

## An Autopsy Study of Organophosphorus Compound Poisoning At Sylhet MAG Osmani Medical College

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### Abstract

### Original Research Article

**Objective:** In this study our main goal is evaluation of autopsy study of organo phosphorus poisoning in patients. **Method:** This retrospective type of study was conducted among 75 patients who fulfilled criteria from Sylhet MAG Osmani Medical College from January 2015 to January 2017. **Results:** During the study, 57% patients were male, which was 14% higher than female. 50% worked as an agriculture area/ farmer. Also, 75% people used organo phosphorus for suicide and 25% people used it accidentally. **Conclusion:** From our study we can conclude that, organophosphorus is a self-poisoning important clinical problem in developing world. Because of limited guide therapy, properly study is needed for seeking treatment which could help to reduce mortality and morbidity. **Keywords:** organo phosphorus, insecticides, agricultural area.

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## INTRODUCTION

Organophosphates (OP) are used as insecticides in agricultural and domestic settings throughout the world. The mechanism of action is through the inhibition of the enzyme acetylcholinesterase, leading to the accumulation of acetylcholine at cholinergic synapses.

On a worldwide basis, pesticides are responsible for hundreds and thousands of cases of acute poisoning and many thousands of deaths each year. Vast majority of these deaths are result of suicidal consumption of organo phosphorous compounds.

The excess acetylcholine causes constant acetylcholine receptor triggering, resulting in malfunction of the autonomic, somatic and central nervous systems. Clinical manifestations of OP poisoning lead to acute cholinergic crisis [1].

Although parasympathetic overstimulation tends to predominate, the overstimulation causes a clinically indistinguishable pattern of symptoms which,

however, tend to be milder and of shorter duration [2]. Their common availability renders OP insecticide poisoning a worldwide health problem affecting millions of patients. With a high fatality rate [3, 4].

The majority of these poisonings appear to be an act of self-harm. Thousands die each year, especially in the Asian Pacific region, where pesticide poisoning is the most frequent cause of fatal self-poisoning [4]. In this study our main goal is evaluation of autopsy study of organo phosphorus poisoning in patients.

## OBJECTIVE

### General objective

- To evaluation of autopsy study of organo phosphorus poisoning in patients.

### Specific objective

- To detect symptoms of the exposure to organophosphates of the patients
- To identify poisoning level of the patients

## METHODOLOGY

<b>Type of study</b>	<b>Retrospective study</b>
Place of study	Sylhet MAG Osmani Medical College
Study period	January 2015 to January 2017.
Study population	75 patients included in the study who were fulfilled criteria.
Sampling technique	Purposive

### Study procedure

During the study. Face to face interview of the participants were conducted with the semi-structured, pre-tested questionnaire. The interview was conducted anonymously and privately as much as possible. Before preceding the data collection, the detail of the study was explicitly explained to each eligible respondent and informed written consents from the respondents were obtained.

### Data Analysis

Data were entered in the template of Statistical program, SPSS-15 after necessary editing and coding. Descriptive statistics were generated for socio-demographic variables and were presented with relative frequency. For assessing the compilations and health seeking pattern relevant data were analyzed along with the descriptive statistics. Cross tabulation of the selected complication and key health seeking practice variables were done to explore the association through chi square test at a significance level of  $P < 0.05$ .

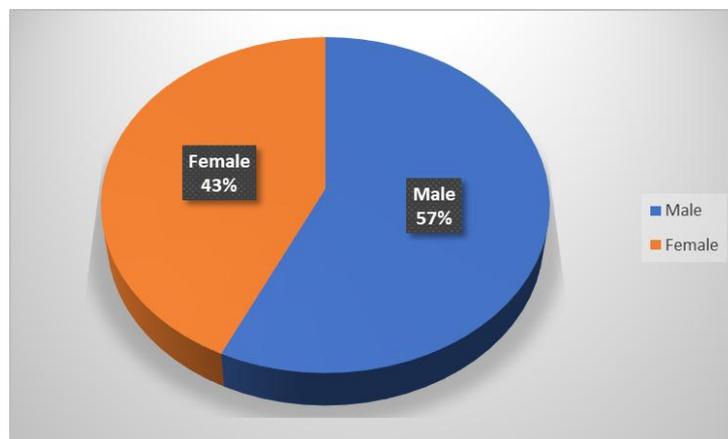
## RESULT

In table-1 shows age distribution of Opc poisoning cases where most of the patients belong to 21-30 years age group, 40%. The following table is given below in detail:

**Table-1: Age distribution of Opc Poisoning Cases**

Age group in years	No of victims	Percentage
<10years	5	7%
(21 - 30) years	30	40%
(31-40) years	25	34%
(41 - 50) years	10	13%
>50 years	5	7%
Total=	<b>75 cases</b>	100%

In figure-1 shows distribution of OPC poisoning cases according to the gender where 57% patients were male, which was 14% higher than female. The following figure is given below in detail:



**Fig-1: Distribution of OPC poisoning cases according to the gender**

In table-2 shows distribution of OPC Poisoning cases by professions. 50% worked as a

agriculture area/ farmers. The following table is given below in detail:

**Table-02: Distribution of OPC Poisoning cases by professions**

Profession	No of Victim	Percentage
Agriculture working / Farmers	40	50%
House wife	30	40%
Others	5	7%
Total=	<b>75</b>	100%

In figure-2 shows distribution of the patients according to purpose of organophosphates where 75% people used it for suicide and 25% people used it

accidentally. The following figure is given below in detail:

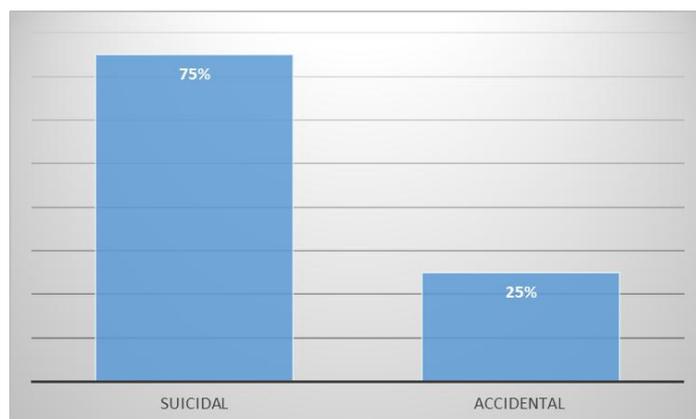


Figure-2: Distribution of the patients according to purpose of organophosphates

## DISCUSSION

In China and South-East Asia pesticides account for about 300000 suicides each year [5]. Another study suggested that each year worldwide there is 3 million acute poisoning with 220000 deaths [6].

In Bangladesh poisoning is an important health problem causing around 2000 deaths per year. Self-poisoning constitutes more than half of the total poisoning cases admitted in hospital. Most of the poisoning cases may have some reasons for taking poison. Which is quite similar to our study where 75% people used it for suicide and 25% people used it accidentally.

OPC poisoning in a country like Bangladesh is not only a public health problem but also related to economics and culture. There is great need to enhance stress on prevention of poisoning. A coordinated and comprehensive response is needed to make any impact.

In our study most of the cases belonged to the age group of 21-30 years which is similar to the one study [7]. In a country like India this is the age group where the youth have to shoulder the responsibilities of the family. However, some cannot cope with this burden and hence this age group contributes for maximum deaths due to poisoning. In our study, males and females comprised 57% and 43% of the cases respectively; male patients were 14% higher than female. This male predominance was also seen in the one report [8].

Another report from India in 1993–1994 analyzed 559 cases of poisoning and aluminium phosphide was found to be the most common poison. The scenario was not different from these reports and agrochemicals continue to be the most common agents responsible for suicidal and/or accidental poisoning [9]. According to National Crime Records Bureau India, every 5 minutes one person commits suicide and 7 attempts to kill themselves, forming about 100000 deaths per year [10].

In a study of India, suicide rate was found highest in the state of Kerala [11]. Majority of the victims belonged to the group 14–34 years and OPC was the most common agent used for suicidal purpose [12]. In Sri Lanka, many of hospital admissions each year are for agrochemical poisoning with over a thousand deaths annually. Of these, about three-quarters are self-administered, and the rest are occupational and accidental [13]. In Sri Lanka another study showed that incidence of suicide due to poisoning was more than 80%, followed by hanging which constituted 10.7% [14]. However, changing use from the most toxic pesticides to less toxic pesticides has had a remarkable effect in Sri Lanka and the suicide rate has fallen by 50% over ten years since such legislation was passed. [15-16] In USA, during 1980, out of total fatalities 49.7% were suicides and 39.5% were accidental by agrochemical poisoning [17].

## CONCLUSION

From our study we can conclude that, organophosphorus is a self-poisoning important clinical problem in developing world. Because of limited guide therapy, properly study is needed for seeking treatment which could help to reduce mortality and morbidity.

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