

## Clinical Study and Hospital Outcome of Different Types of OPCs and Carbamate Poisoning in a Tertiary Level Hospital

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This study was carried out to quantify the burden of organophosphorus compound (OPC) and carbamate, and also to compare the severity of these common poisons in regard to clinical feature, treatment and morbidity and mortality. The study was conducted in medicine department of Dinajpur Medical College. A total of 168 patients were enrolled, among them 100 were of OPC and 68 were of carbamate group. Male were predominant in both the group. Younger patients of <30 years were main victims. Clinical feature was almost similar in both the groups. Less amount of atropine required in carbamate group for atropinisation than OPC. PAM was not used in carbamate group. Mortality was 16% in OPC group in contrast 0% in carbamate group.

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**Key words:** Organophosphorus, carbamate, poisoning

### Introduction

One of the most common modes of committing suicide in developing country like Bangladesh is by consuming poisons especially organophosphorus compounds and carbamates. The reason for choosing organophosphorus (OPCs) and carbamates are inherent advantage of its easy availability in our agro-based country and almost predictable results. Currently OPCs and carbamates poisoning has become a major

health problem of Bangladesh. Unfortunately such poisoning is seldom included as a priority for health research in this country.<sup>1</sup>

Current OPCs and carbamates poisoning scenario in Bangladesh is alarming. In 2007, 37,712 metric ton of pesticides were sold in this country.<sup>5</sup> OPCs and carbamates are most popular in Bangladesh and are available even in small rural shops. But our farmers are almost ignorant about their side effects.

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## Methods

It was a simple observational study prospective in nature. The study was carried out in the Department of Medicine of Dinajpur Medical College Hospital, Dinajpur (DJMCH) from 1<sup>st</sup> October 2010 to 31<sup>st</sup> March 2011. All patients who were admitted with the history of OPC or Carbamate poisoning fulfilling the inclusion criteria were included.

### *Inclusion criteria:*

1. History and clinical features of OPC or Carbamate poisoning in men and women age between 15-60 years.
2. No other co-morbidity or illness.
3. Who brought samples of ingested poison.

### *Exclusion criteria:*

1. Concomitant ingestion of other drugs.
2. Pregnant patients
3. Patient who received medication for this poisoning prior to admission.
4. Patient who could not bring sample.

A total of 168 cases were selected who have fulfilled the inclusion and exclusion criteria. They were divided into two groups according to chemical composition of poison ingested into OPC and Carbamate groups. All the data were recorded in a preformed structured questionnaire. All data were compiled and edited meticulously by thorough checking and rechecking. All omissions and inconsistencies were corrected, data analyzed methodically and presented in Tables.

## Results

Regarding age most of the patients were between 21 and 30 years in both groups. Incidence markedly reduced after the age of 40. Age distribution is shown the Table 1

Table I: Age distribution of the patients

Name of poison	Age Groups				Total
	<21 years	21-30 years	31-40 years	>40 years	
Organophosphorus	30	44	21	5	100
Carbamate	22	29	11	6	68

Male person were the main bulk, 77% in OPC and 71% in Carbamate group. Commonest manifestation was pupillary in both groups. Atropine requirement was much less in carbamate group for atropinisation. Sex distribution of the patients is shown in the Table II.

Table II: Sex distribution of the patients

Name of substance	Male	Female	Total
Organophosphorus	77	23	100
Carbamate	48	20	68

Atropine toxicity during treatment was more common in carbamate group. PAM was only used in OPC group. Duration of hospital stay is shown in the Table III.

Table III: Duration of hospital stay

Name of substance	of 0-4 days	5-7 days	≥8 days
Organophosphorus	26	64	10
Carbamate	46	22	0

Early recovery and reduced hospital stay was observed in carbamate group. Morbidity and mortality was much more in OPC group. Mortality was 16% in OPC group in contrast 0% in carbamate group. Outcome of treatment is shown in the Table IV.

Table VI: Treatment outcome

Name of substance	Complete recovery	Recovery with complication	Death	Death rate
Organophosphorus	77	7	16	16%
Carbamate	67	1	0	0%

## Discussion

This observational study reflects that young peoples are commonly affected by OPC poisoning. Faiz and Hasan (1998) reported 76% of OPC poisoning was 11-30 years of age group. Ibrahim (2005) in Chittagong Medical College also reported similar result. So this study is consistent with findings of other study carried out in Bangladesh. In this study 77% patients were male and 23% female in OPC group. Male to female ratio is 3.3:1 and 2.4:1 respectively in OPC and carbamate group. Rahman and Samad (2000) showed male to female ratio in OPC poisoning 1.6:1, Faiz MA and Hasan M. (1998) showed male to female ration 2.21:1. So, this study shows increasing trend of OPC poisoning in male. In this study common clinical features were pupillary. Similar result was reported by Shiva Kumar S et al. (2002) at Stanley Medical College and Hospital Chennai, India. In this study 77% patients completely recovered, 7% patient recovered with complication and 16% patient died in OPC group. In Bangladesh Faiz and Hasan (1998) found case fatality 16.7% Sharif et al. (2008) reported mortality due to pesticide poisoning has been found to be 14-15% in Bangladesh. Anwar et al. (2004) reported overall mortality to be 21.7% in pesticide poisoning. So, result of this study is consistent with other study performed in Bangladesh.

## Conclusion

Much of the success in the agricultural field in our country is due to the knowledge and use of agricultural insecticides. Their preparations are most popular on one side and on the other side also take many lives every year, though mostly in the rural areas but also to a considerable extent in the urban areas. OPCs are not ideal pesticides because of lack of target vector selectivity and severe toxicity and even death in human and domestic animals. Now a days OPC poisoning is the leading cause of morbidity and mortality due

to poisoning especially in agriculture based developing country like Bangladesh. Community education in rural area where small and large-scale farming is practiced is very important. Doctors working in the primary care centres must be aware of the dangers posed by OPCs used by farmers. In contrast carbamates are less toxic, easier to treat and morbidity and mortality is much less.

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