

## ROLE OF MAGNESIUM SULPHATE IN ORGANOPHOSPHATE POISONING

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## ABSTRACT

Introduction: Organophosphate is the frequently being used and most easily available poisons in developing countries. Its mortality rate is high and its management is a huge economic burden on affected families. The incidence of Organophosphate poisoning is high in South East Asia. According to an article by Micheal Eddleston it kills an estimated of 20,0000 people in a year. Studies estimates that organophosphorus pesticides are responsible for almost the 2/3 of deaths from this pesticide. **Objective:** To determine the therapeutic role of magnesium sulphate in organophosphate compounds in decreasing hospital stay.

## Operational Definition

## Morbidity

Hospital stay --> less than 5 days after admission.

## Research Methodology

**Study Design:** it is a randomized clinical control trial study

Place of study.--- : ziauddin hospital, Karachi.

Duration of study --> 30-36 weeks

Sample size --> 65 patients of organophosphate poisoning came from local population at Dr.ziauddin Hospital.

## Sample selection

## Inclusion Criteria

i- AGE; more than 13years of age.

ii- presented with op poisoning ingestion.

iii-Patients who reached within 24 hours of op poisoning.

## h) Exclusion Criteria

i- pregnancy.

ii- patient who reached after 24 hours of ingestion. **Data**

**Collection Procedure:** After taking consent we divided the patient in two groups. Both groups Received conventional treatment i.e atropine along with pralidoxime as the usual doses. One group received 4 gram of magnesium sulphate in a day one, while the other group received placebo. Data from selected patients will be collected on a Performa see attachment A. **Data Analysis:** Statistical analysis be done by SPSS

version-17. **Results:** 65 patients of OP poisoning were studied, in which 2 groups were divided. Group A and Group B. We found out the be lesser hospital stay in patients whom MgSO<sub>4</sub> given in 24 hours that is average of 5 days out of 21 days maximum in usual treatment. Meanwhile reduced in number of mortality.

## INTRODUCTION

Organophosphorus poisoning frequently used and readily available on the market poisons in developing countries. It kills nearly twenty lac people in a very year.<sup>[1]</sup> Self damage is a more of common then intentional and customary pesticides.<sup>[2]</sup> According to WHO eight lac fifty thousand people die globally from records 2001, these are self prompted according to annual.<sup>[3]</sup> In rural Asia, concerning sixty percent of all deaths occurred because of complications.<sup>[4,5,6]</sup> Organophosphorus poisons are less costly but its treatment is costly for the suffered patients. Organophosphorus poisoning are the most typical form of self-poisoning in several rural areas of its association of higher rate.<sup>[7]</sup> In Sri Lanka the concern happened is also terribly excessive.<sup>[8]</sup> In instance 1995 the six district in rural regions showed the very best amount of dying because of intoxication.<sup>[9]</sup>

Organophosphosphate poisoning cases reported from the nineteenth century. It employed in agriculture for chemical purpose.<sup>[10]</sup> Routes of absorption are by dermal contact, inhalation and commonest is consumption. Sign and symptoms will occur from ten minutes to two hours.

And can be symptoms up to 7-21 day. The cholinergic effects leads in some cases to intermediate syndrome. Another effects polyneuropathy caused by organophosphorus poisoning effects, death discovered in those patients WHO had cholinergic effects followed by intermediate syndrome.<sup>[12,13]</sup> Major effects nicotinic and muscarinic effects (include campy abdominal pain, vomiting, loose stool, short of breath, muscle wasting, tremors, motor weakness, muscular cramps, cardiovascular disease, flaccid paralysis seen with level of enzyme in red blood cells concerning 40-60%. Severe symptoms of, metabolism muscle, excessive secretion of secretion, lacrimations, muscle dysfunction, seizure and coma.<sup>[14]</sup>

Organophosphate compounds avidly bind to enzyme molecules and proportion a comparable chemical structure. Cholinesterase's corpuscle form is of two forms that are acetyl cholinesterase and pseudo cholinesterase.<sup>[15]</sup>

The neuron chemical neurotransmitter is bind within the terminal endings of all neural structure parasympathetic nerves, at monaural junctions, and at each parasympathetic and sympathetic ganglion. The foremost vital toxicity of insecticide compounds is that the valence binding of phosphate radicals to the spirited websites of the cholinesterase's, transforming them into protein succor inert proteins.<sup>[16,17]</sup>

Basic management includes mydriatic drug that is injection atropine and pralidoxime and newer drugs like magnesium sulphate in usual treatment.<sup>[18,19]</sup>

## OPERATIONAL DEFINATION

Deduction within the days of hospitalization and early recovery from severe OP poisoning effects.

## AIM

Affectivity of MgSO<sub>4</sub> within the in management and early recovery from OP poisoning.

## MATERIAL AND METHODS

**Location:** The study was conducted at Dr.Ziauddin Hospital, kemari Karachi.

**Sample Size:** Sixty five patients were registered in our study Following were the inclusion and exclusion criteria. Patients who are the included are: I age of 13 years old and 75 years old. Ii- Present with history and sign and symptoms of op poisoning consumption Iii- Patients who reached to hospital within twenty four hours of op poisoning.

**Patients who are excluded are:** I- Pregnancy. Ii- patient who reached after twenty four hours of consumption Iii. Patients with concament poisoning.

Patients were registered once written consent was obtained from next of keen. The designation of acute OP

poisoning was primarily based upon history of oral consumption of a famed OP poisoning. Statistical comparisons were disbursed mistreatment Student t-tests. P values of 0.05.

## RESULT

In our study we enclosed sixty five patients who came with sign and symptoms of organophosphorus poisoning. Thirty two male and thirty three female received with acute Organophosphorus poisoning sign and symptoms over period of four years in our hospital as shown in graph below. Age graph 1.

Age group of patients was from 13 years to 75 years old. The mean age of patients were graph 2: Patients divided into equally into two groups. These groups were MgSO<sub>4</sub>, and Non\_ MgSO<sub>4</sub> groups. The group of MgSO<sub>4</sub> patients chosen for additional magnesium sulphate group treatment. Graph 3: In MgSO<sub>4</sub> group thirty three patients in total in which twelve male and eleven male were treated. Graph 4: The Non - MgSO<sub>4</sub> group includes thirty two fourteen male, eighteen female.

Graph5: Demographic characteristics weren't statistically totally different between these groups (Table 1).

The mean hospitalization days of Mg-treated group to be less with non -MgSO<sub>4</sub> group, it varies from twenty days that's most keep and minimum to at least one day stay was observed (table 2).

In MgSO<sub>4</sub> group the most length for admitting patient is twelve days and minimum stayed in hospital is two days. The length of stayed is more lesser in those that given magnesium sulphate as a usual treatment, that's worth tabulated in table type. 3

Twenty patients were intubated and ventilated in organophosphorus poisoning. Ten patient inMgSO<sub>4</sub> group and non mgso<sub>4</sub> ten patients were offered ventilator support. No significance distinction discovered in each group. Table.3-----

Another vital variable was noted was expiration. Ten mortality in non magnesium sulphate were seen, where no expiration seen in magnesium sulphate group.

It's were a really large significance marker in discovered inMgSO<sub>4</sub> cluster 0.002. of P.

## DISCUSSION

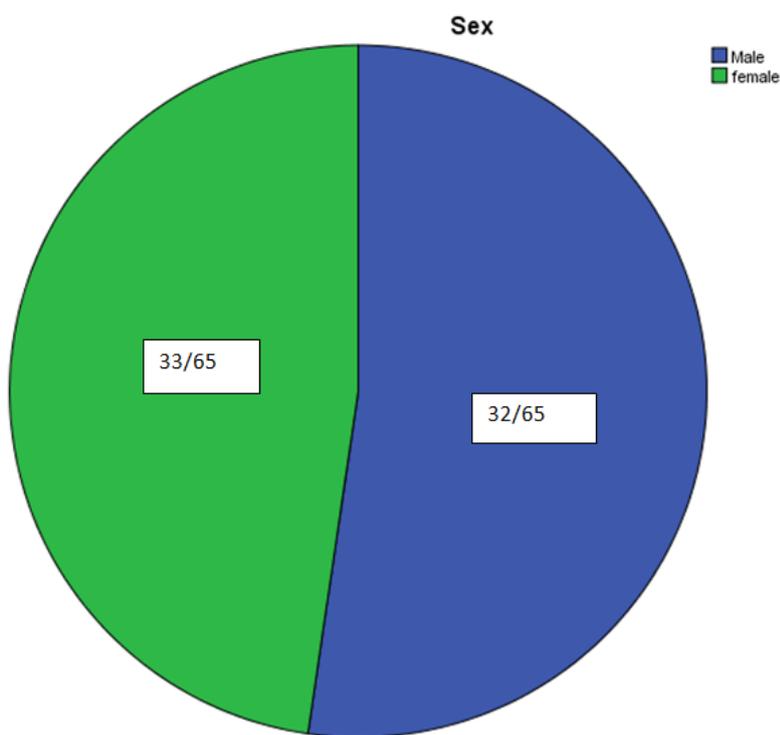
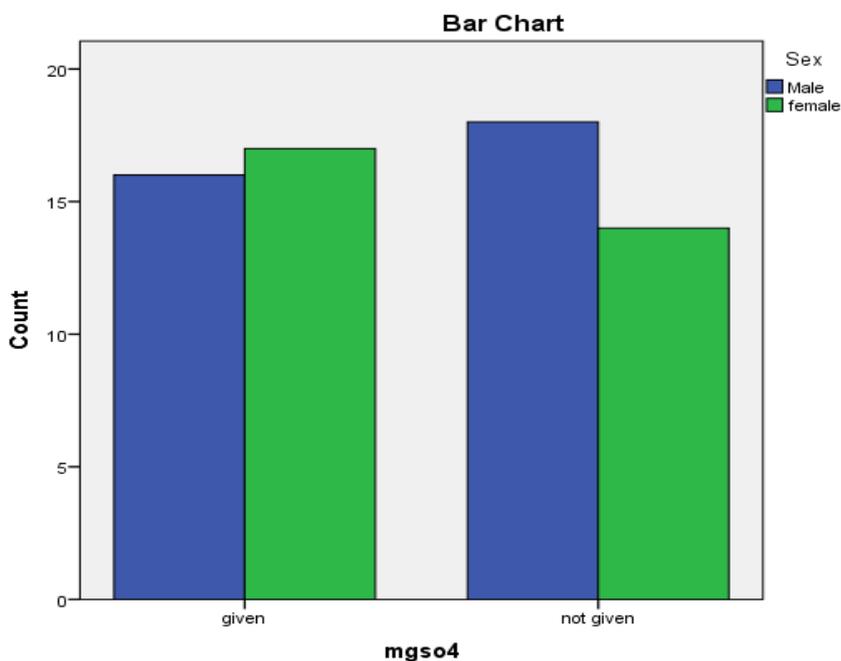
Organanophorous poison. Its toxicity leaves to severe adverse effects on health.

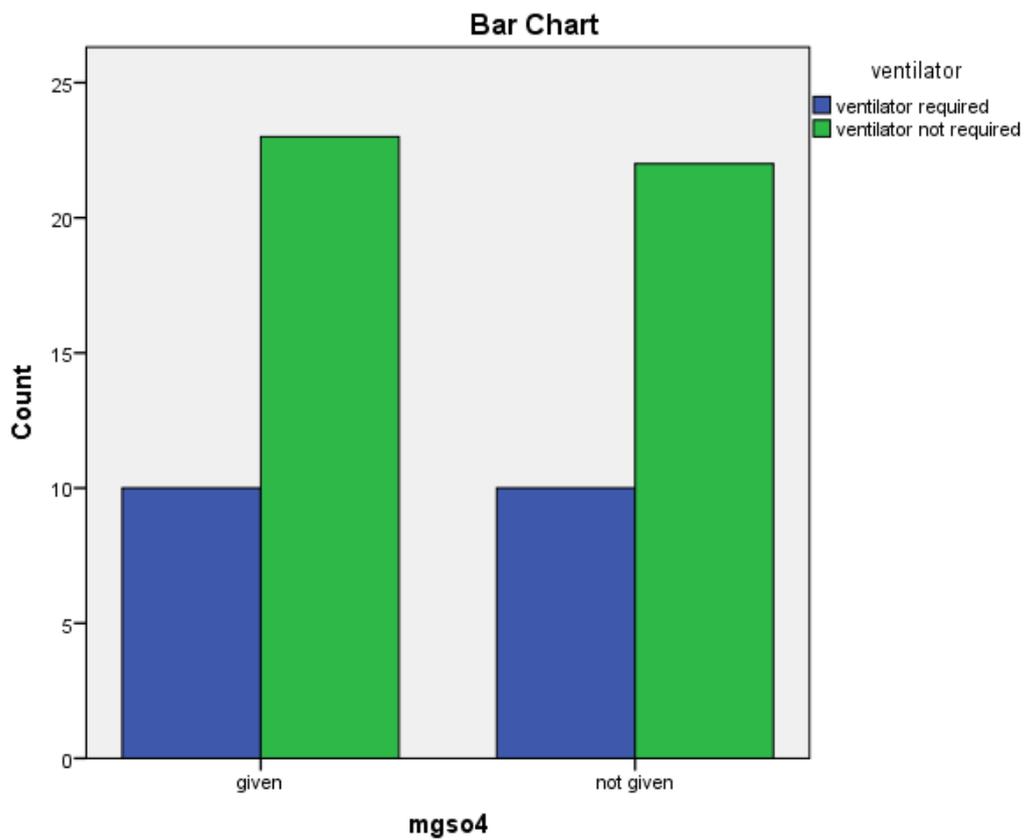
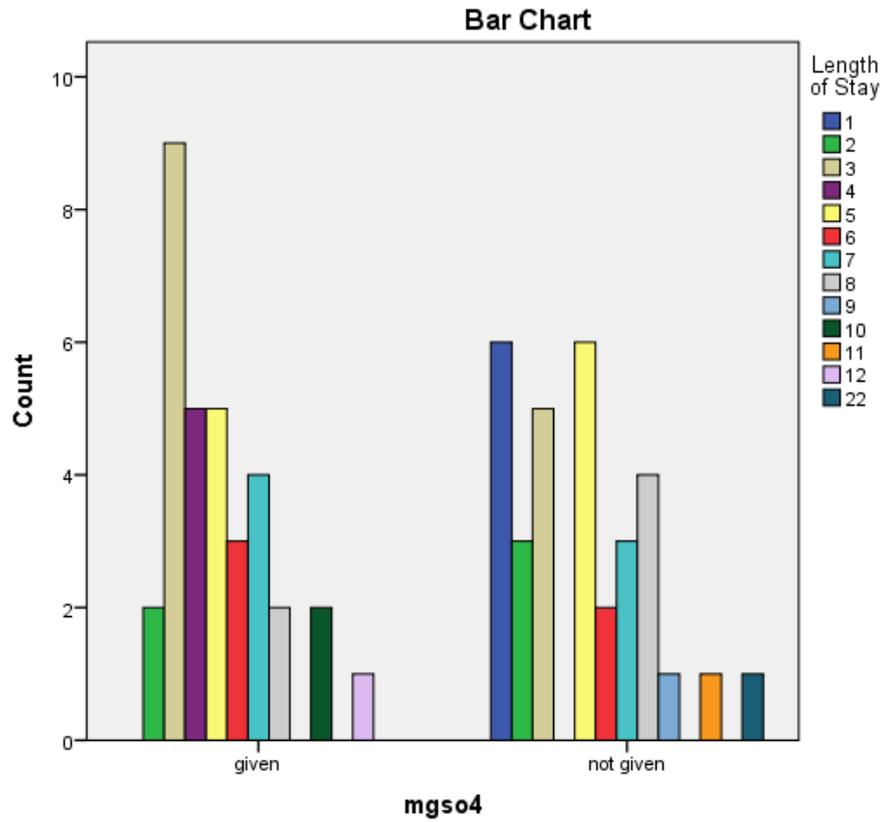
Management of op poisoning began with first ravage with the patient by managing the airways then shifted the patient to vital care unit for any management. The medical treatment includes injection atropine and injectable pralidoxime after the maintaining the vitals and stabilizing the patient. Magnesium sulfate infusion was offered in MgSO<sub>4</sub> group, for the first 24 hours after

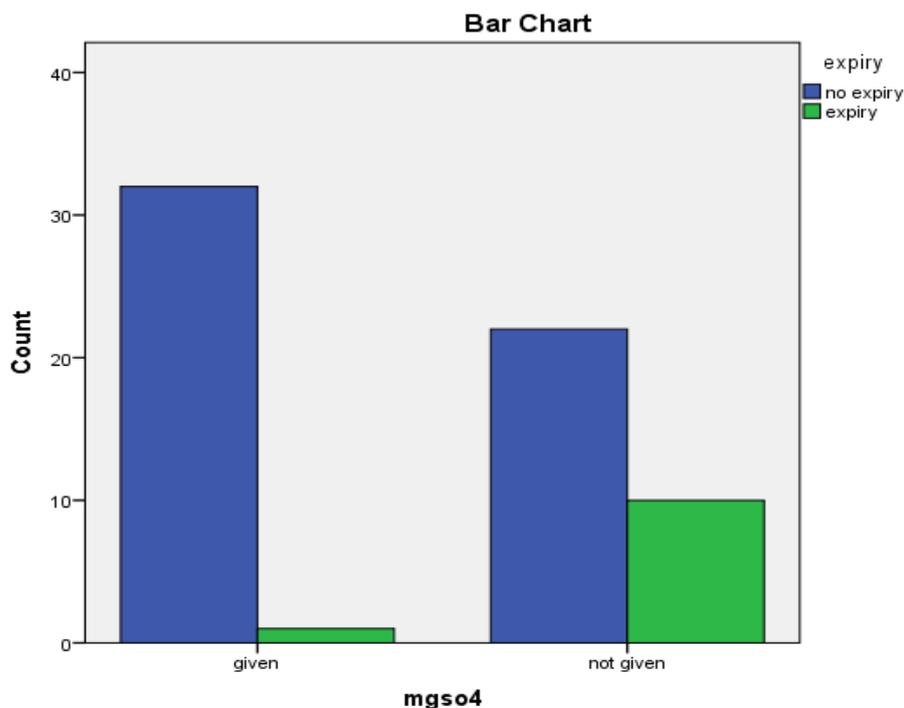
admission as a dose of 4miligram. It reduced the mortality from 90% in the Magnesium sulphate group treated patients along with the total number days. The length of hospitalization were found lesser in MgSO4 Group as compared to Non-MgSo4.Thus, the aim is to diminish the cost from the family of the affected person. Early recovery of patients and early discharge was observed. From our study, we advise the used of Magnesium Sulphate 4 gram intravenous for day one to the patient admitted with acute Organophosphorous

poisoning. The reason for higher mortality rates may be due to late arrival to hospital, due to illiteracy and dose of higher in quantity, as we enrolled patients with 50ml to 100ml.

**Limitation:** Limitation many tertiary care involved with a bigger scale of patients as to further effectiveness of Magnesium Sulphate in the treatment and early recovery from Organophosphorous poisoning Another limitation of the study was it's a unicentric study.







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