

## ABSTRACT

Agricultural workers are confronted with many unfavorable health conditions due to environment, equipment, machinery and chemical exposure. Therefore it is essential to cater the health issues faced by agricultural workers. Although care of the individual worker is a major task of an occupational health service, it has responsibilities for improving the health of the workforce as a whole by identifying poor health and its causes. Implementation and evaluation of preventive measures should be compatible with socioeconomic and cultural context of a country. Assessments of currently existing health situation among agricultural farmers are important in different dimensions and it will provide information on current health problems and their determinants.

The study was done in two phases among the male farmers in the Naula Divisional Secretariat area of the Matale district in Sri Lanka. A descriptive follow up study was done over a period of six months following one month baseline investigation as the first phase. The study aimed at, describing the socio demographic characteristics and cultivation practices, to determine the incidence of occupational injuries, to determine the incidence of symptoms of occupational pesticide poisoning and to describe their existing correlates, among the male farmers. A two arm parallel group quasi experimental intervention study was done over a period of six months following one month baseline investigation, aiming to assess the effectiveness of an education and practiced based intervention to reduce occupational pesticide exposure among spraying farmers in the second phase. The intervention was introduced to a group of farmers over a period of six months and the comparison group was allowed to continue their routine spraying and handling practices during the same period. The outcome was assessed by measuring erythrocyte cholinesterase activity and proportion of symptoms of occupational pesticide poisoning.

Out of 2303 study participants, a majority (68%) were above 40 years of age. Education level only up to junior secondary level (Year 6 - G.C.E. O/L) was obtained by 70% of farmers. More than 92% of farmers used equipment like hoe, knife and 'kettha' for farming activities. In addition, most of the study farmers used the knapsack spray machines (92%) and two wheel tractors (78%) for farming activities. The most commonly wore protective clothing, while handling pesticide was long sleeved shirt

(82%). Boots (4%) and polythene or chemical resistant apron (2%), were the least commonly used protective gears while applying pesticide. Harvesting the crop before the pre-harvest interval of spraying was done by 73% of the study participants.

The adjusted incidence rate of work related injuries for the particular cultivation season was 16.2% for the period of six months. Out of all injuries, the open wound was the commonest (64%) type of injury. Injury to ankle and foot was the commonest (29%) affected body site. The binary logistic regression analysis shows that presence of injuries among farmers were independently associated with age more than 30 years, part time farmers, ethnicity other than Sinhalese, farming alone, extent of cultivated land area more than 2.0 acres and working hours per day for more than 8 hours.

The adjusted incidence rate for symptoms of occupational pesticide poisoning was 64.6% for six months. In the present study severe headache (19%) was the commonest symptom. Presence of symptoms of occupational pesticide poisoning of farmers were significantly associated with age of more than 30 years, primary educational level, ethnicity other than Sinhalese, using of trellis for farming, working duration more than 200 hours per month, extent of land area of spraying at a time more than 0.5 acres and duration of a spraying session more than 2 hours.

A highly significant difference between pre and post intervention mean ChE activity can be seen in the intervention group. There was no such difference among the non intervention group. This implies that, the intervention that has been implemented was able to reduce the occupational pesticide exposure among farming sprayers in Naula Divisional Secretariat area of the Matale district in Sri Lanka.

More attention should be given to minimize occupational injuries and occupational pesticide exposure among farmers. Health promotion programmes, to build awareness towards work site safety and use of personal protective gears while spraying pesticides, should be implemented.

**Key words:** Farmers, Occupational injuries, Symptoms of occupational pesticide poisoning, Personal protective gears, Education and practiced based intervention, Acetyl cholinesterase level.