

THE TREND OF ACUTE POISONING CASES PRESENTED TO THE EMERGENCY  
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## ABSTRACT

**Objective:** Acute poisoning is one of the most common reason of hospitalization. Chemicals, medicines and environmental agents are the main causes of poisoning worldwide. Acute poisoning cases are responsible for significant morbidity and mortality, which has drawn the world attention. The type of poison used depends on various factors like the geographical area, social, financial and educational status etc. Thereby purpose of current study was to access risk factors, survival and mortality of acute poisoning cases presented at Nishtar Hospital Multan. **Methodology:** This is hospital based descriptive cross-sectional study of 155 patients admitted in medical emergency due to acute poisoning. Study duration was 6 months from May 2017-October 2017. Patient of either gender with age above 14 were included by Non-probability convenient sampling method. Demographics, nature of poison and clinical profile (mode of poisoning, clinical presentation and mortality rate) were studied. The collected data was presented as frequency and percentages. **Results:** Among 155 enrolled patients, there were 65 (41.9%) males and 90 (58.1%) females. The minimum age of patient was 15 years with mean age of 28.52±9.23 years. Majority 44.5% (69) of the patients were in age group of 15-25 years. We found that majority of the patients 21.2% (n=33) presented with Paraphenylene diamine (kala pathar) followed by 18% (28) patients with organophosphates and 10.3% (16) patients with Aluminium phosphide, 10.3% (16) with benzodiazepine, 10.3% (16) with Methanol (alcohol) and in 10.9% (17) patients the cause of poisoning was unknown. Survival and mortality rates in our study were 76.1% and 23.9% respectively. **Conclusion:** Acute poisoning is one of the most frequent medical emergency. These patients needs multidisciplinary approach, ICU care, and good knowledge of toxicology of attending doctor. Most of our patients were young. The commonest poison ingested was with Paraphenylene diamine (kala pathar) followed by organophosphates, Aluminium phosphide, benzodiazepine and Methanol (alcohol). Suicidal intention was the main reason for acute poisoning.

**KEYWORDS:** Acute poisoning, paraphenylene Diamine, kala pathar, Aluminium Phosphide, wheat pill, Benzodiazepine, pesticides, suicide, mortality.

## INTRODUCTION

Acute poisoning is defined as the toxic effects of certain chemical or drug occurring within a short period of time. Acute poisoning is responsible for significant morbidity and mortality worldwide.<sup>[1]</sup> According to WHO data 2012, 84% of fatalities among poisoning cases belongs to underdeveloped and developing countries.<sup>[2]</sup> Outcome and clinical presentation of poisoning depends on a variety of factors which include time interval between poisoning & reaching to the hospital, type/nature of poisonous substance, the amount consumed age and health of the victim as well as underlying medical illnesses.<sup>[3,4]</sup> Poisoning may be suicidal, homicidal or accidental. But most of the patients presents as a result of self-poisoning with the intention of suicide.<sup>[5,6]</sup> It has discovered that the majority of patients present with

acute poisoning are young, with age ranges from 15-30 years.<sup>[7]</sup>

There are numerous harmful substances/OTC medicines that are used for poisoning worldwide e.g. organophosphates, opioids, OTC analgesics, benzodiazepine, kerosene oil, corrosives, alcohol and paraphenylene diamine etc. Substance used for poisoning is totally different in different parts of world and changes with time.<sup>[8]</sup> In line with WHO it's the ninth leading reason for death in young adults and up to half a million individuals die every year as a result of poisoning.<sup>[9]</sup> Among the assorted etiological agents, organophosphates are the foremost common agent use as self-poisoning worldwide with the share ranging from four percent in European countries to fifty in Asian

countries.<sup>[10,11]</sup> Roughly 258,000 cases of suicidal attempt due to pesticides reported globally every year [Gunnell et, al., 2007] most of them in Asia. Organophosphate is also one of the most frequently used poison for suicide in Pakistan.<sup>[12]</sup> On the other hand in western countries most commonly used agents are Opioids and benzodiazepines. In Pakistan paraphenylene diamine (kala pathar) is in an evolving cause of poisoning, especially in South Punjab.<sup>[13]</sup> It is commonly used as hair dye and, cheap in price and very toxic even if taken in a small amount. The severity and outcome of poisoning are determined by various factors like chemical and physical properties of poison, the quantity is taken, the intent of poisoning, age of the patient, availability of antidote, co-morbidities, early identification and prompt management. Lack of intensive care services in Pakistan has played a significant role in increasing mortality rate due to poisoning. Pharmacokinetics and pharmacodynamics of poison ought to be considered during the management of patients exposed to a poison [Khan et, al, 2013]. Data of poisoning in a very explicit area can facilitate early identification and treatment. This can facilitate in decreasing morbidity and mortality because of poisoning.

## METHODOLOGY

It was hospital based descriptive cross-sectional study. We enrolled total 155 patients presented with acute poison intoxication to the emergency department of Nishtar Hospital Multan. We conducted this study in duration of six month from May 2017-October 2017. Patients with age above 14 years were included through non-probability convenient sampling method. Detailed history was taken and examination was performed on every patient. We collected information regarding educational status, occupation, socioeconomic status, nature of poisoning substance, mode of poisoning, time of arrival, co-morbidities etc. All the baseline investigation was done. Informed consent was taken from the patients or their relatives before selection of patients for study. The patients who were received dead or died before receiving any treatment, pregnant women, age below 15 years, case of food poisoning, patients or their relative who didn't gave consent and were not included in the study. The collected data was presented as frequency and percentages.

## RESULTS

Among 155 enrolled patients, there were 65 (41.9%) males and 90 (58.1%) females. The minimum age of patient was 15 years with mean age of 28.52±9.23 years. Majority 44.5% (69) of the cases were between the age group of 15-25 years and there were only 15 patients were above age 45 years. In our study the percentage poisoning cases decrease with increase in age. We found that majority of the patients 21.2% (n=33) presented with Paraphenylene diamine (kala pathar) followed by 18% (28) patients with organophosphates and 10.3% (16)

patients with Aluminum phosphide, 10.3% (16) with benzodiazepine, 10.3% (16) with Methanol (alcohol) and in 10.9% (17) patients the cause of poisoning remained unknown. About 47.76% patients were married, 36.12% were single and remaining 16.12% were divorced/widow. We found that 36.12% patients presented with poisoning were illiterate. Those 17 patients presented with unknown poisoning, their sign and symptoms and investigation were very vague not pointing towards some specific poisoning agent. Survival and mortality rates in our study were 76.1% and 23.9% respectively. The highest mortality rate was of Aluminium phosphide poisoning cases i.e. 14/16.

**Table 1: Distribution of patient among different age group and gender.**

Age groups	Male	Female	Total
15-25	26 (16.77%)	43 (27.7%)	69 (44.5%)
26-35	28 (18.6%)	27 (17.4%)	55 (35.4%)
36-45	6 (3.8%)	10 (6.4%)	16 (10.3%)
46-55	3 (1.9%)	8 (5.1%)	11 (7.1%)
Above 55	2 (1.2%)	2 (1.2%)	4 (2.5%)
Total	65 (41.93%)	90 (58.1%)	155 (100%)

**Table 2: Relationship status among 155 cases.**

	Frequency	Percentage
Single	56	36.12%
Married	74	47.74%
Divorced/widow	25	16.12%
Total	155	100%

**Table 3: Qualification of 155 cases.**

Degree	Frequency	Percentage
Illiterate	56	36.12%
Primary	37	23.8%
Secondary	28	18%
Graduation	29	18.7%
Post-graduation	5	3.2%

**Table 4: Occupational status of 155 patients.**

Occupation	Frequency	Percentage
Housewife	24	15.4%
Student	26	16.77%
Office Job holders	18	11.61%
Labors	15	9.6%
Farmer	30	19.35%
Jobless/ idle	22	14.19%
Medical students/doctors	6	3.8%
Unknown	14	9%
Total	155	100%

**Table 5: Outcome of 155 poisonous cases in tertiary care unit.**

Poisoning	Total	Patients survived	Patient died
Organophosphate (spray intake)	28	23	5
Paraphenylene diamine (kala pathar)	33	27	6
Phenyl	5	5	0
Kerosene oil	9	8	1
Aluminum phosphide (wheat pill)	16	2	14
Opioids	8	7	1
Paracetamol (Panadol)	4	4	0
Benzodiazepines ( sleeping pills )	16	14	2
Ethanol/Methanol	16	13	3
Copper sulphate	3	3	0
Unknown poisoning	17	12	5
<b>Total</b>	<b>155</b>	<b>118 (76.1%)</b>	<b>37 (23.8%)</b>

**Table 6: Intent of poisoning.**

	Frequency	Percentage
Unintentional	22	14.19%
Homicidal	18	11.61%
Suicidal	88	56.77%
Others (Mental illness, drug abusers, unknown etc.)	27	17.4%

## DISCUSSION

In our study the mean age of patients was 28.52±9.23 years and most common age group was 15-25 years. Sujatha et al,<sup>[14]</sup> showed similar results that most of the patients were in second decade of life with mean age of 28.5 years. Similar age groups were mentioned in studies performed in Istanbul.<sup>[15]</sup> This may be due to increase level of stress and impulsiveness among young because of excessive work burden, relationship problems and financial problems. In current study there were 58% female patients and 42% male patients i.e. male to female ratio of 1:1.38. Deslaw et al and Saglam et al showed similar results i.e. 60.1% and 66.4% respectively.<sup>[16,17]</sup> The higher ratio of poisoning among female might be explained due to the fact that female are more prone to physical or mental trauma in our society, lack of appreciation and family support. When we evaluated intention of poisoning we found that suicidal was on the top with 56.77% followed by unintentional 14.19% and homicidal 11.61%. Suicidal thoughts are usually associated with personality disorder, depression or anxiety.<sup>[9]</sup> After getting history from patients and their attendants we found that most of them were going through some psychiatric issues. Environment culture and society plays an important role in triggering a depressed person for such an awful act. Paraphenylene diamine was most commonly used poisoning agent in our study followed by organophosphate, Aluminium phosphide, benzodiazepine and methanol. Paraphenylene is commonly used as hair dye in our region. It is very cheap and easily available at home. Therefore it is deliberately used as self harm mostly among females. Organophosphate was second most common agent used for suicidal purpose in our study. According to many studies performed in Pakistan, trend of using OP poisoning is on top.<sup>[18]</sup> But in some areas like South

Punjab trend of paraphenylene diamine is increasing day by day, similarly seen in our study. OP poisoning was the most commonly reported by studies from areas where agriculture is major occupation of people.<sup>[10]</sup> Benzodiazepine known as “sleeping pills” was ingested by 16 patients in our study. Singh et al,<sup>[20]</sup> reported that most common drug used for poisoning was Benzodiazepine. Methanol was used by 16 patients, it is common source of alcohol ingestion in people of low socioeconomic status. There was male predominance in methanol poisoning. Male tendency towards alcohol can be explained due to more indulgence in negative habits. Increase magnitude of poisoning is due to easy availability of Kala pathar, pesticides and OCT medicine in market and at home. The other reasons are illiteracy, ignoring psychiatric illness, lack of regulations and law regarding purchase and handling of these chemicals and medicines. The mortality rate of wheat pill poisoning is very high in our study, its toxicity attributed to the liberation of phosphine gas, the major lethal consequence of aluminum phosphide is circulatory collapse due to super oxides and peroxides.

## Recommendations

All the patients who are prone to self-harm should be subjected to detailed psychiatric evaluation and suicidal risk assessment to prevent recurrent suicidal attempts.

The government should take steps in making strict terms and conditions on sale of pesticides. The second common agent responsible for acute poisoning was medical drugs. For such agents there should be proper legislation and such substances should not be sold without the prescription of the registered chemist or physician and also large quantities of such drugs should not be sold to the individuals.

## CONCLUSION

Acute poisoning is a common medical emergency. These patients need multidisciplinary approach ventilatory, inotropic support, and good knowledge of toxicology of attending doctor. Most of our patients were young. The commonest poison ingested was with Paraphenylene diamine (kala pathar) followed by organophosphates, Aluminum phosphide, benzodiazepine and Methanol (alcohol). Wheat pill poisoning has very poor prognosis in our hospital. Suicidal intention was the main reason for acute poisoning. Due to easy availability, lack of toxicological experts, limited resources, illiteracy and lack of knowledge the ratio of acute poisoning cases has increased from past.

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