



## INTRODUCTION

Work is generally considered one of life's worthwhile and exiting experiences. Most adult spent approximately one-fourth to one-third of their time at work, which become an integral part of their life. As documented by World Health Organization and Lundy, (2002) that healthy workforce is vital for sustainable social and economic development on a global, national, and local level. Therefore, health care professionals should have some basic knowledge about workforce populations, work and related hazards, and methods to control hazards and improve health. Every effort must be made to prevent and control work-related illness and injury (*American Association of Occupational Health Nursing, 2000*).

Agriculture is one of the most hazardous sectors in both the developing and industrialized countries. It is ranked as one of the three most hazardous industries together with mining and construction. Half of the world labor force is employed in agriculture and worldwide. According to the International Labor Organization estimates for 1997, out of a total of 330,000 fatal workplace accidents worldwide, there were some 170,000 casualties among agricultural workers (*International Labor Organization, 1997*).

Pesticides are used increasingly in Egypt as in other developing countries. Many grave poisoning episodes have been documented in the last 30 years. Regulations are now in place in the country to curtail



poisoning of the population at large and farmers in particular; (*wikipedia, 2009*).

As pointed out by *Food and Agriculture Organization of the United Nations, (2007)*, pesticide is a any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport.

According to *Ontario Pesticides, (2011)* defined a farmer is a person who operate an agricultural operation, include operations that grow, produce or raise farm animals or crops, produce eggs, cream or milk, operate agricultural machinery and equipment, process farm products, manage nutrients, or conduct other activities for farm purposes, such as the use of transport vehicles or storage containers or maintenance of shelterbelt for the purpose of an agricultural operation. Also buy and use Class 2 or 3 pesticides to manage the woodlot on farmer farm. Approximately Percent of farmer in Egpyt about 5 million.

Farmers are at risk for pesticides exposure during planting, weeding, and cultivation of field crops, this type of exposure is a major preventable occupational hazard for farmers. Whereas, the acute and chronic adverse health effects of pesticides exposure have been well documented in clinical and epidemiological investigations, the identification of factors that predict exposure is lacking. Socio-culture and environmental factors influence the working and living conditions of farmers. The environment in which rural people work and live, standard of living and nutrition are important to the availability of health services. In developing countries, a large number of rural people live under poverty line. In Egypt, 23% of people live under poverty line, many of them live in rural communities (*Ministry of Health and Population, 2001; Yassin, et al., 2002*).

Pesticides used in Egypt are of different types such as organochlorine, organophosphorus, carbamates, ureas, anilides and pyrethroid. The four general categories of these pesticides are insecticides, fungicides, herbicides and bactericides. Organophosphorus insecticides are of great significance in pest control and increasingly used instead of organochlorine insecticides. Organophosphorus insecticides represent more than 80% of total insecticides used during 1995 (*Alert, 2009*).

Farmers can be exposed to pesticides and their toxicity in three ways inhalation, dermal and digestive tract. Pesticides are absorbed through lung, GIT, and sometime through intact skin and eyes,



depending on the situation and they could enter the body by any one or more of these routes (*WHO, 2004*).

Today, the health hazards due to effects of pesticide are a matter of global concern. Pesticides are graded in farmer's daily use, and their toxicity is frequently ignored. But careless handling and needless exposure can cause serious health problems (abdominal pain, dizziness, headaches, nausea & vomiting, as well as skin and eye problems and long-term health problems such as respiratory problems, memory disorders, dermatologic conditions cancer, depression, neurological deficits, miscarriages, and birth defects (*WHO/UNDP.2004*). Avoid using pesticides reduced crop yields by about 10%, associations between non-Hodgkin lymphoma, leukemia, prostate cancer, breast cancer from exposure to DDT prior to puberty. Multiple myeloma and soft tissues sarcoma than other cancers soft tissues sarcoma with less association found for other cancers and 70% increase in the risk of developing Parkinson's disease for people exposed to even low levels of pesticides (*Montgomery, 2008*).

Health education is any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire the information and the skills needed to make quality health decision, this process involves several key components .First, health education involves the use of learning teaching strategies .Second, learner maintain voluntary control over the decision to make changes in their actions. Third, health



education focuses on behavior changes that have been found to improve health status, (*Edelman & Mandle, 2006*).

Community health nurse is seen as a resource to be involved in planning and delivery of Personal, Social and Health Education (PSHE). The nurse may contribute to the immediate solutions to the problems of pesticide poisoning and environmental quality better education about the safe storage and proper application of pesticides ( how to be prevented through safe dealing and good health practices and using of self protective measures, better regulation of pesticides, and better compliance by the homeowner to ensure that the products used in accordance with instructions on the label. one of the healthy people 2010 objectives is to reduce pesticide exposures that result in visits to a health care facility(*Mckenzie et al., 2005; Pesticide Legislation Approved ,2009*).

### **Significance of the study**

In Egypt, the irrational use of pesticides triggered a number of environmental and health problems that most Egyptians still somberly remember. Probably the most dramatic incidents occurred in 1971, 1973 and again in 1976 when neurotoxic organophosphates caused the widespread poisoning and death of about 35 pesticide operators and hundreds of farm animals (*World Bank Report, 2002*).



Since that time many problems flared up. For example, five of the internationally banned pesticide in addition to fifty nine of pesticides that should be used under very strict precautions were used in Egypt at the period between 1996-2004, those pesticides have triggered the crisis face today. The minister also added that this committee was held at 1996 and act as a filter and a barrier to carcinogenic pesticides and pesticides of bad reputation (*Al Ahram Newspapers, 2005*).

Pesticides can be dangerous to consumers, workers and close by standards during manufacture, transport, or during and after use. Some pesticides are considered too hazardous for sale to the general public and designated restricted use pesticides, Poisoning may also occur due to use of DDT and other chlorinated hydrocarbons by entering the human food chain when animal tissues are affected (*Ritter, 2009* ).

While there is no doubt that pesticides provided significant benefits to society they can be dangerous if used or stored improperly. World Health Organization and the Unitedp Notion Environment Programme estimate that each year, 3 million workers in agriculture in the developing world experience severe poisoning from pesticides, about 18,000 of workers in agriculture die. As many as 25 million workers in developing countries may suffer mild pesticide poisoning yearly (**Ontario Pesticides&Ritter, 2009**)

The community health nurse should assume a role in raising the farmers knowledge regarding to pesticides health effects, how to be



prevented through safe dealing and good health practices and using of protective measures to fulfill the health needs, upgrade knowledge and practice for this group and increase their health awareness about importance of prevention from pesticide risks or pesticide-related illnesses (*WHO/UNDP.2004*).