

TITLE PAGE

“POISOING SEVERITY SCORE A TOOL FOR PREDICTION OF MORTALITY AND MORBIDITY IN POISOING CASES REPORTED AT A TERTIARY CARE HOSPITAL”**Dr. Sardar Eske¹, Dr. Bhupendra Parmar², Dr. Sanjay Rawat³, Dr. Deepak Makwana⁴**

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email-deepakmakdhar@gmail.com**Running Title – “POISOING SEVERITY SCORE A TOOL FOR PREDICTION OF MORTALITY AND MORBIDITY IN POISOING CASES REPORTED AT A TERTIARY CARE HOSPITAL”**

Work Attributed to – GRMC. Medical College, Gwalior Madhya Pradesh, India

ABSTRACT”

Background:- Poisoning is a huge epidemic of noncommunicable disease in this century. Among the unnatural deaths, deaths owing to poisoning fall next only to road traffic accident deaths. Management of these critically ill patients will largely get better if the general causes of poisoning are properly defined^[1]. The PSS is a classification scheme for cases of poisoning in adults and children^[2]. This scheme should be used for the classification of acute poisonings regardless of the type and number of agents involved. **AIMS AND OBJECTIVES :-** To evaluate the “Poisoning Severity Score (PSS)” and its ability to predict outcome in cases of poisoning. **MATERIAL AND METHODS:-** It is a Prospective Descriptive study consisting of total 60 cases of Acute poisoning. Severity score was assessed by the information in case sheets using Poisoning severity scoring (PSS) system. The outcome was measured in terms of morbidity and mortality. **RESULT :-** Out of 60 cases according to PSS 48% were grade 1 cases, 33% were grade 2 cases, 15% were grade 3 cases and 4% were grade 4 or death. 39 of patients did not require to be intubated. **CONCLUSIONS.** Poisoning is one of the medical emergencies and causes significant mortality and morbidity. Suicidal intent was significantly higher than other modes of poisoning (p=0.001). Organophosphorus compounds are the commonest agents involved in poisoning followed by rat killer poison. Banning or restricting their use may decrease mortality and morbidity from poisoning. In this study, we found that PSS was a very helpful

tool in predicting the mortality in patients of poisoning. **Keywords:-** Drugs, Organophosphorus compounds, mortality and morbidity.

INTRODUCTION:- The word poison means “A Substance That Causes Damage, Morbidity or Mortality, Particularly by Chemical Manners”^[3]. Poisoning is a huge epidemic of noncommunicable disease in this century. Among the unnatural deaths. The prevalence and deaths owing to poisoning in developing countries have been increasing. The WHO conservatively roughly calculates that the occurrence of pesticide poisoning, which is more in developing countries^[4]. According to the World Health Organisation (WHO) more than 3 million poisoning cases with 2,51,881 deaths occur worldwide annually of which, 99% of the fatal cases occur in developing countries^[4]. Poisoning is the fourth most common cause of death in India and it has been estimated that, five to six persons per lakh of population die due to acute poisoning every year. It is extremity of poisoning in order to take the right preventive measures and Lack of specialized toxicological services in developing countries like India has further contributed to the higher rates of morbidity and mortality^[2]. The cornerstone of treatment includes supportive measures, timely gastrointestinal decontamination, extracorporeal methods of elimination of poisons and antidotes^[5]. It is therefore important to know the nature and severity of poisoning to take prompt measures in saving life and thereby reduce morbidity and mortality.

AIMS AND OBJECTIVES:- To evaluate the “Poisoning Severity Score (PSS)” and its ability to predict outcome in cases of poisoning

MATERIAL AND METHODS:- Data for this study was obtained from indoor wards of Department of Medicine, G.R.MEDICAL COLLEGE & J.A. Group of hospitals Gwalior. The study was scheduled to be completed in a time duration from January 2019 to June 2020. It is a Prospective Descriptive study consisting of total 60 cases of Acute poisoning.

Inclusion Criteria:-

- Age > 18 years.
- Acute poisoning

Exclusion Criteria:-

- Age < 18 years.
- Patient not consenting for this study.

METHODOLOGY:- Severity score was assessed by the information in case sheets using Poisoning severity scoring (PSS) system. It was used to grade the severity of poisoning and use it for prediction of mortality and morbidity.

Severity Grades:

- None (0)- no symptoms or signs related to poisoning.
- Minor (1)- mild, transient, and spontaneously resolving symptoms.
- Moderate (2)- pronounced or prolonged symptoms.

- Severe (3)- severe or life- threatening symptoms.
- Fatal Death (4)

STATISTICAL ANALYSIS: Data was entered on Microsoft excel worksheet. Observation tables prepared using the data were analyzed by Graph pad software, Chi square test for calculating p value and appropriate statistical test was applied. P value <0.01 was considered significant.

RESULTS:

Table 1: Age distribution of patients studied. (N=60)

AGE IN YEARS	NO. OF PATIENTS	Percentage[%]
18-20	8	13.34%
21-30	33	55%
31-40	13	21.66%
41-50	3	5%
51-60	2	3.34%
61-70	1	1.66%
TOTAL	60	100%

Majority of poisoning occurred in 21-30 age group (n=33), followed by 31-40 age group (n=13), 18-20 (n=8). The youngest patient being 18 yrs and the oldest patient being 67 years.

Table 2: Gender distribution of patients studied. (N=60)

Gender	No. Of Patients	Percentage[%]
Male	33	55%
Female	27	45%
Total	60	100%

Majority of patients were male (n=33). Number of female patients were 27. Most of the patients coming with op poisoning were males.

Table-3: Agents of poisoning. (N=60)

Poisoning compounds	Frequency	Percentage[%]
OP Poisoning	13	21.67%
Celphos	9	15%
Rat Killer	11	18.33%
Kaner	5	8.33%
Dhatura	1	1.67%
Unidentified+ alcohol	3	5%
Unidentified substance	18	30%
Total	60	100%

In this study 21.67% cases are of OP, 15% of Celphos, 18.33 % of Rat Killer, 8.33% of kaner Poisoning, 1.67% of Dhatura and 35% cases were unidentified .

Table-4: Mode of presentation. (N=60)

Clinical feature/ Mode of presentation	Frequency	Percentage%
Unconsciousness	4	6.6%
Abdominal Pain and burning sensation	1	1.7%
Altered Sensorium, Vomiting	1	1.7%
Vomiting, Giddiness	10	16.7%
Vomiting, Abdominal Pain	1	1.7%
Breathlessness, Giddiness	4	6.6%
Palpitation	2	3.3%
Inability to speak, throat pain	1	1.7%
Vomiting , Headache	3	5%
Altered sensorium	3	5%
Vomiting, breathlessness	2	3.3%
Nausea, Giddiness	9	15%
Vomiting	15	25%
Palpitation,Dizziness	1	1.7%
Abdominal pain	1	1.7%
Drowsiness, palpitation	1	1.7%
Vomiting, Chest Pain	1	1.7%
Total	60	100%

In this study 25% patients(n=15) presented with vomiting commonly followed by breathlessness(n=4) 6.6% followed by unconsciousness 6.6%(n=4) followed by altered sensorium 5% (n=3) followed by abdominal pain 1.7% (n=1) .15 % in asymptomatic and presenting with giddiness.

Table 5: Distribution according to poisoning severity score on admission. (N=60)

Grade	PSS on admission
Grade 1	29(48%)
Grade 2	20(33%)
Grade 3	9(15%)
Grade 4	2(4%)

There were 29 cases (48%) of grade 1 poisoning. 20 cases (33%) of grade 2 poisoning. 9 cases (15%) of grade 3 poisoning and 2 cases (4%) of grade 4 poisoning on Admission.

TABLE 6: Distribution according to poisoning severity score on 2nd days after Hospitalization (N=60)

Grade	PSS
Grade 1	34(56.67%)
Grade 2	15(25%)
Grade 3	8(13.33%)
Grade 4	3(5%)

There were 34 cases (56.67%) of grade 1 poisoning. 15 cases (25%) of grade 2 poisoning. 8 cases (13.33%) of grade 3 poisoning and 3 cases (5%) of grade 4 poisoning (death within first 24hours).

Table 7: Correlation of PSS with outcome

PSS	Total Patient	Survived without intubation(n=36)	Survived with intubation(n=9)	Death(n=15)	P value
Grade 1	26	24(40%)	0(0%)	0(0%)	0.021
Grade 2	12	9(15%)	0(0%)	3(5%)	0.021
Grade 3	16	3(5%)	9(15%)	6(10%)	0.026
Grade 4	6	0(0%)	0(0%)	6(10%)	0.023

Table 8: Correlation of PSS with Mortality

PSS(Final)	Mortality	Percentage	P value
Grade 1	0	0	<0.001
Grade 2	3	3	<0.001
Grade 3	9	6	<0.001
Grade 4	0	6	<0.001

DISCUSSION

In this study, we analysed the data regarding cases of poisoning admitted to our hospital over the period January 2019 to June 2020. In the present study 60 poisoning patients was undertaken to assess the utility of PSS (Poison Severity Score) scoring system in predicting severity and clinical outcomes in poisoning.

AGE DISTRIBUTION

In this study highest number of cases occurred in 21-30 years of age group (55%) followed by 31-40 years of age group (21%). Youngest case is 18-year-old and the oldest was 61 years of age. Incidence of the poisoning was highest in the 21-30 years age group in Vasanthan et al study^[6] and Dr Achinta Mandal et al study^[7].

Gender DISTRIBUTION

Higher incidence of poisoning occurred in males (55%) compared to females (45%) and male to female ratio 1.2:1. This is similar to many studies which found a male preponderance^[8].

TYPE OF POISONING

In this study, among the types of poisoning, most common was organophosphorus poisoning (21.67%). Rat killer was the commonest agent found by Rathore et al.,^[9] Vasanthan et al^[6] studies, Although other studies from Moradabad conducted by Ravi Gangal found^[10], Insecticides & Pesticides to be the most commonly consumed substance and another study conducted in Pakistan found drugs as the common poisoning agent. In our study the second common agent involved in poisoning is rat killer. Similar result also found in narayana Prasad Modi et al., study^[11].

MODE OF PRESENTATION

In this study the most common mode of presentation was vomiting (25%) followed by breathlessness (6.6%). The present study was conducted to assess the efficacy of PSS to predict severity and clinical outcome of poisoning. The possible outcomes and risks at different exposure levels were predicted by evaluating clinical effects, poisoning severity, severity of mental injury. Poisoning was the most common form of intentional self-harm.

POISON SEVERITY SCORE

The poisoning severity score (PSS) is a severity grading scale adopted by the IPCS, the Commission of the European Union, and the European Association of Poison Centers and Clinical Toxicologists (IPCS/EC/EAPCCT) for grading the severity of poisoning. This scale is necessary to facilitate comparability of case data. The PSS was developed, so that valid comparisons regarding severity and outcome could be made among the various poison centers and to take an account of the overall clinical picture. The purpose of the PSS is to provide a simple but relatively robust system for describing the severity of poisoning on the basis of clinical observations. It is not a prognostic score but is instead meant to define the degree of severity when the overall clinical features are most severe. Study done by Casey PB showed that poison severity score recorded at admission can be used to predict outcome of poisoning patients^[12]. The present study tried to assess the ability of PSS to predict the final outcome of poisoning patients.

Out of 60 cases 48% were grade 1 cases, 33% were grade 2 cases, 15% were grade 3 cases and 4% were grade 4 or death. The findings of this study highlight the usefulness of few clinical indices like Poisoning severity scoring systems for predicting severity which in turn can be used to predict outcome of poisoning in patients especially during triage. Identification of severity at an early stage followed by prompt treatment can prevent the late respiratory and cardiac failures associated with poisoning.

CONCLUSIONS

Most exposures to Poisons can be treated with general emergency care and, if necessary, with symptomatic intensive-care measures. Poisoning has always been a part of human life. The causes and scientific understanding of poisoning change over time and with them the opportunities for its correct diagnosis and treatment. In earlier times, poisoning was thought of as a single clinical entity that could be prevented, or treated, in practically the same way for all agents. Standard ‘detoxifying measures’ were used and supposed universal antidotes.

Today, modern analytical toxicology and the rapid accessibility of support from poison information centers enable treating physicians to address each case individually, with much more accurate poisoning risk assessment. The specific treatment to be provided depends on the toxic substance and dose involved. one of the medical emergencies and causes significant mortality and morbidity. It is useful in peripheral areas to identify high risk patients for urgent referral to tertiary care center.

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