INTRODUCTION

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 (American Association of Occupational Health Nursing, 2000).

Farmer is a person who operates an agricultural operation that includes grow, produce or raise farm animals or crops. Approximately the percent of farmers in Egypt is about 5 million. Pesticides are used increasingly in Egypt as in other developing countries (Food and Agriculture Organization of the United Nations, 2007; Ontario Pesticides Act & Regulation, 2011).

The New Egyptian Journal of Medicine Vol.:45, No.: 6 Supplement 1st December 2011 15
Farmers are at risk for pesticide exposure during planting, weeding, and cultivation of field crops, this type of exposure is a major preventable occupational hazard for farmers. Pesticides used in Egypt are of different types such as organochlorine, organophosphorus, carbamates, ureas, anilides and pyrethroid. Farmers can be exposed to pesticides and their toxicity in three ways: inhalation, dermal, and digestive tract (Ministry of Health and population, 2001; Yassin, et al., 2002). Today, the health hazards due to the effects of pesticides are a matter of global concern. Pesticides are great in farmers’ daily use, and their toxicity is frequently ignored. But careless handling and needless exposure can cause serious health problems (Tracher 2001; WHO/UNDP, 2004).

Significance of the study

The recent incident of pesticide poisoning occurred at July 2005 when more than 200 cases of pesticide poisoning were suspected at different parts of Sohag Governorate after eating melons sprayed with pesticides (Al-Ahram Newspapers, 2005).

Pesticides can be dangerous to consumers, workers, and the general public during manufacture, transport, or 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. The World Health Organization and the UN Environment Programme estimate that each year, 3 million workers in agriculture in the developing world experience severe poisoning from pesticides, about 18,000 of whom die. As many as 25 million workers in developing countries may suffer mild pesticide poisoning yearly (Ritter, 2009; Ontario Pesticides Act & Regulation, 2011).

The community health nurse should assume a role in raising the farmers’ knowledge regarding to pesticide 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).

Aim of the study

This study aimed to evaluate the effect of educational health program on self-protective measures for farmers using pesticides at Kalyobia Governorate.

Hypothesis

There will be a significant improvement in farmers’ knowledge and practices about self-protective measures during using pesticides after attending an educational health program.

Subjects and Methods

Design: - A quasi experimental design was used in this study.

Settings:

The study was conducted at: I-The agriculture unit to observe the farmers during purchasing pesticides, its packaging, and instructions given to the farmers. The two places were located at El-Safina Village and El-Hesa Village. It represents a typical rural community and the largest Village in Tokh district, Kalyobia Governorate. It has a total population density in El-Safina Village 14000 persons and 1027 of them are working in agriculture; while El-Hesa village has a total population density 1800 persons, most of them work in agriculture.

II-Farmers who agreed to participate in the study were visited by the researcher in their farmland to observe their actual practices when dealing with pesticides.

Sample:

The sample for this study included 200 farmers who attended to the above mentioned settings, and according to the following criteria:
- Male farmers
- Age more than 18 years
- Use pesticides for at least 5 years

Sampling selection procedures were as
follows, the village divided into two sides (east & west of road), one hundred homes were selected from each side using systematic random sampling, started by the first home on right east side, each third home was selected until reaching 109 and the same was repeated in the west side.

Tools of the study:

For data collection two tools were used

First tool:

A structured Arabic interviewing questionnaire was designed by the researcher after reviewing literature, using internet, books, journals, periodicals and magazines. Both close- and open-ended types of questions were used. It consists of the following parts:

Part I: Covers demographic characteristics of the farmers. It includes 14 questions about age, educational level, marital status, numbers of family members, and smoking, questions are also asked about whether farmers are working farming only or farming beside other work, working hours/day in farmland, years working farming, and assessing past medical history related to chronic illnesses (questions from 1 to 14).

Part II: It is designed to assess the farmers’ knowledge about pesticides: It included 10 questions covering areas related to the types of pesticides commonly used and negative effects to pesticides.

Part III: It deals with farmers’ knowledge related to pesticide use. Adopted from Baker et al., (2005), it includes 32 questions to assess safe and unsafe farmers’ practices regarding to, use of pesticides, places of buying pesticides, methods and place of pesticide storage, where are pesticides mixed? If any family members help in mixing, application of pesticides, better regulation of pesticides, there are also questions about bad habits as eating, smoking or drinking tea at the time of pesticide spraying or not, hygienic behaviors as washing hands, face, taking shower, and changing clothes after pesticide spraying.

Scoring system:

Farmers’ knowledge related to pesticides use system: Each item was rated on 2-point scale by giving one for a Yes answer while for a no answer it is scored zero. Scores 0-15 are evaluated unsatisfactory (<50%); while from 16-32, satisfactory (≥50%). A high mean score on global measurement reflects more satisfactory knowledge of the farmers.

Second tool:

It consists of the following parts:

Part I: Self-reported farmers’ health complaint related to pesticide exposure. This sheet adopted from Abiel Gafil (2002), it includes 29 questions.

Part II: Observation checklist used to assess the farmers’ practices during purchasing process, preparing pesticide for use, practices pre/post use pesticide use.

Scoring system:

Each item was graded (2) for the answer correctly done, while graded zero for the answer not done or incorrectly done.

Total practice score was evaluated as follows:

- Unsatisfactory ≤ 50% 0-<10
- Satisfactory ≥ 50% ≥10

Statistical analysis:-

Computerized data entry and statistical analysis were fulfilled using Statistical Package for Social Science (SPSS), version 11. Data were presented using descriptive statistics in the form of frequency and percentages for quantitative variables. Qualitative categorical variables were compared using chi-square test. Statistical significance was considered at p-value <0.05 and highly significant at p<0.001

Field Work:

- An official approval was obtained from the administrators of the study settings to carry out the study. This was done by submission of a formal letter from the Dean of the Faculty of Nursing Kalyobia University.
- Approval was obtained orally after the researcher introduced herself to each farmer and after explaining the purpose of the study to get better cooperation during the implementation of