



“ROOT CAUSES OF PESTICIDE POISONING AMONG FARMERS IN DIFFERENT VILLAGES OF YAVATMAL REGION”

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ABSTRACT

India is currently the largest manufacturer of pesticides and the second largest producers of agrochemicals in Asia, out of 145 pesticides registered in India, 85 are of technical grade and are locally produced. Multiple cases of pesticide poisoning were reported in India causing Deaths mostly among farmers. This cross sectional study was conducted among the farmers of different villages in Yavatmal district during the period of 25th September 2017 to 15th February 2018 to know the root cause of pesticide poisoning. From this survey based analysis it was evident that most of the reported health effects were observed due to lack of knowledge about safe handling of pesticides. Although farmers had awareness about the danger of pesticides, but no protective measure were used by them, which proved to be the main reason behind inhalation and contact poisoning.

KEYWORDS: Pesticides, Poisoning, Knowledge, Survey, Yavatmal.

INTRODUCTION

Many farmers in India have an impression and belief that if pesticides are used in excess, pests can be controlled quickly to get more protection from pests and high yields. In India, the sale, dosages and uses of many of these pesticides is not very well regulated. According to official estimates, Pesticide poisoning is directly responsible for the death of at least 10,000 people every year and these deaths are mostly of poor people, who are not reported or are under- reported (Gupta, 2004). Pesticides are the chemicals that are designed to kill member of one species i.e. insect's pests, but it is often found that members of different species are also affected including humans. Pesticides come under the category of economic poisons, a general term to describe chemical agents the use of which is acknowledged to confer benefits that outweigh the harmful consequences that may be associated with their use (Aiyar, 2003).

The world health organization stated that there are 3 million cases of pesticide poisoning each year and up to 2, 20,000 deaths, primarily in developing countries (W.H.O. 2016). Gupta (2017) analyzed the pesticides exposure scenario in India and concluded increasing cases of pesticide exposure were found.

Jeyaratnam *et al.*, (1987) investigated the extent of acute pesticide poisoning amongst agricultural communities in Indonesia, Malaysia, Sri Lanka and Thailand and confirmed that the existence of the problem was due to the inadequate knowledge of safe practices in the use of pesticides and the lack of personal protective equipments use by farmers in hot and humid conditions.

India is currently the largest manufacturer of pesticides and the second largest producers of agrochemicals in Asia, out of 145 pesticides registered in India, 85 are of technical grade and are locally produced from which, Insecticides (73%) dominate the market.

The pressure on land in India is constantly mounting due to rapidly increasing need of providing food to the ever increasing population. Owing, the limited scope for exploitation of unused land for agriculture, the solution lies in intensive and extensive cultivation to increase production and productivity. Pesticides may continue to play an essential role to ensure an adequate supply of food to meet the need of human beings.

Keeping the above references in mind, it is evident that, despite the pesticide poisoning incidents all over the world, no effective protective and preventive steps are implied. The no. of deaths has kept arising. Although many physiological causes for poisoning have been reviewed by scientists, root cause for the poisoning is still not evident. This is our small attempt to search to farmers in rural areas for finding the root causes of pesticide poisoning.

METHOD AND MATERIALS

Yavatmal district has a population of 2,07,7144, from this population 53% are directly involved with agriculture. The survey was conducted in different villages of district Yavatmal. The survey included villages from tehsil Ner, Mahagaon, Pusad, Darwha, Arni and Umardhed. The villages undertaken our survey are Kali (Tq. Mahagaon), Shilona (Tq. Pusad), Sarkinhi (Tq. Mahagaon), Malkinhi (Tq. Mahagaon), Kapshi (Tq. Ner).

The survey was conducted from 25th September 2017 to 15th February 2018. Primary data were collected by cross sectional guided questionnaire and observations on spot. The survey included 30 to 40 farmers that were engaged in pesticide application practices and also includes visits to family member of farmer which were died due to pesticide poisoning. The questionnaire consists of closed and open ended questions. Secondary data were collected by the Shri Vasantnao Naik Government College and Hospital Yavatmal.

When poisoning were assessed, the interviewed person was asked if he had fallen ill during the past months or years and if he answered yes, then he was asked to specify the systems in details.

OBSERVATION AND RESULT

In our survey Separate questionnaire was asked to the farmers of different villages of Yavatmal district. As Maharashtra is famous for its traditional crops like Cotton, Tur, Soya bean, most no. of pests are attacked on these crops which requires pesticides as a pest control. On the basis of answers given and interactions with the farmers in selected areas, list of pesticides is prepared which are mostly used. The table below indicates the list of most used pesticides.

Pesticides	Chemical group
Polo	Diafenthiuran
Profex super	Profenofos + Cypermethrin
Police	Imidacloprid + Fipronil.
Monocil	Monocrotophos.

Table:- Different pesticides used by farmers and their chemical groups.

All the farmers usually use mixture of two to four pesticides in one spray. During the interviews, majority of the farmers stated that using mixture of pesticides makes the dose even stronger and effective while some believed that single dose proves less effective. It was also noted down that the person who sprays pesticide prefers making the formulations on his own or as told by experienced farmers. Farmers stated that the doses depend on the amount of attack of pests but usually the whole bottle of pesticides is used at once. There was no standard method preferred for making formulations.

All the farmers of cotton field usually sprays on cotton once a week in one field. But they undertake hired spraying work in other farmer's field. Farmers stated that on an average, they spray 8 hours per day. It

was observed that the farmers who spray pesticides usually spray whole day i.e. in hot and humid conditions.

When we asked about time from which they apply pesticides, they responded that all of them spray pesticide from about 8-9 years and had poisoning after prolonged use of pesticides. They also stated that the symptoms of pesticide poisoning didn't arrive early.

It was noted that while applying pesticides, there were lot of difficulties faced by the farmers, among these difficulties common answers were increased height of cotton crop which is the probable cause of inhalation poisoning, also direction of wind played important role for entering the human route through nasal track. It was also noted that most of the farmers don't use any protective equipments while applying the pesticides in the fields.

According to answers given by the farmers general symptoms observed and their extent is given in table below

S.N	Symptoms	Prevalence (%)
1.	Headache	88%
2.	Dizziness	70%
3.	Blurred vision	73%
4.	Difficulty in Breathing	89.4%
5.	Skin rashes	67%
6.	Vomiting	55%
7.	Irregular heart beat	47%
8.	Excessive Sweating	84.6%
9.	Eye rashes	47 %

Table 2: Occurrence of symptoms with their prevalence

From the survey it was evident that there are very few farmers who use protective equipments. It was observed that there is direct relationship between no. of protective equipments used and occurrence of symptoms. The graph below shows relationship as no. of symptoms are more when there is less use of protective equipments.

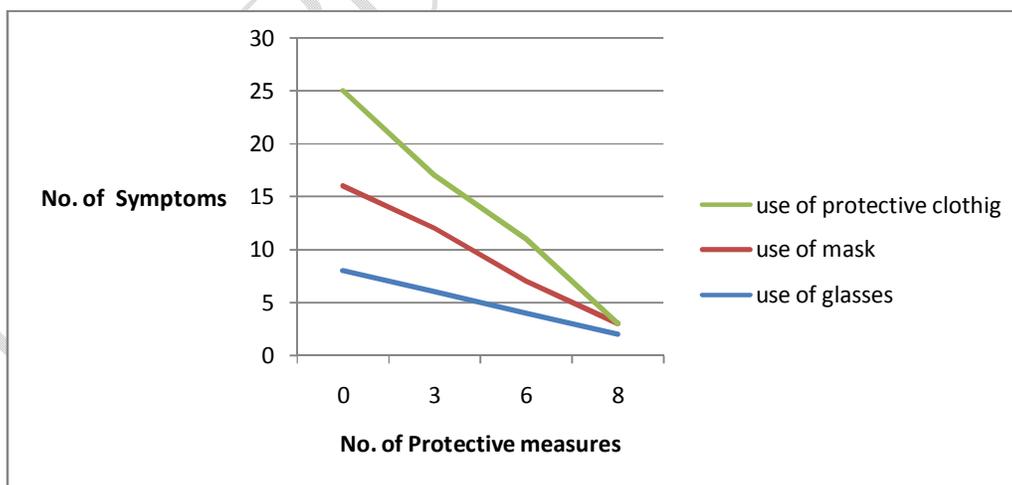


Fig: Graph showing relation between No. of symptoms and No. of protective equipments used.

It was observed that due to lack of education and awareness, most of the farmers had very little knowledge about the toxicity and safe handling of pesticide. This was thought to be one of the important

reason for increasing cases of poisoning as 95% of the farmers who spray pesticides stated that they didn't even know how to read the instruction on user manual.

DISCUSSION

The approach of face to face questionnaire and direct interaction with the affected as well as the daily sprayers was made to assess the common reasons behind this much extent of pesticide poisoning.

Despite the fact that most of the farmers were aware about the health hazards associated with pesticide spraying, they avoided the use of personal protective equipments. A higher percentage of farmers said that they received instructions from agriculture shop or neighbor but the dilemma is that there was no training or workshop regarding the safe practices. With regarding to no. of hours spent for application of pesticide, the study found that most of the farmers used to spray about 7-8 hours/day according to the answers provided by them. The finding of this study was quite similar to the study conducted by Jensen *et al.*, (2011) who concluded that symptoms of pesticide poisoning were related to no. of hours spraying and no. of personal protective equipments used.

From this survey it was also reported that Organophosphate was the most impactful pesticide leading to increasing no. of affected persons. Similar study was conducted by Antonijevic (2007), who concluded that Organophosphates are detrious to target as well as non target organisms.

CONCLUSION

From this survey based analysis of the extent of pesticide poisoning amongst pesticide spraying people in different villages of Yavatmal district, it is evident that most of the reported health effects were observed due to lack of knowledge about safe handling of pesticides. Although farmers had awareness about the danger of pesticides, but no protective measure were used by them, which proved to be the main reason behind inhalation and contact poisoning.

Most of the farmers were uneducated and reading the instruction manual was not possible. Spraying the pesticides without knowing the proper dose proved to be one of the main reasons for poisoning. The first priority for reducing the no. of pesticide poisoning cases must be to effectively phase out the most hazardous pesticides from the market. Proper knowledge and Education amongst pesticide sprayers for the proper use of pesticides is the need of hour. This can be achieved by awareness among farmers towards proper use of pesticides by conducting seminars and workshops by the agriculture department of that particular area.

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