrence of Chronic Diseases N=160

S. No.	Diseases	Frequency	Percentage
1	Diabetes	62.00	38.75
2	Anaemia	81.00	50.62
3	Blood Pressure	51.00	31.87
4	Asthma	47.00	29.37
5	Tuberculosis	11.00	06.87
6	Liver problem	94.00	58.75
7	Gastric / other abdominal Issues	105.00	65.62
8	Slip Disc	06.00	03.75
9	Cataract	52.00	32.50
10	Skin Infection / Allergies	106.00	37.50
11	Migraine	62.00	38.75

Data presented in Table 1 clearly indicated that more than sixty five per cent respondents were suffering from 'gastric/other abdominal issues' while about fifty nine per cent respondents were having ‘liver problem’. More than fifty per cent respondents found having ‘Anaemia’, whereas little less than per cent respondents were suffering from 'Diabetes'. About thirty two per cent respondents were having 'blood pressure' while little less (29.35) respondents were suffering with ‘Asthma’. Minimum (3.75%) farmers were also found suffering from ‘slip disc’ and ‘tuberculosis’ (6.87%). About sixty six per cent respondents were having ‘skin infection/Allergies’ while about thirty nine per cent respondents were suffering from Atherosclerosis/ Osteoporosis. Cataract is clouding of lens inside the eye which slowly decreases vision, 32.50 percent respondents were found suffering from cataract, whereas 37.50 percent respondents were having migraine also. Finding the study are in concurrence with findings of the Lee *et al.* (2010) [2] selected lifetime disease prevalence and odds ratios for agricultural workers. The most prevalent diseases were arthritis, hypertension, and intervertebral disc disorders. Compared to the total population, agricultural workers showed a significantly higher risk of arthritis, gastritis and duodenitis, whereas agricultural workers had a lower prevalence of diabetes mellitus, cancer, and cataract/glaucoma. The results were similar when the analysis were repeated comparing agricultural to manual and non-manual workers.

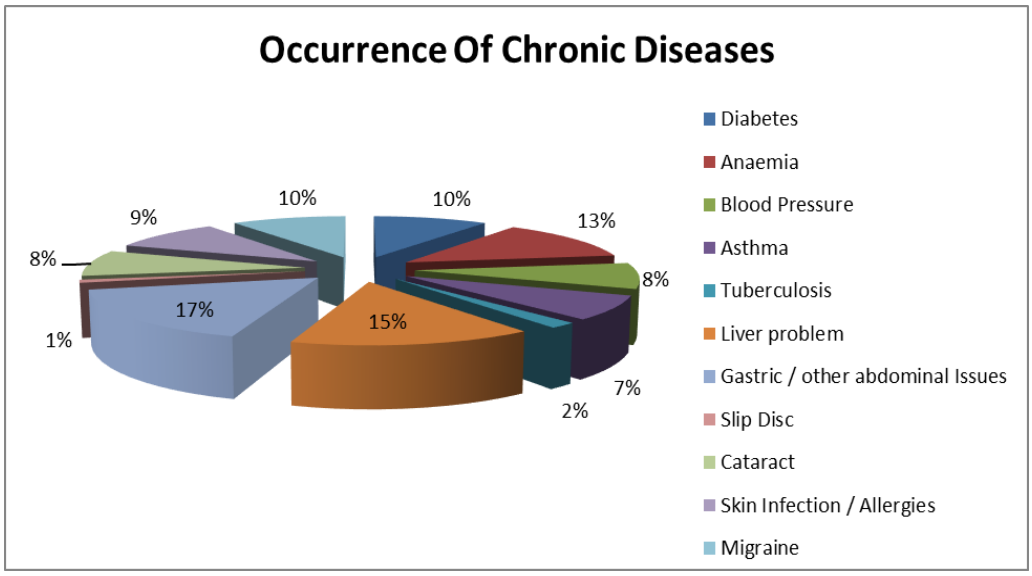

Fig 1: Respondents on the Basis of Occurrence of Chronic Diseases

Table 2: Distribution of Respondents on the Basis of Causes of Injuries N= 160

S. No.	Causes	Frequency	Percentage
1	Foot Slip at work station	25.00	15.62
2	An object hit /fallen	61.00	38.22
3	Road accident	15.00	09.37
4	Cut/hit as part of activity	87.00	54.37
5	Home farming Accident	110.00	68.75
6	insect bite	49.00	30.62

It is explicit from the Table 2 that about sixty nine per cent respondents were injured as a result of home/farming accidents, whereas 54.37 percent respondents injured due to cut or hit as a part of activity like hand/foot cut with sickle or spade etc. About thirty eight percent respondents were found injured as an object hit or fallen on them while 30.62 percent suffered with insect bite. More than fifteen per cent respondents were injured because of foot slip at work station and about nine percent respondents were injured as a result of road accident. Finding of the study are in agreement with finding of Voaklander *et al.* (2009) [4] the most common external causes of injury were machinery (26%), falls (19%), transport (18%), animals (17%) and being struck by an object (11%). Increased injury risk was observed for being an employee/contractor (odds ratio 1.8, 95% CI 1.2 to 2.7), not having attended farm training courses (1.5, 95% CI 1.0 to 2.1), absence of roll-over protective structures on all/almost all tractors (2.5, 95% CI 1.7 to 3.8), absence of personal protective equipment for chemical use (4.7, 95% CI 1.6 to 13.9) and a low average annual farm income of AUD$5000 or less (2.7, 95% CI 1.3 to 5.6). Decreased injury risk was observed for several health related characteristics and some farm characteristics

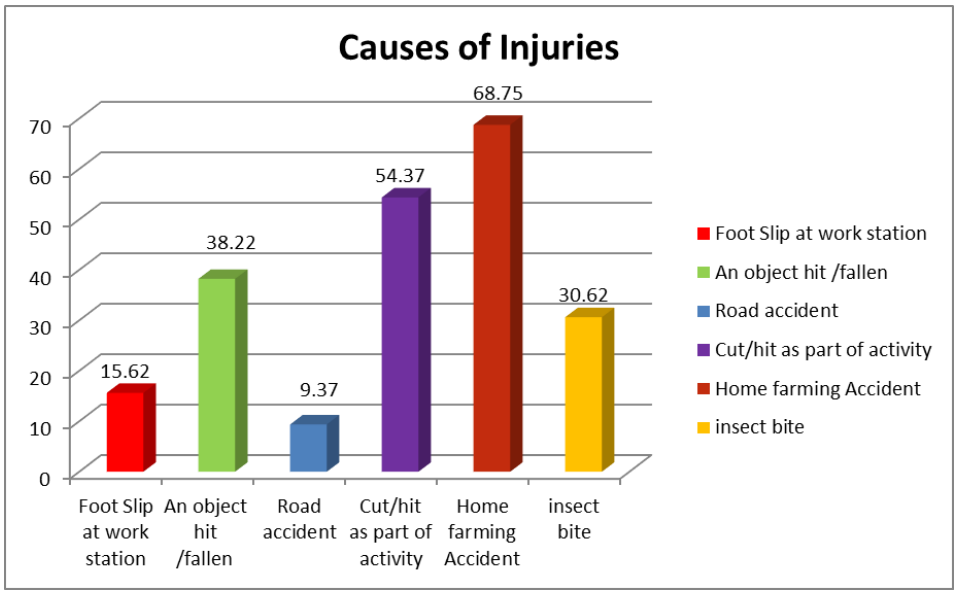

Fig 2: Respondents on the Basis of Causes of Injuries

Conclusion

Health in a broader sense is a state of physical mental and social well-being of a person. Productivity of a person is highly affected by physical and mental wellbeing. Table-1 indicated that potato growers were suffering from some or many chronic disease viz.: more than sixty five per cent respondents were suffering from gastric or other abdominal issues and cataract while 50.62 percent respondents found suffering from Anaemia disease. Agriculture is one of the most hazardous sectors in both developing and industrialized

countries. It is ranked as one of the three most hazardous industries with mining and construction (ILO 1998). As Table -2 revealed that more than sixty five per cent respondents were found injured from home/farming accident and little less than fifty five percent suffered with cut or hit as a part of activity.

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