

# ‘Sani’ Powder Poison-Legally Banned

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**Abstract-** Cowdung poison is commonly known as sani powder poison in local tamil language in south india, it is a lethal poisonous synthetic chemical . Cow dung was traditionally used as a germicide & insect repellent to clean homes, courtyards & temples in the state of Tamil Nadu, since the unavailability of cow dung synthetic chemicals are used to prepare this sani powder. sani powder poison is available in two colours that is yellow and green .

‘Sani’ powder is available in two varieties:

1. Yellow powder: Auromine, chemically known as Diaryl methane dye.
2. Green powder: Malachite Green, chemical constituent being triphenyl methane.

The modern population started using this deadly ‘Sani’ powder instead of cow dung for the same purpose. This was either due to nonavailability or inaccessibility of the natural cow dung in the urban areas. In spite of a legal ban on this chemical, it is easily procurable at the grocery shops for a meagre price of 3 – 5 rupees/packet.

Cowdung poison is lethal as it has no antidote. This deadly neurotoxic poison causes severe hepatotoxic, nephrotoxic, ocular & GI damage, to prevent the damage of the multiorgans n-actyl cystiene (NAC) drug have been used to counteract on this deadly poison.

**Index Terms-** Auromine, Sani powder, Cow dung powder, Malachite Green,n-actyl cystiene (NAC )

## I. INTRODUCTION

Cowdung poison is commonly known as sani powder poison in local tamil language in south india, it is a lethal poisonous synthetic chemical . Cow dung was traditionally used as a germicide & insect repellent to clean homes, courtyards & temples in the state of Tamil Nadu, since the unavailability of cow dung synthetic chemicals are used to prepare this sani powder. sani powder poison is available in two colours that is yellow and green .

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In rural Tamil Nadu (South India), especially in the districts of Coimbatore, Tirupur and Erode cow dung powder is commonly used as a suicidal poison. There is no specific antidote for these dyes. It is very toxic due to which death occurs within hours of ingestion. Many deaths have been reported due to this cow dung poison.[1,3]

The lethal effect of this agent is most commonly accomplished by the liver the reason behind preponderance liver toxicity is established by fact that within several hours of ingestion of the total ingested dose is concentrated in the liver. Over half the deaths due to cow dung toxicity occur in the first day ,following which liver damage,hepatitis,fulminant hepatic failure .

In such cases ,a huge population in our country is left with no choice other than to suffer death. The morbidity and mortality following toxic exposures of sani powder poison continues to rise .

No specific antidote exists till date to shut the hepatic injury in sani powder poison to prevent their ill effects following consumption.

A team of emergency and critical care physicians from our hospital dedicated their time and effort to achieve an end point to this alarming problem

Our search for solution came to halt during literature review looking at the` pathophysiological mimicry` of sani powder poison with acetaminophen toxicity . The stages of liver damage were more or less similar in both poisonings. In the first stage [< 24 hours], patient is either asymptomatic or has signs and symptoms of local gastrointestinal irritation. The second stage [24-72 hours] after ingestion is also an asymptomatic period but mild biochemical alteration in liver functions may be found. The third stage advanced occurs beyond 72 hours until the resolution of symptoms or death. The NAC was cited as research study as it can be useful .

None of the literature quoted NAC as the antidote despite its proven anti-oxidative effect but needed large trails to prove this drug as effective for sani powder poison . There were no standardized dosing regimens for this purpose from those literatures either. This triggered us to study the role of NAC as an antidote to sani powder poison that might benefit patients in demand and restore productive members to society. Ever since we recognized the usefulness of NAC, we have been trying the agent randomly on sani powder poison patients presenting with consumption of sani powder within the 24 hour period at doses recommended by texts for acetaminophen toxicity [a loading dose of 150 mg/kg for 15–60 min, followed by 50 mg/kg for next 4 hours, 100 mg/kg for next 16 hours: all in 5% Dextrose solution]. As the results of this we were able to reduce the mortality and morbidity .

## II. AIM

To study the outcome of sani powder poison in patient admitted in VMKVMC&HOSPITAL ,SALEM .

### III. METHODOLOGY

This single centered and interventional study was conducted in the Department of Emergency VMKVMC&HOSPITAL ,SALEM, located in the outskirts of Salem, Tamil Nadu, India. We encounter all types of emergencies including poisonings from both rural and urban areas nearby. The hospital has well equipped emergency room and intensive care units for advanced toxicology management including separate decontamination area. Emergency and critical care physicians who are well trained in toxicology are available round the clock. This study came to a start in our hospital in May 2016 with a total study period of one year from may 2015 to april 2016. All fresh patients with definitive history of sani powder poisoning presenting within 24 hours.

Cases of mixed poisoning, patients < 18 years of age, with prior renal or liver diseases, pregnant or lactating females, patients with sero-positivity for HBV, HCV or HIV, and having known allergy or anaphylactic reaction to NAC were all excluded. A written informed consent was obtained from patients included into the study.

Included patients in the study group were managed as per the formed protocol giving due importance to airway, breathing and circulation stabilization . All were subjected to decontamination with stomach wash and multidose activated charcoal following which NAC was administered. Further management continued with supportive care, monitoring of liver and renal functions. The data collected were compiled and spread into Microsoft Excel worksheet for comparison, analysis and interpretation. The extracts of the study were narrowed at knowing the marked benefit of NAC in management of sani powder poison patients. The morbidity indicators were measured in terms of biochemical evidence of hepatitis.

Hepatitis [jaundice, lethargy, etc] and altered laboratory parameters of liver function was co-existing. 'Fulminant hepatic failure' meant end-stage liver damage [bleeding tendencies, encephalopathy, etc] that require liver transplantation. The mortality assessments were the most important aspect to arrive at the needed conclusion. All statistical analysis were done using computer software 'Statistical Package for Social Sciences version 16.0' and cross-checked manually. A 'p' value < 0.05 was considered significant.

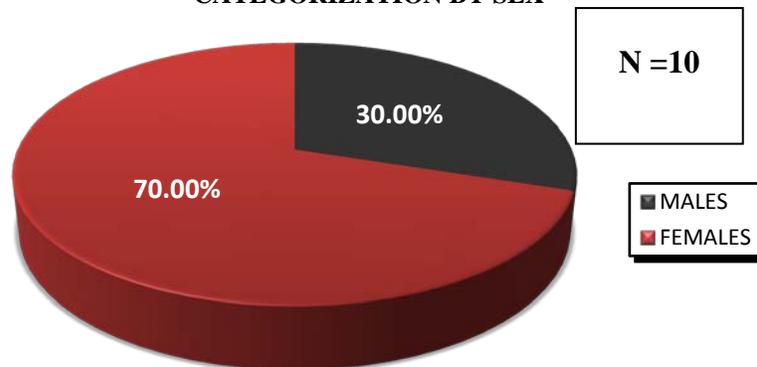
### IV. RESULTS

All the patients with a history of ingestion of Sani powder who reported to our hospital had severe liver dysfunction and derangement of coagulation. The trial application of a NAC (N-acetyl cystiene) regimen similar to that used for paracetamol overdose, has given us success and hope of survival in this type of poisoning. All the patients benefited from NAC. The initial liver function parameters were deranged and after administration of NAC for 48 hrs patient liver function parameters came to normal levels patients were shifted out of ICU and tablet NAC was continued for one week. Though, the NAC regimen is not considered as an antidote, it is found to decrease further damage of the liver.

### V. STATISTICAL ANALYSIS

A detailed statistical survey applying tests of significance like Chi-square, mean, median, mode, standard deviation, variance and correlation coefficients is performed.

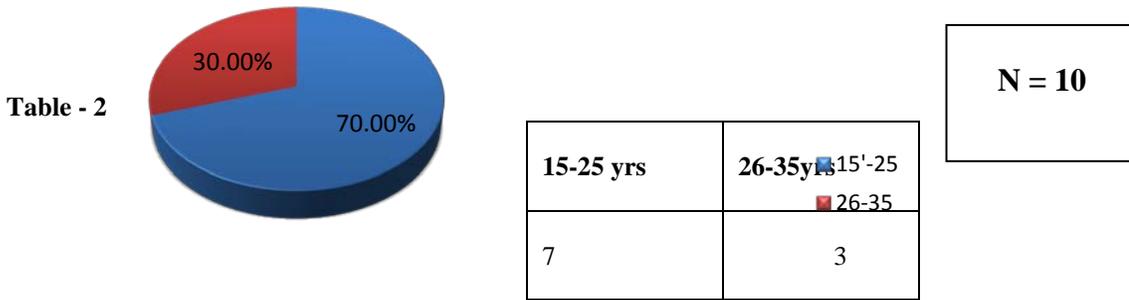
**Graph - 1  
 CATEGORIZATION BY SEX**



**Table - 1**

MALES	FEMALES	TOTAL
3	7	10

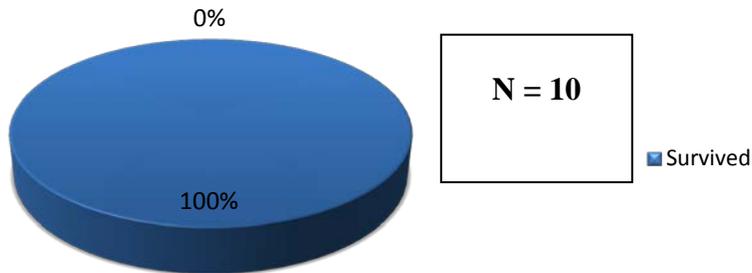
**Graph - 2  
 CLASSIFICATION BY AGE**



Mean age: 23.2 yrs

**Graph - 3**

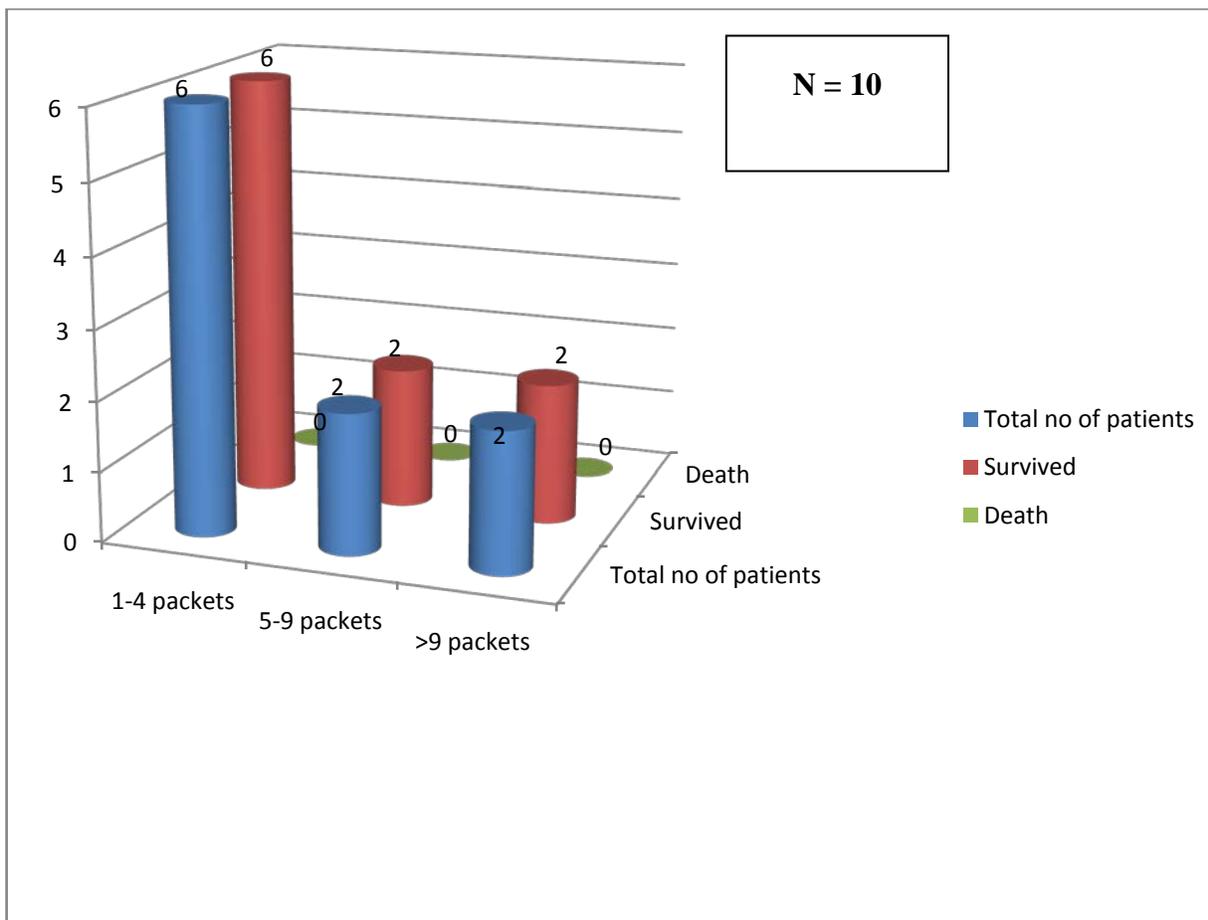
**Sani Powder Poisoning-prognosis**



**Table - 3**

<b>Survived</b>	<b>Deaths</b>
10	0

**Graph - 4**  
**Number Of Packets and Prognosis**

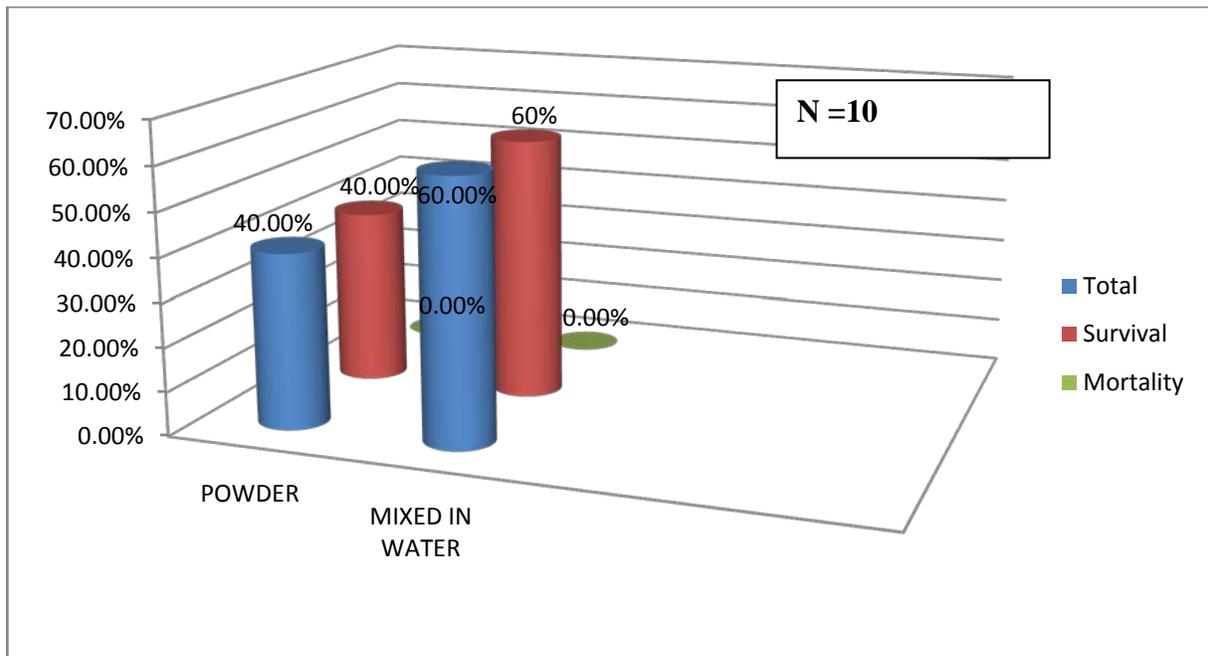


**Table - 4**  
**Number Of Packets and Prognosis**

	1-4 PACKETS	5-9 PACKETS	>9 PACKETS
Total No of patients	6	2	2
Survived	6	2	2
Death	0	0	0

Average number of packets consumed : 6

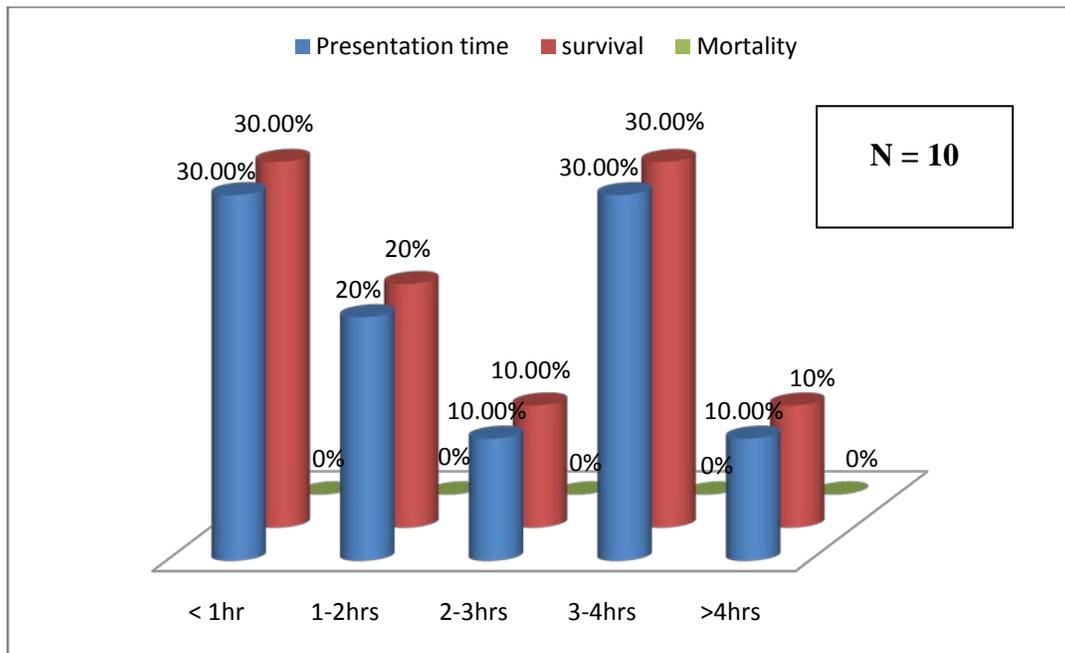
**Graph – 5**  
**INGRESTION FORM AND PROGNOSIS**



**Table – 5**  
**INGRESTION FORM AND PROGNOSIS**

POWDER	MIXED IN WATER
4	6

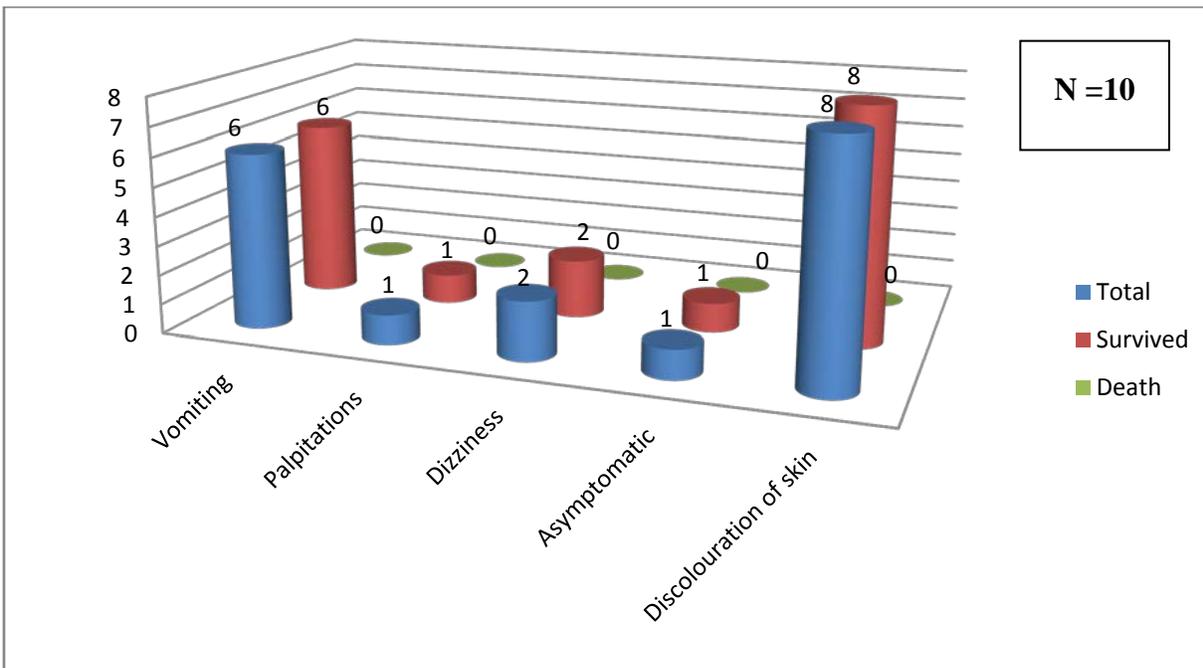
**Graph - 6**  
**Time To Presentation And Prognosis**



**Table – 6**  
**Time To Presentation And Prognosis**

	< 1hr	1-2hrs	2-3hrs	3-4hrs	>4hrs
No of patients	3	2	1	3	1
Survival	3	2	1	3	1
Death	0	0	0	0	0

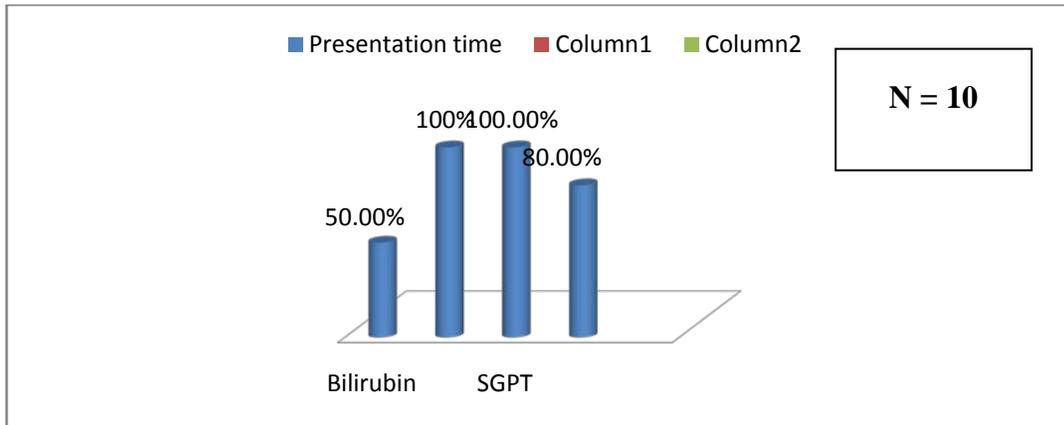
**Graph - 7  
 Symptoms And Prognosis**



**Table - 7  
 Symptoms And Prognosis**

Symptoms	Vomiting	Yellow colored urine	Hepatome galy	Asymptomatic	DISCOLOURATIO N OF SKIN
Total	6	1	2	1	8
Survived	6	1	2	1	8
Death	0	0	0	0	0

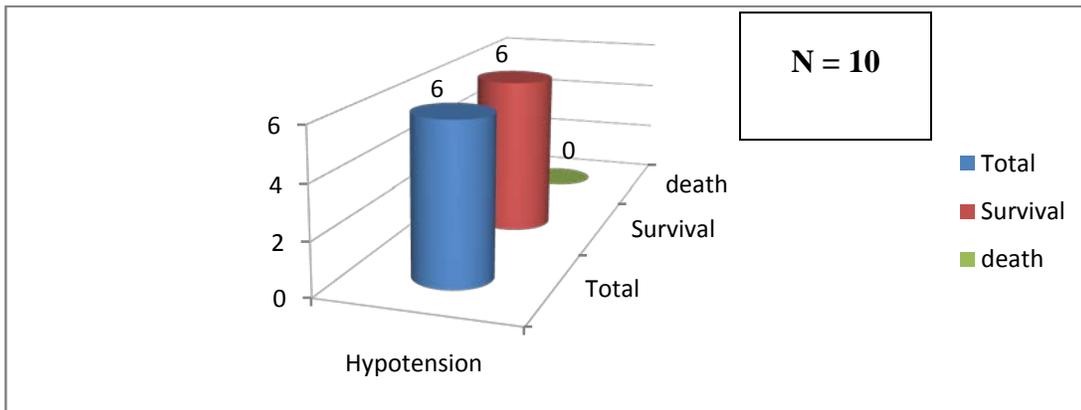
**Graph - 8**  
**Initial liver function parameters**



**Table – 8**  
**Time To Presentation And Prognosis**

	S.Bilirubin	SGOT	SGPT	ALP
No of patients	5	10	10	8

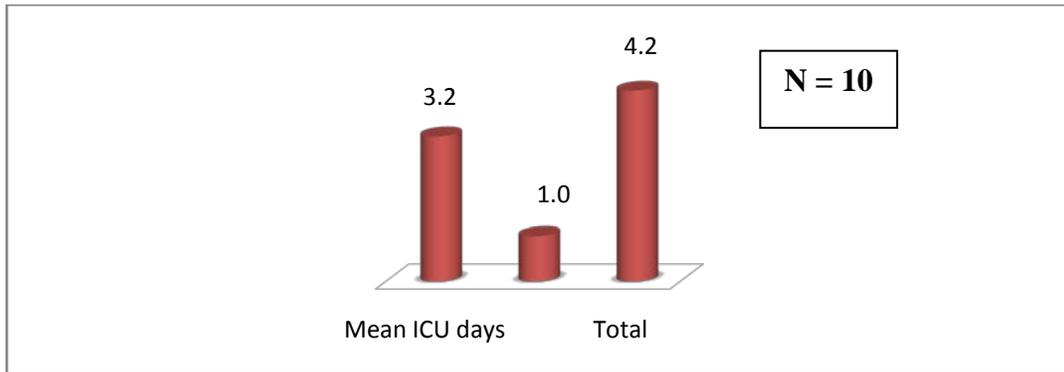
**Graph - 9**  
**Hypotension And Prognosis**



**Table – 9**  
**Hypotension And Prognosis**

	Hypotension
Total	6
Survived	6
Death	0

**Graph - 10**  
**Hospital Stay- Number Of Days**



**Table 10**  
**Hospital Stay- Number Of Days**

Total	Mean ICU days	Mean hospital days
4.2	3.2	1

**VI. CONCLUSION**

The illegal sale and mostly suicidal ingestion of Sani powder are prevalent in the rural areas irrespective of strict legal measures. A promotion and increase of public awareness & curtailing its availability for public use is an urgent need of the hour. A standard treatment protocol should also have to be developed and implemented to reduce the morbidity and mortality associated with this deadly poison.

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