
**“AN OBSERVATIONAL STUDY ON
CLINICOPATHOLOGICAL
FEATURES OF POISONING IN
LIVING AND DEAD”**

Submitted by

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LIST OF ABBREVIATIONS USED

WHO	World Health Organization
MRD	Medical Records Department
ICD	International Statistical Classification of Diseases
NCRB	National Crime Records Bureau
ED	Emergency Department
OPD	Outpatient Department
WBC	White Blood Cell
SD	Standard Deviation
RFSL	Regional Forensic Science Laboratory
DALYs	Disability Adjusted Life Years
NDPS	National Poison Data System
MDMA	Methylenedioxyamphetamine
CO	Carbon monoxide
GI	Gastrointestinal
WBI	Whole bowel irrigation
PEG	Polyethylene Glycol
BUN	Blood Urea Nitrogen
MLC	Medicolegal Case
OPC	Organophosphorus compound
ICU	Intensive Care Unit
SGOT	Serum Glutamicoxaloacetic Transaminase
SGPT	Serum Glutamate Pyruvate Transaminase
PT	Prothrombin Time
INR	International Normalized Ratio

BT	Bleeding Time
CT	Clotting Time
aPTT	Activated Partial Thromboplastin Time
HCO ₃	Bicarbonate
PM	Postmortem
IEC	Institutional Ethical Committee
PDC	Poison Detection Centre
Na	Sodium
K	Potassium
Cl	Chloride
IV	Intravenous

ABSTRACT

TITLE: “An observational study on clinicopathological features of poisoning in living and dead.”

BACKGROUND:

Poison is defined as “any substance which when introduced into the living body or brought into contact with any part of the body will produce ill effects or death by its local or systemic action or both.” Poisoning can be classified as fulminant, acute, sub-acute, chronic, or sub-chronic based on the duration of exposure to poison with presenting signs and symptoms. Acute poisoning is one of the commonest causes of hospitalization to the emergency department. It is necessary to know the clinical presentation and laboratory investigations of the poisoning cases to manage the cases timely.

OBJECTIVES:

1. To assess the clinicopathological features of the poisoning in living and dead.
2. To find out the significance of Case history, circumstantial evidence, and autopsy findings in any case of poisoning.

MATERIAL & METHODS:

Study design: A Cross sectional study

Study period: January 2021- June 2022

Study population: Patients of poisoning of both living and dead from KLE Hospital, Belagavi.

Sampling size and method: Convenient sampling (data from MRD files) on an average 200 cases /year were recorded from the last four years in KLE hospital, Belagavi. So, my sample size of living is approximately 200 and in case of dead is 30.

(i.e., all the live or dead poisoning cases coming/brought to KLE Hospital, Belagavi from January 2021 to June 2022).

Inclusion criteria:

- All consecutive cases of poisoning exposure, including cases with adverse drug effects of prescribed medication will be enrolled within 24 hours of arrival in our emergency department.
- Victims who expired due to poisoning in our hospital will also be enrolled.

Exclusion Criteria:

- Those poisoning patients who are brought dead without any proper records or history will be excluded.
- Food poisoning patients.

Data collection:

After obtaining permission from Scientific Research Committee and Institutional Human Ethics Committee, the present study was conducted in KLE Hospital, Belagavi. A convenient sampling technique was used and 163 live and 34 dead cases were included in the study. After explaining the purpose of the study, written consent was obtained from poisoned patients of living person/patient's caregiver/treating physician and deceased relative (Annexure ----). A timeline of about 15 to 20 minutes requires to collect the questions on proforma. Report form data will be initially obtained through direct interviews of patients or patient caregivers by the ED staff and medical assistants. The report form will be completed during the hospitalization period itself.

Those who will be discharged with a stable condition will be routinely followed in psychiatric OPD and therefore we can obtain information on each patient's condition after discharge. For those who would be discharged with an unstable condition,

transferred to other hospitals, or could not return to the outpatient clinics, follow-up phone calls will be made to the patients or their friends or relatives to obtain information. On critically ill and die-on-arrival patients, the information will be obtained from their friends, relatives, emergency paramedical technicians, and policemen. Similarly, for the deceased poisoning patients, we will collect the same parameters using hospital records and we will also do a histopathological examination of the Brain, Lungs, Liver, and kidneys using autopsy.

RESULTS:

A total of 197 cases were included in the study. Mean±SD age was 30.75±15.62 years and 60% of them were males. The death rate was 17.3% and almost 94% of them were due to self-poisoning (suicide). Paraquat (Herbicide) was found too high lethality compared to other compounds. There was decreased platelet count and increased WBC were found among poisoning cases. Autopsy findings among the deceased show most cases have Brain (82%) involvement followed by Heart (73.5%) and Liver (50%). An association between clinical features and the type of component ingested was found to be significant with $p<0.01$ and, a significant difference exists between platelet count, WBC count, and electrolytes value between survived and deceased cases with $p<0.05$.

CONCLUSION

In the current study, there were fluctuations in the lab parameters which predict the lethality of poisoning. From autopsy findings, we can conclude the end organ damage due to the type of poisoning substances. Further research with large sample size is needed to find the specific organ damage caused by different poisoning substances.

KEYWORDS: Poisoning, Clinicopathological, dead, survived.

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INTRODUCTION

As per the standard textbook, the definition of poison is “any substance which when introduced into the living body or brought into contact with any part of the body will produce ill effects or death by its local or systemic action or both.”¹ As per the International Statistical Classification of Diseases – 10th Revision (ICD-10), a case of poisoning is defined as “T36-T50: the overdose of drugs, medicaments and biological substances and/or a wrong substance given or taken in error”²

Poisonings are a leading cause of hospitalization and fatality in both developed and developing countries. The fatality of the poisoning depends on various factors, including the chemical and physical characteristics of the poison, the amount taken, the mechanism of poisoning, any underlying diseases, and most crucially, the initial treatment, which impact the severity and prognosis in such cases.³ Based on the manner of poisoning it is classified as accidental, suicidal, and homicidal.

Of these suicidal poisoning is more common, followed by accidental poisoning and homicidal poisoning being the least.³ It is common to believe that suicide /deliberate self-harm are issues that are unique to the industrialized world. However, in a study on the Worldwide burden of diseases, research has started to underline the significance of suicide in the developing world.^{4,5} As per WHO, more than 7,00,000 people die due to suicide and are from low and middle income countries.⁶ In India, a total of 1,64,033 suicidal deaths were reported in 2021, an increase of 7.2% in comparison to 2020 as per the National Crime Records Bureau (NCRB). On the list of methods to commit suicide, poisoning tops the list as second in India, and 38,336 people have used poison for suicide.⁷

Accidental poisonings are more common among children because of inadequate supervision or wrong labeling. In the case of adults contaminated foods or unknown bites remains the cause of accidental poisoning.⁸ In India, a total of 3,97,530 accidental deaths were reported in 2021 of which 5.9% is due to poisoning.⁹ Homicidal poisoning is relatively uncommon; however, isolated cases and mass poisoning cases are not relatively uncommon.

Poisoning can be classified as fulminant, acute, sub-acute, chronic, or sub chronic based on the duration of exposure to poison with presenting signs and symptoms. Acute poisoning is one of the important causes of admission to the emergency department.^{10,11} A study shows 0.63% of cases in emergency setups are due to acute poisoning.¹² Acute poisoning is generally due to a single high dose or small doses taken over frequent intervals. Chronic poisoning is mainly observed in persons exposed to low doses of a substance over an extended period and is mostly occupational in nature.¹²

Based on the poison the manner and nature of presentation vary. Insecticides and poisonous plants are the most used agents in suicides. Advancements in agriculture and industrialization have led to a variety of insecticides that are accessible to everyone.¹³⁻¹⁵ Household poisons and therapeutic drugs are commonly implicated in accidents. Homicidal poisoning can be due to any agent, but heavy metals such as arsenic are the preferred compounds. While snakebite is a common cause of acute poisoning in rural populations of tropical and subtropical countries where the climate is humid and mostly rainy.¹⁵

Diagnosis of poisoning in living is based on depending on the history, clinical features, laboratory investigation, and toxicological analysis of vomitus or gastric lavage. This is more difficult when the patient is unconscious or when the poisonous agent implicated is unknown. Diagnosis of poisoning in the death is based on autopsy features, histopathological examination, and chemical analysis of the visceral organs.

Poisons are absorbed, metabolized, and eliminated by major organs such as the liver, kidney, lungs, etc.¹⁶ Thus, poisons will cause damage to these organs and it will be evident in histopathological examination. Most common poisons such as organophosphates will have distinctive findings in the lungs, liver, and kidneys.^{17,18} Poisons such as rodenticides will cause more hepatic damage and will have findings such as fatty change, necrosis, sinusoidal dilatation, and hemorrhage.¹⁹

While paraquat poisoning will cause extensive pulmonary damage because of the generation of free radicals leading to alveolar damage.²⁰ Renal damage is common in all poisons, however, distinctive findings are seen in hair dye poisoning, hemolytic snake bites, etc.^{21,22}

The pattern of poisoning [demography, compound used, manner of poisoning] varies across different states in India. This is mainly due to the availability or ease of access to poisons more common in the region. There were only a few studies in India reports on clinicopathological features of poisoning. So, this study outcome will be helpful to understand the clinicopathological features of the poisoning in the Belagavi region for physicians and forensic experts. With this background, the current study aims to assess the characteristic features such as demographics, presentation, clinical features, and histopathological features of the poisoning in the case of both living and dead.

OBJECTIVES

1. To assess the clinicopathological features of the poisoning in living and dead.
2. To find out the significance of Case history, circumstantial evidence, and autopsy findings in any case of poisoning.

REVIEW OF LITERATURE

DEFINITION:

*WHO*²³ refers to 'Poisoning' as exposure to an agent which is capable of producing an adverse response in a biological system. Poison is any substance (solid, liquid, gas) that if assimilated in the human body or which comes in contact with body parts, will lead to deterioration of health or may eventually lead to death by its constitutional or local effects.

BURDEN:

*Mew EJ et al.*²⁴ in a systematic review of data from 2006 to 2015 concluded that pesticides account for 14–20% of suicides leading to 1,10,000 to 1,68,000 fatalities yearly over the period 2010–2014 globally, the study also estimated that 14 million people have died from using pesticides.

World Health Organization (WHO)^{23,25} in its annual estimates reported that about 2 – 3 million cases of acute unintentional poisonings were reported globally of which 1 million cases end up as severe poisonings resulting in 20,000 deaths annually. Nearly one million people die each year as a result of suicide.

*National Poison Data System (NPDS)*²⁶ showed that since 2000, cases with more serious outcomes have increased by 4.6 % from 108, 148 cases in 2000 to 170, 956 cases in 2012.

*Mittal C et al.*²⁷ in their systematic review to find the toxico-epidemiology reported that Pesticide poisoning was most prevalent in North India (79.1%), followed by South (65.9%), Central (59.2%), West (53.1%), North East (46.9%) and East (38.5%).

CAUSES OF POISONING:

*Groholt B et al.*²⁸ and *Desalew M et al.*²⁹ reported that apart from accidental poisoning the cause of the increase in several self-poisonings is dependent on factors such as urbanization, unemployment, family breakdown, failure of a love affair, and economic instability, while depression, mental illness, low self-esteem, and lower social class have been reported as risk factors in developed countries.

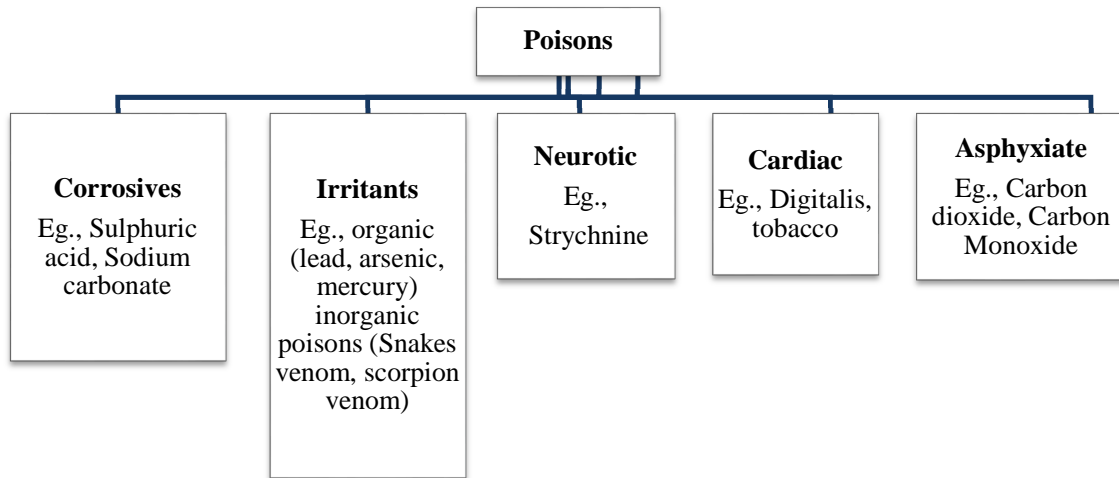
*Fliege H et al.*³⁰ in their systematic review reported that the “high-risk” group for acute poisoning were the youth, from teenagers to young adults, particularly those with any psychiatric or psychological disorder, those with a history of child abuse, and those who were addicted to any substance, constitute a high-risk group for suicide.

*Hanssens Y et al.*³¹ conducted a prospective hospital-based study in Oman and stated that several factors can contribute to the wide difference in poisoning patterns such as climate, socioeconomic factors, cultural, and ethnic variations, and religious beliefs prevalent in the community. In addition, different prescribing practices between physicians, the type of medications involved, and their availability can vary from one country to another.

CLASSIFICATION OF POISONS:³²

Classification of poisons has its importance in the forensic investigation can be done according to the;

1. *Mode of action and nature of poison:* aids to determine the type of poison and analyzing it.



Medico-legal classification is based on the intention of usage:

- Homicidal Poisons:** these are used to kill others. E.g., aconite, abrus precatorius, arsenic.
- Suicidal Poisons:** these are used for self-killing. E.g., opium, barbiturate, agricultural poisons.
- Accidental Poisons:** these are ingested or come in contact accidentally. E.g., snakes bite, carbon monoxide, and datura's seeds ingested by mistake thought as capsicum seeds.
- Abortifacient Agents/ Poisons:** these poisons are used to induce abortion. E.g., Quinine (alkaloid), Calotropis, croton, oleander, marking nut.
- Stupefying Agents/ Poisons:** these are used to stupefy a person. E.g., Datura, Chloral hydrate.

DIAGNOSIS: ³³

Based on the duration of exposure, signs and symptoms, poisoning is categorized as fulminant, acute, sub-acute, chronic, and subchronic. Acute poisoning is due to the intake of a single high dose or several small doses over a short interval of time i.e., seconds, minutes, or hours, or repeated exposures over about a day. In acute

cases, the onset of signs and symptoms is instantaneous and depends upon the dosages. Chronic poisoning is due to exposure to small doses over a long period e.g., mercury, arsenic, lead, cadmium, antimony, and opium. Sub-acute poisoning occurs more slowly than acute poisoning but exposure than chronic poisoning. The adverse response ranges from mild bodily irritation to seriously deleterious effects and even death.

Table 1: Type of Poison & common signs and symptoms of poisoning

Sl.no	Signs and symptoms	Type of poison
1.	Nausea, vomiting, abdominal pain, tinnitus, deafness, sweating, fever, disorientation, lethargy, hyperventilation, vasodilatation, metabolic acidosis	Salicylates
2.	Nausea, vomiting, abdominal pain, jaundice, confusion, coma may develop later	Acetaminophen
3.	Agitation, restlessness, tremor, mydriasis, anxiety, arrhythmias, convulsions, tachycardia	Sympathomimetics
4.	Delirium, hyperthermia, agitation, tachycardia, mydriasis	Ecstasy (MDMA), amphetamines, cocaine
5.	Blurred vision, dry mouth, fever, hypotension, coma, seizures, confusion, mydriasis, sinus tachycardia arrhythmias, respiratory depression, hyper-reflexia, myoclonus,	Tricyclic antidepressants, orphenadrine, antihistamines less commonly
6.	Blindness	Quinine, methanol
7.	Drowsiness, hypotension, hypothermia, lethargy, dysarthria, coma, ataxia, respiratory depression with overdoses	Benzodiazepines
8.	Hyper-salivation, miosis, bronchorrhea	Organophosphate and carbamate insecticides
9.	Anxiety, nausea, vomiting, euphoria, headache, chest pain, hypertension, fever, tachycardia, tachypnea, agitation, twitching, mydriasis, diaphoresis, confusion, hypotension, abdominal cramps, cardiopulmonary arrest, hallucinations, seizures	Cocaine
10.	Nausea, vomiting, drowsiness, reduce respiratory rate, coma, miosis, cyanosis, seizures, noncardiac pulmonary edema, bradypnea	Narcotics and opioids
11.	Drowsiness, chest pain, hypotension, coma, confusion, seizures, bradycardia, peripheral cyanosis, respiratory distress	Calcium channel blockers

Table 2: Signs of various poisons

S.no	Signs and symptoms	Type of poison
1.	Tachycardia	Antihistamines, cocaine, salicylate, amphetamine, tricyclic antidepressants, anticholinergic drugs, alcohols
2.	Bradycardia	Cholinergic drugs, calcium channel blockers, opioid, digitalis, beta blockers, digoxin, clonidine, procainamide
3.	Hypertension	Sympathomimetic agents (Cocaine, amphetamine, ephedrine, marijuana), anticholinergic agents Atropine, tricyclic antidepressants, antihistamines), ethanol, sedative hypnotic drug withdrawal
4.	Hypotension	Calcium channel blockers, beta blockers, clonidine, heroin, antidepressants
5.	Tachypnea	Salicylates, CO, ethylene glycol, methanol, paracetamol, salicylate
6.	Bradypnea	Ethanol opioid
7.	Hyperthermia	Acetylsalicylic acid, MDMA (ecstasy), arsenic, cyanide, halothane, MAO inhibitors, dinitrophenol, cocaine, quinidine, amphetamine
8.	Hypothermia	Opioid, barbiturates, antidepressant, CO, tricyclic antidepressants, CNS depressants, benzodiazepines
9.	Coma	Narcotic, cyclic antidepressants, lead, CO, cyanide, organophosphate
10.	Peripheral neuropathy	Chronic poisoning of arsenic, lead, mercury
11.	Muscular rigidity	Phenothiazines, haloperidol, cyclic antidepressants
12.	Ataxia	Narcotic, antidepressant, barbiturates, phenytoin, alcohol
13.	Tremors	CO, mercury, phenothiazines, alcohol, caffeine, tricyclic antidepressants
14.	Seizures and convulsions	Cocaine, lead, lindane, camphor, salicylate, strychnine, tricyclic antidepressants, caffeine, theophylline, organophosphate

There is no single symptom and no definite group of symptoms that are characteristic of poisoning. Acute poisoning symptoms appear immediately or within a short period after the suspected food or drink, has been taken. The symptoms are uniform in character and it rapidly increases in severity.

MANAGEMENT:

*Chandran J et al.*³⁴ describe the diagnostic points based on internal and external clinical signs;

I. Initial assessment: must be done, followed by resuscitation (Airway, Breathing, Circulation (ABC)) with basic life support taking priority.

II. Supportive care:

- ❖ **Airway Management:** The loss of airway-protective reflexes and concern for aspiration or the presence of respiratory failure dictates the need to secure the airway.
- ❖ **Respiratory Support:** Several toxins interfere with oxygenation and ventilation. Hence, the adequacy of respiration must be assessed immediately after the airway is secured.
- ❖ **Circulation and Hemo-dynamics:** After establishing an airway and supporting respiratory function, the next priority is an assessment of the circulatory status.
- ❖ **Decontamination:** Gastrointestinal Decontamination Gastrointestinal (GI) decontamination, once a mainstay in the management of the poisoning, is no longer recommended. It is generally considered in patients who present very early (less than an hour after their ingestion) or for those patients who have taken a very large or dangerous overdose, where an antidote does not exist. Activated Charcoal Activated charcoal is a commonly used decontaminant.

- ❖ **Whole Bowel Irrigation:** Whole bowel irrigation (WBI) is another technique of decontamination, which works by enhancing the flow of toxins through the gut. It is done by placing a nasogastric/orogastric tube and administering large amounts (1–2 L/hour) of osmotically balanced polyethylene glycol solution (PEG) until the patient has at least two clear, liquid stools.
- ❖ **Urine Alkalinization:** Alkaline urine aids in the ionization of acidotic drugs within renal tubules which prevents resorption of the ionized drug back thereby enhancing elimination through the urine.³⁶
- ❖ **Extracorporeal removal:** Extracorporeal removal techniques, including hemodialysis, hemofiltration, and continuous renal replacement therapies, have limited indications in poisoned patients.

History may be inaccurate and hence the following laboratory tests should usually be obtained:

- ❖ Complete blood count
- ❖ Basic serum electrolytes
- ❖ Blood urea nitrogen (BUN), and creatinine
- ❖ Liver function test
- ❖ Serum lactate
- ❖ Arterial blood gas
- ❖ Electrocardiogram
- ❖ Toxicology screening

PREVENTION AND CONTROL STRATEGIES FOR POISONING:

Early diagnosis, treatment, and prevention are crucial in reducing the burden of poisoning-related injury in any country. The *WHO*³⁵ stated that acute poisoning cases can be prevented through an understanding of circumstances, substances, and at-risk populations along with other considerations which may provide pathways to sound policies targeted at poisoning prevention.

DIAGNOSIS OF POISONING IN DECEASED PERSON:

Postmortem examination is done to find out the cause of death. Especially the alimentary system should be examined as signs of corrosive and irritant poisons are likely to be found. Histopathology of vital organs reveals the cause of death in most poisoning cases.

*He XH et al.*³⁶ conducted a study among pigs to evaluate the respiratory dysfunction in acute severe dichlorvos poisoning and reported that pulmonary histopathology from animal studies showed that exposing lungs to OP insecticide (directly or indirectly) causes edema, hemorrhage, alveolar destruction, and inflammation.

*Akhgari M et al.*³⁷ conducted a study among organophosphorus-poisoned patients to determine the histopathological cardiac lesions in methamphetamine poisoning-related deaths and reported that mild atherosclerosis, moderate to severe atherosclerosis, congestion, microscopic hemorrhage, myocardial fiber hypertrophy, perivascular fibrosis, focal degeneration/necrosis, myocardial ischemia, acute myocardial infarction, old subendocardial myocardial infarction, mural thrombosis, endocarditis, and pericarditis were the most pathognomonic findings to be noted.

*Singh J et al.*³⁸ classified the degree of damage to hepatic tissue histopathologically, caused by agricultural poisonous substances grouped into I, II & III. Group I changes include congestion, mononuclear and neutrophilic infiltration, and sinusoidal dilatation, group II changes were cytoplasmic vacuolization and hydropic degeneration, group III features were patchy or centrilobular necrosis and patchy hemorrhages.

SOCIO-DEMOGRAPHIC VARIABLES:

*Srihari C et al.*³⁹ conducted a study to determine the epidemiological profile of poisoning patients in a tertiary care teaching hospital in South India and reported that out of the 317 patients enrolled majority (31%) of the patients were between 15 to 24 years followed by 25 to 34 years of age (26.18%) and 11.35% were below five years, with a female predominance of 54.8% and with a male: female ratio of 1:1.2.

*Chaudhari VA et al.*⁴⁰ conducted a study in South India to find the Epidemiological profile and reasons for fatal suicidal poisoning and reported that out of the 595 cases, the majority were males (n = 363, 61%) and belonged to 20 to 29 years (31.8%, n = 189). The mean age reported was 35.8 years (SD: 14.6). The mean age for males and females was 39.4 years (SD: 14.2) and 30.3 years (SD: 13.5), respectively.

*Goswami O et al.*⁴¹ reported that higher deaths (26.5%) following accidental poisoning were seen in the age group of 0–10 and 11–20 years and there is a gradual decline in deaths among persons aged more than 60 years.

*Jailkhani SM et al.*⁴² did a retrospective analysis of poisoning cases and reported that the majority (71.4%) of the study participants were males and 28.6% were females.

Around 39.2% of the males were between 20 and 30 years, and 54.9% were males aged 20 and 40. About 38.3% of the females were between 20 and 30 years, and 48.9% of the females aged between 20 and 40.

*Singh NK et al.*⁴³ reported that out of those 180 cases (5.2% of the total cases) were acute suicidal in nature. Among these cases males had committed more suicidal poisoning than females in the ratio of 1.22:1=M: F. Of these married was 60%, and unmarried was 40%.

*Srihari C et al.*³⁹ conducted a study in a tertiary care teaching hospital in South India to determine the epidemiological profile among poisoning patients and reported that among the study participants 46.37% were married, and 54.6% were single. Among those married, 35.37% were married for 3 to 7 years, 21.76% were married for 7 to 15 years, and 20.4% were married for 0 to 2 years.

*Chaudhari VA et al.*⁴⁰ conducted a study to find the epidemiol-toxicological profile and reasons for fatal suicidal poisoning and reported that the majority (74.8%) of the cases were married, (24%) were unmarried, and 7 were widowed/ widower (1.2%). Most of the cases were agriculture workers (22.2%), followed by laborers (20%).

*Banerjee I et al.*⁴⁴ conducted a study to find the clinico-epidemiological characteristics of patients with organophosphorus poisoning and reported that the majority were Hindus 540 (55.79%) followed by Muslims 424 (43.80%) and Christians 4 (0.41%).

HISTORY OF EXPOSURE TO POISON:

*Chatterjee S et al.*⁴⁵ in their study reported that the majority (66.72%) of the victims had exposure to poisoning indoors and (33.28%) had a history of exposure outdoors.

*Dash SK et al.*⁴⁶ reported the socio-demographic profile and showed that 55.9% of the suicide happened in the daytime (6.00 am to 6.00 pm).

*Chaudhari VA et al.*⁴⁰ reported that self-poisoning was common - 61.2%, during the day (06.00 am to 06.00 pm) followed by night - 38.8%. (06.00 pm to 06.00 am).

*Singh NK et al.*⁴³ reported that the time of poison consumption as in 30% of cases poison was consumed between 4 pm-8 pm, 21% of them consumed it between 12 am-4 am, and the least number of victims (6%) had consumed poison afternoon hours between 12 pm-4 pm.

*Goswami O et al.*⁴¹ conducted a study on acute poisoning cases brought for medico-legal autopsy in a north-eastern city of India and reported that; 30% were students, 18.3% were housewives and 6.62% were farmers and 59.3% had access to poisons at their homes, 19.87% from the pharmacy and 14.9% from a neighborhood store.

*Ahuja H et al.*⁴⁷ conducted a study to find the patient profile and outcomes among ICU patients and reported that the oral route (95.5%) was the most employed route of poisoning.

*Bureau National Crime Records, Government of India,*⁴⁸ reported that family problems (37.7%), other than marriage-related issues and illness (17.7%), were the two leading causes of poisoning.

*Chaudhari VA et al.*⁴⁰ conducted a study in South India to find the epidemiological profile and reasons for fatal suicidal poisoning and reported that the most common reason for suicide by poisoning was due to family problems (30.2%), followed by chronic illness (25%). The most common reason among females were family problems (33.2%), and among males were chronic illness (32.8%).

*Mohanty et al.*⁴⁹ conducted a four-year retrospective study and reported that financial burden and marital disharmony were the two most common reasons for suicidal poisoning and account for 37% and 35% respectively.

*Sharma BR et al.*⁵⁰ conducted a study to find the trends of poisoning cases in India and reported that dowry harassment was the leading cause of suicide among married females.

*Rajapakse et al.*⁵¹ in their systematic review to determine the features of non-fatal self-poisoning in Sri Lanka reported that interpersonal conflict was the most reported stressor associated with self-poisoning and alcohol misuse was frequent among males who self-poisoned.

*Goswami O et al.*⁴¹ conducted a study that reported that unintentional death was seen in lower age groups, whereas suicidal poisoning cases were observed among young and adult age groups.

*Patel DJ et al.*⁵² conducted a three years study to find the organophosphorus poisoning profile in Chhattisgarh and reported that 72.02% of them were suicidal, 25.88% were accidental and 2.10% of cases were due to unknown causes.

*Waghmode AH et al.*⁵³ in their study to determine the poisoning trends among cases admitted at tertiary care hospitals in India and reported that accidental poisoning was seen in 165 cases (88.71 %) followed by suicidal in 21 cases (11.29%).

*Singh NK et al.*⁴³ in their study reported that 50% of victims had consumed Organophosphorus poison, 40% Aluminum phosphide, 8% organochlorine, pyrethroids, and 2% had committed suicide using drugs.

CLINICAL FEATURES:

*Khosya S et al.*⁵⁴ in their study reported that nausea and vomiting were the commonly reported complaint. The most common sign of organophosphorus exposure was pupillary constriction followed by excessive salivation and sweating. In OPC 39% of cases were admitted with cough with expectoration and 39% were of diarrhea. A maximum of 8% convulsion came in the case of organophosphorus. Maximum hypotension resulted in the case of aluminum phosphate (24%). Similarly, breathlessness and cough with expectoration also resulted highest in the case of aluminum phosphate. In Rodenticide poisoning palpitation (65%) was the biggest complaint followed by nausea (56%) and abdominal pain (56.4%). This study also reported aluminum phosphate resulted in hypotension and breathlessness in (24%) of cases. In rodenticide (zinc phosphide) poisoning cases presenting symptoms as abdominal pain (66.4%), palpitation (65%), and sweating (66%) were reported.

*Chugh et al.*⁵⁵ in their study of 20 cases of zinc phosphide ingestion reported that profuse vomiting (100%) and pain abdomen were seen in all patients, palpitation, and sweating among 80% of them, 75% reported dyspnea and tachypnea, metabolic

acidosis was seen in 60% of the study participants, shock and hypotension was seen among 40% cases.

*Banerjee I et al.*⁵⁶ in their study reported that nausea and vomiting were the most common symptom 85.02% followed by abdominal cramps 47.93%, while miosis was the most common sign observed in 91.94% of patients.

*Banday TH et al.*⁵⁷ in their study reported the predictors of morbidity and mortality among OP poisoning cases in a rural hospital in Karnataka and reported that the most frequent signs noted in this study were miosis 93.2%, increased salivation 86.4%, anxiety and restlessness 82.7%, bronchospasm 78.2% and urinary/fecal incontinence in 58.6%.

*Muhammad R et al.*⁵⁸ reported that among acute poisoning cases unconsciousness was the most common (26.2%) clinical presentation followed by vomiting 21.4%. Altered mental status was the most frequently reported presentation of patients with acute poisoning. Vomiting was present in 21.4% of cases. Shock and tachycardia were present in 4.8% of cases.

*Verma R et al.*⁵⁹ in their study at a tertiary care institute of Haryana among acute aluminum phosphide poisoning to determine the patient profile reported that nausea, vomiting, retrosternal burning, and epigastric pain were present in the majority of patients, 53% of patients showed restlessness without alteration in consciousness.

*Panchal et al.*⁶⁰ studied the clinical Profile in patients of organophosphorus poisoning and reported that 86% of them reported nausea and vomiting followed by abdominal pain (34%) and altered sensorium in 32%, miosis was also reported in 42% of cases and disturbed consciousness in 52% of cases.

*Ather NA et al.*⁶¹ in their study on acute organophosphorus poisoning reported that increased salivation was observed in 97% of cases, 96% had constricted pupils, and increased gut sounds were heard in 94% of cases.

PHYSICAL ASSESSMENT:

*Muhammad R et al.*⁵⁸ in their study reported that altered mental status was the common clinical presentation of patients with acute poisoning.

*Kori RK et al.*⁶² assessed the adverse health effects of poisoning among farm workers exposed to chronic pesticides- in Madhya Pradesh and reported that dizziness (66.1%) was commonly reported followed by headache (56.5%) and numbness/tingling (32.3%).

*Suresh MN et al.*⁶³ conducted a study to find the clinical profile and outcome of patients admitted with rodenticide poisoning and reported that jaundice was seen in 20% of patients, oliguria among 16.6%, bleeding diathesis among 11.7% and headache among 6.6%.

*Budhathoki S et al.*⁶⁴ conducted a hospital-based study and reported that the mean±SD respiratory rate among those who survived and among the expired cases were (31.27 ± 10.58) and (34.93 ± 17.12) respectively. The study also reported the mean pulse rate among those who lived and expired cases to be (120.17 ± 25.51) and (130.40 ± 21.92) respectively. The mean arterial pressure among the survivors and expired cases were (73.43 ± 15.18) and (70.62 ± 10.39) respectively.

*Prado-Lu D et al.*⁶⁵ conducted a cross-sectional study to determine the risk factors and health problems of pesticide exposure among cut flower farmers and reported that 41.2% had abnormal blood pressure – not within normal limits.

LABORATORY INVESTIGATIONS:

*Soogarun S et al.*⁶⁶ conducted a study to find the trend of platelet indices in patients with green pit viper toxin and reported the (Mean±SD) hemoglobin (g/dl), red blood cell count and Platelet count to be (14.94 ± 2.28) , (3.49 ± 0.46) and (198.54 ± 69.64) respectively.

*Kumar S et al.*⁶⁷ in their study to find the reliability of leukocyte count as a marker which is reliable for the severity of organophosphate poisoning reported the (Mean±SD) Leukocyte count to be 9882.62 ± 4682.82 .

*Prado-Lu D et al.*⁴³ conducted a cross-sectional study to determine the risk factors and health problems of pesticide exposure among cut flower farmers and reported that abnormal blood parameters; hemoglobin, white blood cell count, platelet count, aspartate transaminase (AST), alanine transaminase (ALT), creatinine and RBC Cholinesterase were reported among 15.7%, 34.3%, 3.9%, 12.7%, 24.5%, 20.6%, and 51% respectively.

*Kumar S et al.*⁶⁷ reported that (mean±SD) serum cholinesterase among the survivors and non-survivors were (3287.16 ± 2719.30) and (1456.05 ± 1159.42) respectively.

*Mathai A et al.*⁶⁸ conducted a study of acute aluminum phosphide poisoning patients to predict mortality and reported that survivors had significantly lower levels of serum creatinine compared to non-survivors $(0.82 \pm 0.1418 \text{ mg/Dl vs } 1.375 \pm 0.642 \text{ mg/dL})$ respectively). The mean serum creatinine (mg %) and Serum bilirubin (mg %) reported in the study were 1.68 ± 1.89 and 0.77 ± 1.08 respectively.

*Suresh MN et al.*⁶³ conducted a study to find the clinical profile and outcome of patients admitted with rodenticide poisoning reported that increased serum bilirubin

(>1.5mg/dl) was reported on day 4 following ingestion, 40% increased SGOT & SGPT on day 4 (>40iu/l), 40% increased creatinine value (>1.5mg/dl), 20% increased PT/INR/aPTT/BT/CT was reported among 11.75% cases.

SERUM ELECTROLYTES:

*Mathai A et al.*⁶⁸ reported the Mean \pm SD of serum sodium (mg %), serum potassium (mg %), and serum bicarbonate (mmol/L) as 139.04 ± 3.20 , 3.59 ± 0.67 and 12.32 ± 5.46 respectively.

*Ahuja H et al.*⁴⁷ conducted a study among acute poisoning cases admitted to a tertiary level intensive care unit in northern India to find the patient profile and outcomes reported that the mean \pm SD of serum sodium, serum potassium, mean serum chloride level, mean HCO₃ and a mean serum bilirubin level to be 141 ± 7.13 meq/L, 3.95 ± 0.57 meq/L, 104.6 ± 6.00 meq/L, 18.58 ± 5.30 and 0.75 ± 0.64 mg% respectively.

CLOTTING FACTORS:

*Hu X et al.*⁶⁹ conducted a study among paraquat poisoning cases to find the association between increased plasma prothrombin time and its poor prognosis, reporting that mean PT expired and living patients to be 13.97 ± 2.82 and 11.62 ± 1.14 respectively. The study reported mean APTT among expired and living patients to be 42.26 ± 21.75 and 30.80 ± 11.81 respectively. Mean d-dimer (μ g/L FEU) expired and living patients reported were 1370.87 ± 1933.13 and 1227.49 ± 1698.92 respectively.

TREATMENT:

*Usha M et al.*⁷⁰ in their study reported that on presentation at a hospital poisoned patients received gastric lavage as the first intervention, where 90% of patients underwent skin decontamination of skin and lavage parallel whereas some people underwent emesis (2.66%), 5.33% underwent only gastric lavage.

*Mathew R et al.*⁷¹ in their study on finding the outcome of acute poisoning reported that twenty patients (10%) required intubation followed by mechanical ventilation. Gastric lavage was done for 86 (43%) patients mostly within 1 hr of their arrival, antidote was given to 21 patients with poisoning and 15 snakebite cases. The median length of emergency stay was 14 (6–22.8) h. Nearly half of them (51%) were discharged from emergency after primary treatment and observation.

POST-MORTEM FEATURES:

*Jain AK et al.*⁷² conducted a prospective study on autopsy findings of aluminum phosphide poisoning victims, the study reported that among 50 confirmed poisoning cases chemical analysis were done and the following parameters were recorded namely time, the quantity of ingestion, and time of death. The average survival time in the hospitalized cases (28 cases) were 12.8 hours and in non-hospitalized cases (22 cases) were 2.6 hours. On external examination during the autopsy, a livid face was seen in 18% of the cases and a bluish-discolored face was seen in 22% of the cases. On autopsy of lungs, they were seen to be congested in all the cases and were edematous in 46 cases (92%). On internal examination, the trachea was found to be congested in all the cases and froth was present in the trachea in 36 cases (12%). Nearly 56% of them have a pungent, garlicky odor of Aluminum phosphide that was

perceptible on sectioning their lungs. The stomach contained grayish-brown fluid or pasty material in 58% of them. Slight congestion was seen in gastric mucosa among 22 cases (44%) that were not hospitalized and congested in 28 cases (56%) that were hospitalized and gastric lavage had been done as part of initial treatment. Sloughing of mucosa was also observed in all the cases, more in the fundal region. Rugosities of the gastric mucosa were obliterated with smooth gastric lining among 16% of the patients.

HISTOPATHOLOGICAL FEATURES:

*Akhgari M et al.*⁷³ conducted a study among OP-poisoned patients to determine the histopathological cardiac lesions in methamphetamine poisoning-related deaths and reported that cardiovascular problems were noted in 68% of cases. Methamphetamine abuse was significantly associated with cardiovascular pathology ($p < 0.05$).

*Sutay S et al.*⁷⁴ conducted a Study to find the pattern of histopathological findings of liver poisoning and reported that liver congestion was seen in 46.5% and fatty changes in 34.9% cases; centrilobular necrosis in 9.3%, and Sinusoidal dilatation in 7.0% cases.

*Manish KN et al.*⁷⁵ conducted an epidemiological and histopathological study on pesticide poisoning and reported that the common microscopic findings were portal and sinusoidal congestion (60%), microvacoualization (52%), hydropic degeneration (44%) and mononuclear infiltration (48%), micro and macro-vesicular steatosis (44%).

*Saleki S et al.*⁷⁶ conducted a study among phosphine poisoning cases and reported that sinusoidal congestion and fine cytoplasmic vacuolization of hepatocytes were the most frequent histopathological findings among them. The fine cytoplasmic vacuoles which were the most consistent finding in our cases are rather uniform in size and shape. The vacuoles were distributed uniformly in all acinar zones in the majority (71.1%) of cases.

MATERIALS AND METHODS

The present study was conducted after getting clearance from Scientific Research Committee and Institutional Human Ethics Committee.

Study design

This was a cross-sectional study done to assess the clinicopathological features of the poisoning in living and dead and to find out the significance of Case history, circumstantial evidence, and autopsy findings in any case of poisoning from KLE Hospital, Belagavi.

Study period

The study was conducted over the period of 18 months from January 2021 to June 2022.

Study area

This study was conducted in KLE Hospital, Belagavi.

Eligibility criteria

Inclusion criteria:

1. All consecutive cases of poisoning exposure, including cases with adverse drug effects of prescribed medication were enrolled within 24 hours of arrival in our emergency department.
2. Victims who expired due to poisoning in our hospital were enrolled.

Exclusion criteria:

1. Those poisoning patients who were brought dead without any proper records or history were excluded.
2. Food poisoning patients.

Sample size

The expected sample size for live and dead cases was calculated from the data available in MRD by assuming an average of 200 cases/ year for live and 30 cases/year for dead cases. The data was collected from January 2021 to June 2022. At the end of data collection, a total of 197 cases were recorded, of which 163 cases were live and 34 cases were dead.

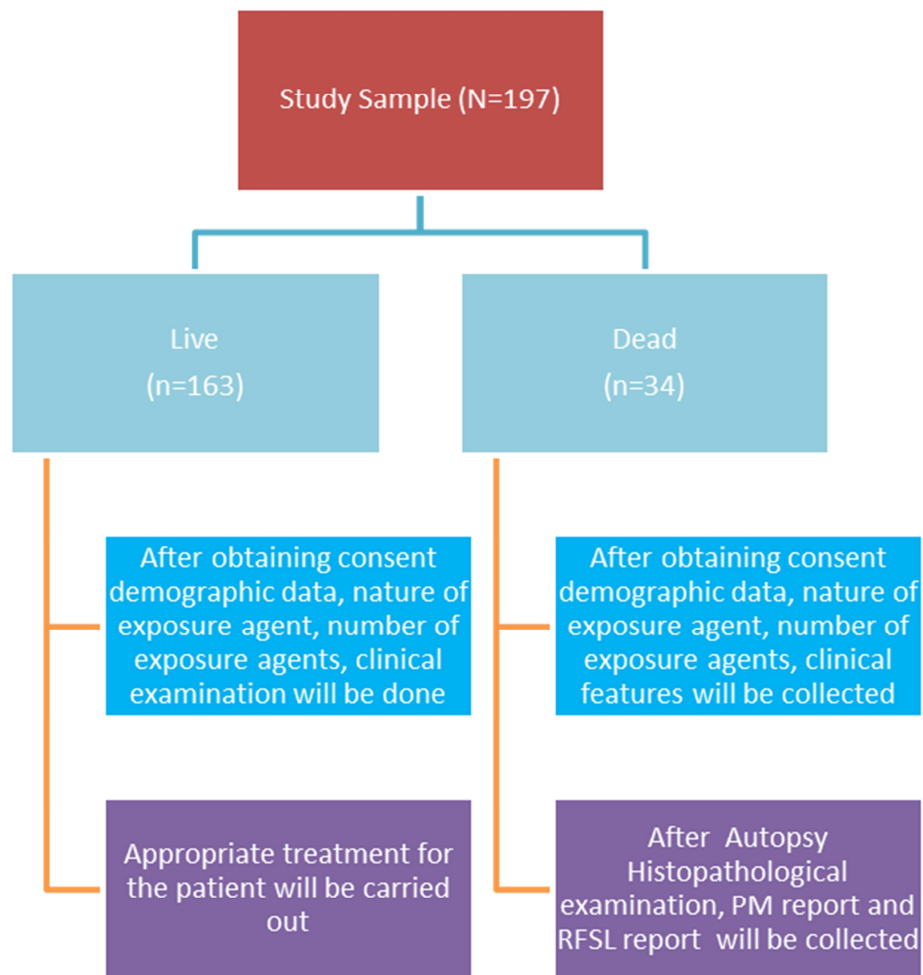
Sampling method

Study participants were included by convenient sampling method. Those samples satisfying eligibility criteria with poisoning cases brought to KLE Hospital, Belagavi was included in the study after getting their informed written consent from poisoned patients of living person/patients' caregiver/treating physician and deceased relative.

Study tools

The principal investigator used a pre-designed and pre-tested questionnaire (Annexure II) to collect the data from patients. Investigator requires 15 to 20 minutes from each participant to collect the required data for the study such as demographic data(age and gender), nature of exposure agents, number of exposure agents (single/multiple), time, types (acute or chronic), concomitant use of alcohol, vital

signs including consciousness level, body temperature, respiration rate, blood pressure, and heart rate were assessed, history of suicide attempts, psychiatric diseases, substance abuse or major systemic disease, presenting symptoms and signs, details of psychiatric consultation, methods of management, clinical observations, final outcomes and laboratory data (blood cell counts, liver and renal function, blood gas analyses, serum electrolytes, urine examination, and x-rays.). Poisoning report forms will be completed for all enrolled patients.



Data Collection Procedure

After obtaining permission from Scientific Research Committee and Institutional Human Ethics Committee, the present study was conducted in KLE Hospital, Belagavi. A convenient sampling technique was used in which 163 live and 34 dead cases were included in the study. After explaining the purpose of the study, written informed consent was obtained from poisoned patients of living person/patient's caregiver/treating physician and deceased relative (Annexure I). A timeline of about 15 to 20 minutes required to collect the questions on proforma. Report form data were initially obtained through direct interviews of patients or patient caregivers by the ED staff and medical assistants. The report form was completed during the hospitalization period itself.

Those who were discharged with a stable condition were routinely followed in psychiatric OPD and therefore we can obtain information on each patient's condition after discharge. For those who would be discharged with an unstable condition, transferred to other hospitals, or could not return to the outpatient clinics, follow-up phone calls were made to the patients or their friends or relatives to obtain information. On critically ill and die-on-arrival patients, the information were obtained from their friends, relatives, emergency paramedical technicians, and policemen. Similarly, for the deceased poisoning patients, we collected the same parameters using hospital records(MRD) and we did a histopathological examination of the Brain, Lungs, Liver, and kidneys using autopsy.

Statistical analysis

Data entered in Microsoft Excel was analyzed using SPSS version 20.0 (Armonk, NY: IBM Corp). Quantitative variables like age and biochemical parameters were expressed in Mean and standard deviation. Qualitative variables like gender, occupation, religion, clinical features, treatment, PM report, RFSL report, and Histopathological examination were expressed in frequency and proportion. The Chi-square test and Fisher's Exact test were used to test the significant association between variables and a p-value less than 0.05 were considered statistically significant.

Ethical Considerations

The study was conducted after obtaining clearance from the Scientific Research Committee and Institutional Ethics Committee. The information sheet indicating the purpose of the study, the procedure for maintaining confidentiality, and the right to participate in this study was provided to all the participants following which an informed consent (Annexure I) was obtained from each of the respondents. Anonymity was maintained and the data were kept confidential throughout the study.

RESULTS

A total of 197 cases were considered for the study, where 163 (82.7%) cases survived and 34 (17.3%) cases deceased.

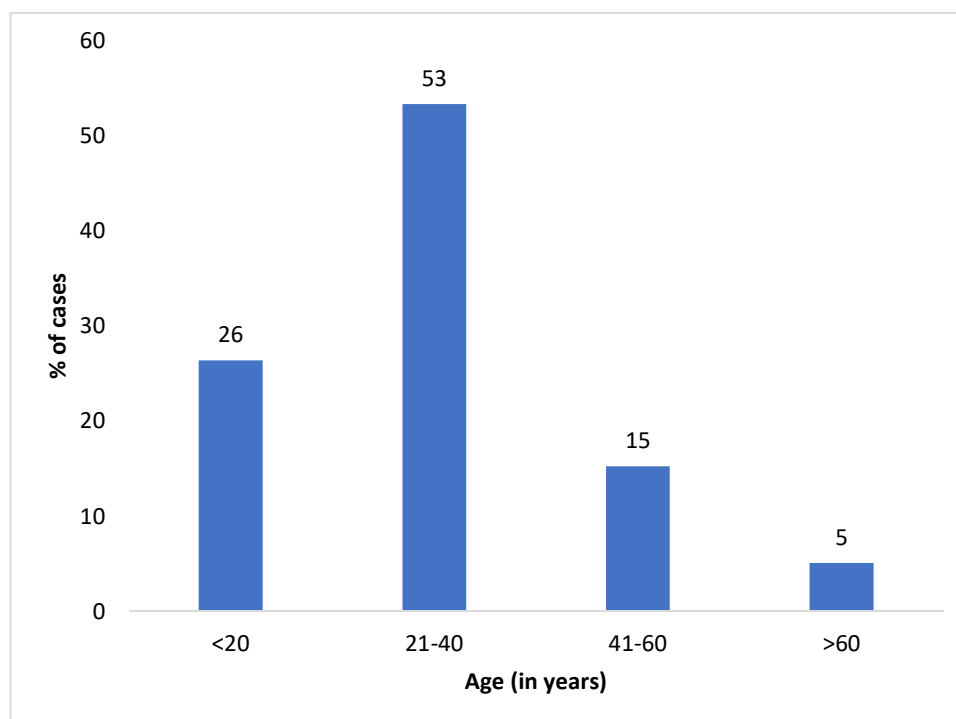


Figure 1: Frequency distribution of Age of study cases (n=197)

Figure 1, shows the frequency distribution of study cases' age. Mean \pm SD age was 30.75 \pm 15.62 years and around 53% of the cases belonged to 21-40 years of age followed by <20 years of age (26%).

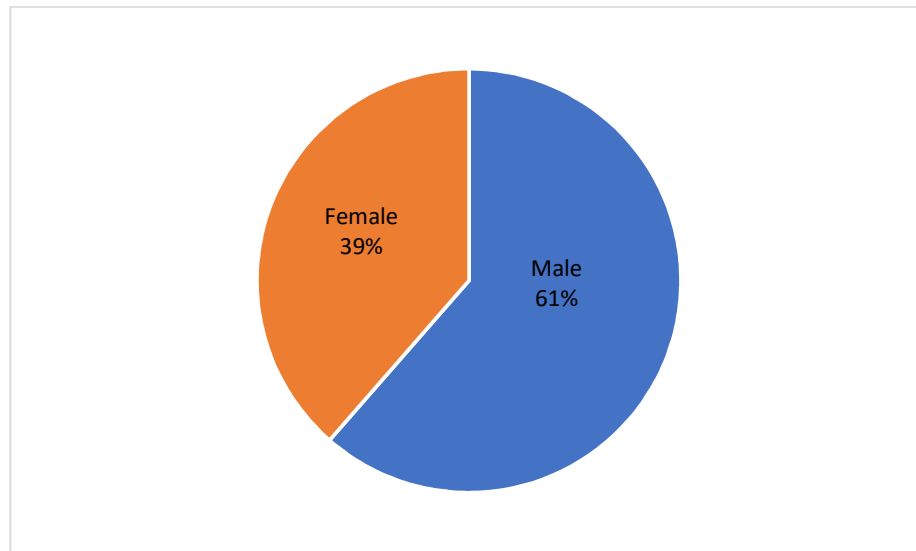


Figure 2: Frequency distribution of study cases gender (n=197)

Figure 2, shows the frequency distribution of study cases' gender. Almost 60% of the cases were male and 39% were females.

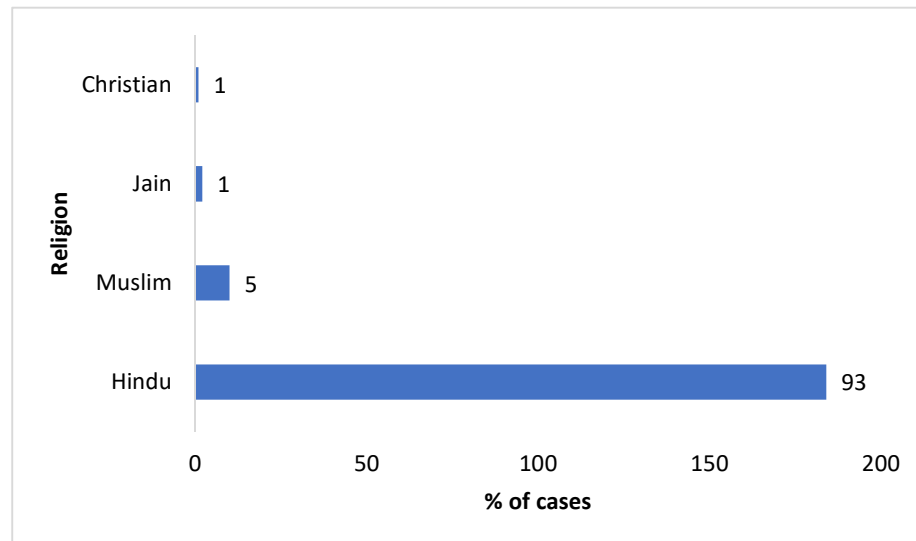


Figure 3: Frequency distribution of study participants Religion (n=197)

Figure 3, shows the frequency distribution of study participants' religion. Maximum of 93% were Hindus followed by Muslims 5%, Christian 1% and Jain 1%.

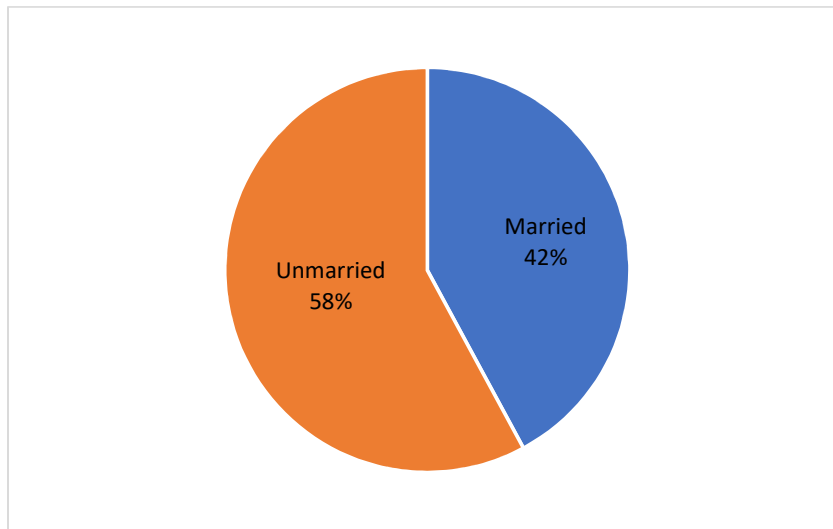


Figure 4: Distribution of marital status among the study cases (n=197)

Figure 4, shows the marital distribution among deceased cases. A maximum of 58% of cases were unmarried.

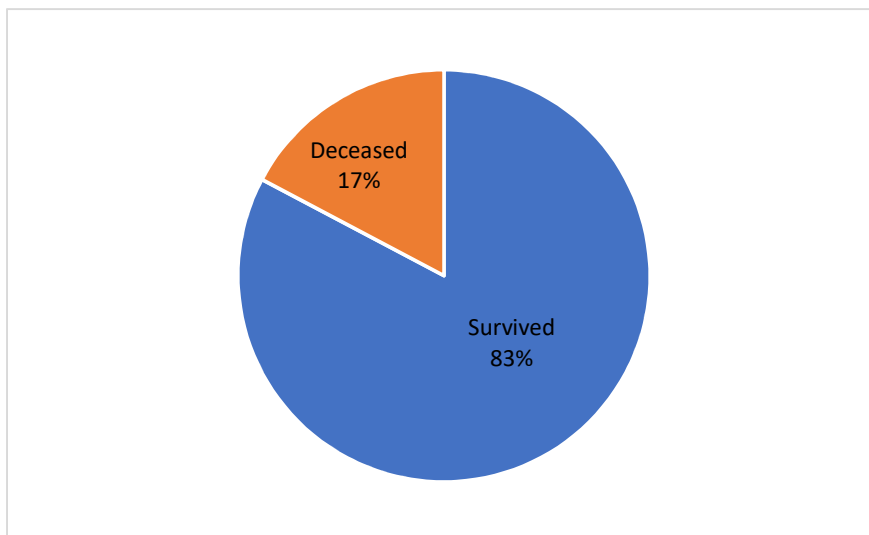


Figure 5: Distribution of Poison ingested case (n=197)

Figure 5, shows the distribution of poison-ingested cases. Maximum of cases survived with 83% and deceased with 17%.

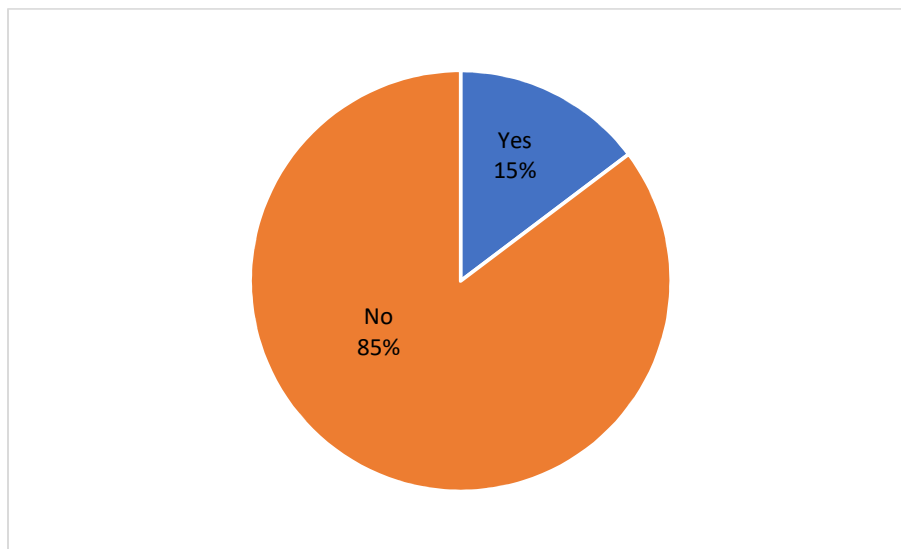


Figure 6: Distribution of past history of suicidal ideation among Deceased cases (n=34)

Figure 6, shows the distribution of the history of suicidal ideation among deceased cases. Nearly 15% of the cases already had a history of attempting suicide.

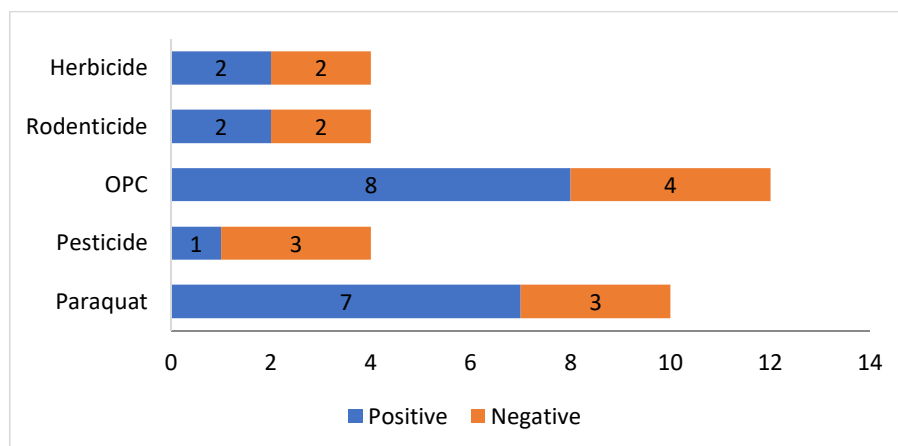


Figure 7: Distribution of Poison Detection Centre report of deceased cases (n=34)

Figure 7, shows the distribution of PDC reports of deceased cases. OPC was positive in 8 cases, and 7 cases were positive for paraquat followed by herbicide and rodenticide.

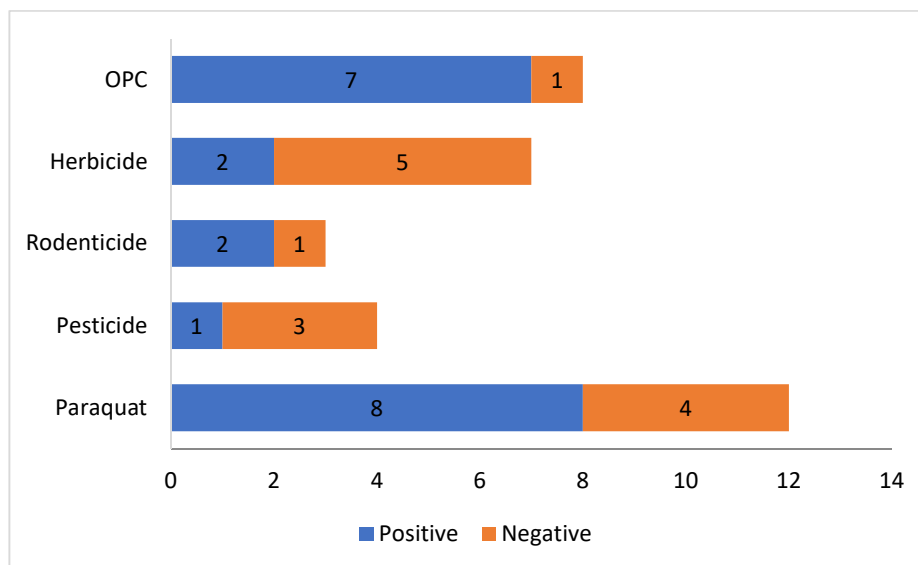


Figure 8: Regional Forensic Science Laboratory Report of deceased cases (n=34)

Figure 8, shows the RFSL report of deceased cases. A maximum of cases proved positive for Paraquat (24%) followed by OPC (21%), Herbicide (6%), and Rodenticide (6%).

Table 3: Frequency distribution of study participant’s Place of ingestion

Variables	Frequency (%)
Home	155 (79)
Farm	28 (14)
Hospital	05 (03)
Others	09 (05)

Table 3, shows the frequency distribution of study participants’ place of ingestion. In both cases, a maximum of ingestion occurred in a home of about 79% followed by farm at about 14%, hospital 3% and others 5%.

Table 4: Frequency distribution of intentional exposure of Deceased cases (n=34)

Intentional Accident/ Exposure	Deceased (%)
Suicide	32 (94)
Homicide	01 (03)
Accidental	01 (03)

Table 4, shows the distribution of intentional exposure of deceased cases, almost 94% of the deceased cases accounted for suicide and 3% accounted for homicide and accidental death.

Table 5: Frequency distribution of type of Compound ingested among Survived cases (n=163)

Variables	Survived (%)
Unknown chemical compound	40 (25 %)
Snakebite	38 (23%)
Organophosphorus	16 (10 %)
Paraquat	09 (06%)
Paracetamol	06 (04%)
Benzodiazepine	04 (02%)
Mosquito Repellent Liquid	02 (01%)
Others	48 (29%)

Table 5, shows the frequency distribution of the type of compound ingested among survived cases. About one-fourth of the cases consumed the unknown compound and 23% of poisoning was due to snake bites. Organophosphorus, Paraquat, Paracetamol, benzodiazepine, mosquito repellent liquid contributed 10%, 6%, 4%, 2%, 1% respectively.

Table 6: Frequency distribution of type of Compound ingested among Deceased cases (n=34)

Variables	Deceased (%)
Paraquat	15 (44)
Organophosphorus	06 (18)
Rodenticide	04 (12)
Pesticide	03 (09)
Unknown Compound	06 (18)

Table 6, shows the frequency distribution of the type of compound ingested among deceased cases. About 44% of cases were ingested paraquat, followed by organophosphorus (18%) and rodenticide (12%) and others (16%).

Table 7: Frequency distribution of clinical features among survived cases (n=163)

Clinical Features	Frequency (%)
Vomiting	46 (28)
Abdomen pain	33 (20)
Fever	21 (13)
Headache	19 (12)
Urination	15 (09)
Throat pain	14 (09)
Giddiness	11 (07)
Salivation	03 (02)
Defaecation	03 (02)
Tingling/numbness	02 (01)

Multiple responses

Table 7, shows the clinical features observed among survived cases. The majority of the poisoning cases were reported vomiting (28%), abdominal pain (20%), fever (13%), headache (12%), and increased urination (9%), throat pain (9%) and others (12%).

Table 8: Frequency distribution of clinical features among deceased cases (n=34)

Clinical Features	Frequency (%)
Vomiting	13 (38)
Throat pain	10 (29)
Drowsiness	09 (26)
Breathlessness	08 (24)
Abdomen pain	08 (24)
Defaecation	04 (12)
Tachypnoea	02 (06)

Table 8, shows the distribution of clinical features among deceased cases. A maximum of patients had various combinations of clinical features together. Common clinical features observed were vomiting (38%), throat pain (29%), drowsiness (26%), breathlessness (24%), and Abdomen pain (24%).

Table 9: Mean (SD) clinical parameters of survived cases (n=163)

Clinical Parameters	Mean ± SD
<u>Hematology</u>	
Haemoglobin (gm/dl)	12.6±2.5
Platelet count (in lakhs)	0.77± .01
WBC count (cu. mm)	11366.81±6435.91
Red cell count (million /cu.mm)	4.73±1.72
<u>Biochemistry</u>	
FBS (gm/dl)	86.07±7.58
Urea (mg/dl)	37.50±2.31
Creatinine (mg/dl)	1.87±1.17
Total Bilirubin (mg/dl)	1.47±0.94
Direct Bilirubin (mg/dl)	1.19±0.45
SGOT (mg/dl)	83.99±43.69
SGPT (mg/dl)	280.59±53.77
Serum albumin (mg/dl)	4.76±4.62
<u>Serum Electrolytes</u>	
Sodium (mmol/l)	138.69±4.61
Potassium(mmol/l)	4.12±0.58
Bicarbonate (mmol/l)	24.55±8.78
Chlorides (mmol/l)	101.27±16.42
<u>Clotting factors</u>	
CT (secs)	12.70±11.76
BT (secs)	14.32±5.23
PT/INR (secs)	1.53±1.80

Table 9, shows the Mean \pm SD of clinical parameters of survived cases. The mean hemoglobin was 12.6 ± 2.5 (gm/dl) and the mean platelets (in lakhs) was 0.77 ± 0.064 . The mean \pm SD of Urea (mg/dl), Creatinine(mg/dl), Total Bilirubin(mg/dl), Direct Bilirubin(mg/dl), SGOT (mg/dl), SGPT (mg/dl) were 37.5 ± 2.3 , 1.87 ± 1.17 , 1.47 ± 0.94 , 1.19 ± 0.45 , 83.99 ± 43.69 and 280.59 ± 53.77 respectively. It was observed that the mean \pm SD for clotting factors CT was 12.70 ± 11.76 , BT was 14.32 ± 5.23 and PT/ INR was 1.53 ± 1.80 .

Table 10: Mean (SD) clinical parameters of deceased cases (n=34)

Clinical Parameters	Mean \pm SD
<u>Hematology</u>	
Haemoglobin (gm/dl)	12.86 ± 1.63
Platelet count (in lakhs)	0.71 ± 0.03
WBC count (cu. mm)	8381.18 ± 13872.55
<u>Serum Electrolytes</u>	
Sodium (mmol/l)	143.6 ± 3.57
Potassium (mmol/l)	4.77 ± 1.01
Chlorides (mmol/l)	141.30 ± 107

Table 10, shows the Mean \pm SD of clinical parameters of deceased cases. The mean hemoglobin was 12.6 ± 2.5 (gm/dl) and the mean platelets (in lakhs) were 0.71 ± 0.03 . The mean \pm SD of Sodium (mmol/l), Potassium (mmol/l) and Chlorides (mmol/l) were 143.6 ± 3.57 , 4.77 ± 1.01 and 141.30 ± 107 respectively.

Table 11: Distribution of Histopathology report of deceased cases (n=34)

Result	Frequency (%)
Brain Congested	28 (82)
Heart Congested	25 (73.5)
Liver Congested	17 (50)
Lung Congested	15 (44)
Pulmonary edema	07 (21)
Acute tubular necrosis	05 (15)
Focal dropout necrosis	03 (06)

Table 11, shows the histopathology report of deceased cases. Multiple organs congested were observed in most of the cases. Common congested organs observed were the Brain in 82% of cases, in 50% of cases observed with lung congestion with pulmonary edema and hemorrhage followed by liver congestion (50%) and kidney congestion (15%)

Table 12: Distribution of treatment observed among survived patients (n=163)

Treatment	Frequency (%)
Inj. Pantoprazole	115 (71)
Psychiatric counseling	83 (51)
Inj. Esomeprazole + Domperidone	35 (21)
Inj. Ceftriaxone	28 (17)
Inj. Ondansetron	21 (13)
Inj. Nebesium	19 (12)
Gastric Lavage	18 (11)

Table 12, shows the common treatment observed among survived cases. A maximum of cases had injections via IV fluids and some of the cases had bowel wash, mucoprone gel, whole blood transfusion, hemodialysis, antibiotics & Anti-snake venom IV as a part of their treatment. About 50% of the patients had psychiatry counseling.

Table 13: Frequency distribution of hospital stay among survived patients (n=163)

Days	Frequency (%)
1-5	102 (63)
6-10	43 (26)
11-15	16 (10)
>15	2 (01)

Table 13, shows the distribution of hospital stays of survived cases. The average number of cases that stayed in the hospital observed was 5.2 ± 3.72 days. Around 63% of the patients stayed 1-5 days in the hospital.

Table 14: Distribution of No. of days survived by deceased cases (n=34)

Days	Frequency (%)
1-5	28 (82)
6-10	02 (06)
11-15	04 (12)

Table 14, shows the frequency distribution of days deceased cases survived in the hospital. The average number of days observed was 4.29 ± 7.09 days. About 82% of cases survived for less than five days in the hospital.

Table 15: Association of baseline characteristics with poisoning cases

Variables	Survived (%) (n=163)	Deceased (%) (n=34)	p-value
Age (in years)			
1-20	39 (24)	13 (38)	0.35
21-40	89 (55)	16 (47)	
41-60	25 (15)	05 (15)	
>60	10 (06)	00 (00)	
Gender			
Male	102 (63)	19 (56)	0.46
Female	61(37)	15 (44)	
Religion			
Hindu	156 (96)	33 (97)	0.52
Muslim	09 (06)	01 (03)	
Christian	01 (01)	00 (00)	
Jain	02 (01)	00 (00)	
Marital Status			
Married	67 (41)	16 (47)	0.52
Unmarried	96 (59)	18 (53)	

#Chi-square test & Fisher's Exact Test

Table 15, shows the association between baseline characteristics with survived and deceased cases of poison ingestion. Baseline characters such as age, gender, religion, marital status, place of ingestion, and clinical features have no association with the virulence of the poisoning cases ($p < 0.05$).

Table 16: Association of Place of Ingestion, clinical features, and compound ingested with poisoning cases

Variables	Survived (%) (n=163)	Deceased (%) (n=34)	p-value
Place of Ingestion of poison			
Home	125 (77)	30 (88)	0.46
Farm	25 (15)	03 (09)	
Hospital	05 (03)	00 (00)	
Others	08 (05)	01 (03)	
Clinical features*			
Vomiting	46 (28)	13 (38)	<0.01**
Stomach pain	33 (20)	08 (24)	
Throat pain	14 (09)	10 (29)	
Breathlessness	00 (00)	08 (24)	
Drowsiness	09 (06)	09 (26)	
Defecation	04 (02)	03 (09)	
Others	28 (17)	03 (09)	
Type of Compound Ingested			
Paraquat	09 (05)	15 (44)	<0.01**
Organophosphorus	16 (10)	06 (18)	
Snake bite	38 (23)	00 (00)	
Unknown Component	40 (24)	06 (18)	
Others	60 (37)	07 (21)	

*Multiple responses

**p<0.05, statistically significant

Table 16, shows the association of place of ingestion, clinical features, and type of component ingested with the type of poison cases. There was a significant association found between clinical features and the type of compound ingested with p<0.01.

Table 17: Mean difference of clinical parameters of survived and deceased cases

Clinical Parameters	Survived (n=163)	Deceased (n=34)	p-value
<u>Hematology</u>			
Haemoglobin (gm/dl)	12.6±2.5	12.6±1.63	1.01
Platelet count (in lakhs)	0.77±0.01	0.71±0.03	<0.01*
WBC count (cu. mm)	11366.81±6435.91	13872.55±8381.18	0.05
<u>Serum Electrolytes</u>			
Sodium (mmol/l)	138.69±4.61	143.6 ± 3.57	<0.01*
Potassium (mmol/l)	4.12±0.58	4.77 ± 1.01	<0.01*
Chlorides (mmol/l)	101.27±16.42	141.30± 107	<0.01*

#Independent t test , *p<0.05, statistically significant

Table 17, shows the mean difference in clinical parameters of survived and deceased cases. There was a significant difference exists between platelet count, WBC count, and electrolytes of survived and deceased cases with p<0.05.

DISCUSSION

Poisonings are a leading cause of hospitalization and fatality in India. The pattern of poisoning [demography, compound used, manner of poisoning] varies across different states in India. This is mainly due to the availability or accessibility of poisonous substances more common in the region. So, the current study focused on assessing the characteristic features such as demographic features, clinical presentation and histopathological features of the poisoning in the case of both living and dead in the Belagavi regions.

In the current study, around 50% of the participants belonged to 21-40 years of age and the mean \pm SD age in years were 30.7 \pm 15.6 years. The majority of the cases were males (61%) compared to females (39%) and a higher incidence of poisoning was reported among unmarried (58%) compared to married (42%) study participants. Similar socio-demographic patterns were observed in the other studies conducted by *Srihari et al*, *Chaudhan et al*, *Jailkhani SM et al*, *Chatterjee S et al*, and *Dash SK et al*.^{39,40,42,45,46} The high incidence of poisoning reported among young adults, males, and unmarried individuals may be due to increased exposure to stress, difficulty in handling work-life balances, economic instability and higher knowledge on the availability of poisonous substances among them compared to females.

In this study, the majority of the participants ingested poison at home (79%) of about 79% followed by farm at about 14%, hospital 3% and others 5%. It was revealed that 94% of the deceased cases were self-poisoned (suicide) and around 15% of the cases had a past history of suicidal ideation. Our study findings were consistent

with the 10-year study conducted in Chandigarh by *Singh S* and consistent with the study conducted in various regions of India.^{77,46,67,40,52}

The reasons were due to increase in unemployment, urbanization, the breakdown of the family support structure, and economic instability as are a few of the variables that may be contributing to a rise in self-poisonings (suicide) among the study cases.

The fatality of the poison depends on the quantity of poisonous substance, nature of the compound ingested, availability of health care facility, and initiation of the treatment. In the present study, around 17 % of the cases expired irrespective of an effective treatment provided to them. The mortality rate was similar to the study conducted by Ramesha KN et al⁷⁸ in Bangalore with a mortality rate of 16%, whereas the study conducted by Sakar D et al⁷⁹ reported a lower mortality rate. This difference in mortality may be due to the different sample sizes included by Sakar D et al.⁷⁹ By improving proper clinical management, counseling services for susceptible individuals, and restricted access to toxic poisonous substances in the community can able to prevent acts of deliberate self-harm (Suicide).

In the present study, the majority of the poisoning cases who survived reported vomiting (28%), abdominal pain (20%), fever (13%), headache (12%), and increased urination (9%) whereas the clinical features of deceased cases ranges from vomiting to drowsiness, breathing difficulty and abdomen pain. Gastrointestinal clinical features were common among the poison cases and the severity of the symptoms has a wide spectrum which depends on the type of poisonous compound ingested by the patients. Various studies conducted by Khosya S et al, Chugh et al, Banerjee et al,

Banday et al, Muhammed R et al.⁵⁴⁻⁵⁸, Verma R et al,⁵⁹ Panchal et al,⁶⁰ Ather NA et al,⁶¹ supported the evidence of gastrointestinal features of poisoning cases.

Around 25% of the poisoning among survived cases is due to unknown chemical compounds followed by snake bite (23%), Organophosphorus (10%), and Paraquat (6%) whereas paraquat (herbicide) contributed maximum lethality i.e., around 44 % of cases among deceased consumed paraquat (herbicide) followed by organophosphorus (18%) as per Regional Forensic Science laboratory report. Similarly, the majority of the studies reported herbicides and pesticides were the major sources of poisoning, its distribution varies with geographical location.⁸⁰⁻⁸³ The study conducted by Jagadeesan et al⁸⁴ and Cherukuri H et al⁸⁵ reported high lethality on paraquat poisoning. Increasing usage of paraquat (herbicide) in agriculture leads to easy access and self-poisoning in India. A study conducted in Kerala by Celine et al⁸⁶ reported pesticides and snake bites were the common compounds of poisoning. Similarly, a study conducted in Andhra Pradesh by Kumar SV et al⁸⁷ and Karnataka by Vanishree et al⁸⁸ reported herbicides and pesticides like Organophosphorus were common agents of poisoning followed by snake bites. This may be due to the easy availability of agrochemicals, uncontrolled sales, and the use of these poisonous compounds in India.

Clinical laboratory parameters play a vital role in predicting the poisonous substance circulating in the body. The chemicals present in poisonous substances alter the homeostasis of the body. By doing blood tests, we can categorize the patients at risk of injury to viscera by calculating the in-vivo toxicity mechanisms. In the present study, the mean hemoglobin was 12.6 ± 2.5 (gm/dl), and the mean platelets (in lakhs) was 0.77 ± 0.064 . We found that there was a decrease in platelet counts and an increase

in WBC count (leukocytosis) among the poisonous patients compared to the normal level. These findings were similar to the study conducted by Cander B et al⁸⁹ and Kumar S et al.⁹⁰ This shows that monitoring of all patients for WBC count and platelet count is essential for the assessment of the prognosis.

Similarly, there were fluctuations in the mean±SD of urea (mg/dl), creatinine(mg/dl), total Bilirubin(mg/dl), direct bilirubin(mg/dl), SGOT (mg/dl), SGPT (mg/dl) level compared to the normal ranges. It was observed that the mean±SD for clotting factors and serum electrolytes were normal among poisoning cases. Our study findings were consistent with the study conducted by Suresh et al⁶³ and Ahuja et al⁴⁷ whereas Hu X et al⁶⁹ reported increased mean±SD for clotting factors. These fluctuations in urea (mg/dl), creatinine(mg/dl), total bilirubin(mg/dl), direct bilirubin(mg/dl), SGOT (mg/dl), SGPT (mg/dl) level shows that there was an injury to liver and kidney due to the poisonous substances.

Autopsy findings are the gold standard method for identifying any case of drug overdose or poisoning. The importance of autopsy examination in case of drug overdose or toxin or poisoning-related death is to rule out natural disease processes. Autopsy findings can also be used to identify the symptoms produced by the toxins or poisons. In the present study, among the deceased, it was found that the majority of cases have brain (82%) involvement followed by heart (73.5%) and liver (50%). The involvement of the Brain with congestion suggests that the patients had cerebral and spinal poisons. These findings were supported by Jain Ak et al and Akhgari M et al.^{72,73}

The liver is the common viscera affected after poisoning because the metabolism of drugs and chemicals is carried out in the liver and it breaks the

poisonous substances into higher toxic substances. In paraquat and organophosphorus poisoning, liver congestion is reported. Our findings were similar to the study conducted by Sutay S et al.⁷⁴ The other viscera affected in the autopsy findings were lungs and kidneys presented with the features of Pulmonary edema, Lung congestion, acute tubular necrosis, and focal drop out necrosis. Viscera congestion in autopsy findings of poisoning cases was supported by Datir S et al., and Job C et al.^{91,92} They reported that in acute poisoning cases liver, kidney, and pulmonary congestions were common in their findings. This shows that in case of poisoning, internal viscera congestions were common internal autopsy findings, so it is mandatory to report the congestions in all poisoning cases.

In the present study, the initial management of poisoning was started with IV injections via IV fluids and bowel wash. Also, patients were managed with mucoprone gel, whole blood transfusion, hemodialysis, hemodialysis, antibiotics & Anti-snake venom IV as a part of their treatment. About 50% of the patients had psychiatry counseling.

The average number of hospital stay among survived cases were 5.2 ± 3.72 days and around 63% of the patients stayed 1-5 days in the hospital. The average number of hospital stay among deceased cases were 4.29 ± 7.09 days and 82% of cases survived for less than five days in the hospital. This shows that the chances of survival among deceased cases were less compared to the survived cases.

In the current study, we tested for an association between the baseline characteristics among survived and deceased cases of poison to check the fatality of poisoning cases. It was found that the baseline characteristics such as age, gender, religion, and marital status have no association with the lethality of the poisoning

cases ($p < 0.05$). This shows that demographic features do not have a role in predicting the fatality of poisoning cases.

While doing an association between place of ingestion, clinical features, and type of compound ingested with the fatality of poisoning cases. It was observed that clinical features and type of compound ingested have a significant association with the fatality of poisoning cases with $p < 0.01$. This shows that persons with severe clinical symptoms like breathlessness, drowsiness, and defecation have a high chance of mortality. Similarly, the type of compound ingested by the patients plays a vital role i.e., the patients who had paraquat (Herbicide) have a high chance of mortality compared with other drugs. These findings were supported by Jagadeesan et al⁸⁴ and Cherukuri H et al⁸⁵ in their studies conducted at Tamilnadu and Maharashtra.

In the present study, we assessed the mean difference of clinical parameters between survived and deceased cases. Though there were fluctuations found in clinical parameters like platelet counts, and WBC count among survived and deceased cases compared to normal values, also we observed a significant difference in platelet count, WBC count, and electrolytes between survived and deceased cases with $p < 0.05$. this shows that the range of clinical parameter fluctuations predicts the lethality of the poisoning cases.

Overall, we observed that the incidence of poisoning was common among young adult males and observed 17% mortality among the admitted poisoning cases in the Belagavi Hospital. We found that paraquat poisoning has high mortality among the other compound poisoning and also, and we observed that clinical parameters like WBC count and platelet count play a vital role in predicting the severity of the poisoning cases. We found an association between the severity of clinical symptoms,

compounds of poison ingested, and fluctuations in clinical parameters like platelet count, and WBC with the mortality of poisoning cases.

The major limitations of this study were, we have included cases from a single institute, so we cannot generalize the findings and we did not measure all the clinical parameters among deceased cases, so only a few clinical parameters were compared between deceased and survived cases.

CONCLUSION

The study aimed to assess the characteristic features such as demographics, clinical presentation and histopathological features of the poisoning in the case of both living and dead. Half of the participants were middle-aged. Males (61%) particularly unmarried (58%) were mostly affected. Around 94% of the deceased cases were self-poisoned (suicide). The mortality rate among poisoning cases admitted was around 17 %.

Gastrointestinal clinical features were common among the poison cases and the common poisoning is due to unknown chemical compounds (25%) followed by snake bite (23%), organophosphorus (10%), and paraquat (6%). Paraquat (herbicide) contributed to maximum lethality i.e., 44% of the deceased patients consumed paraquat followed by organophosphorus.

On laboratory investigation, there was a decrease in platelet counts and an increase in WBC count (leukocytosis) among poisoning cases. Autopsy findings among the deceased show the majority of cases have brain (82%) involvement followed by heart (73.5%) and liver (50%) and kidney (15%). There was a significant association between the severity of clinical symptoms, compounds of poison ingested, and fluctuations in clinical parameters like platelet count, and WBC with the mortality of poisoning cases.

In the current study, it was observed there were fluctuations in the lab parameters which predict the lethality of poisoning and from autopsy findings, we can conclude the end organ damage due to the type of the poisoning substances. Further research with larger sample size is needed to find the specific organ damage caused

by different poisoning substances. To reduce the incidence of self-poisoning (suicide) in the district, the Government and other stakeholders should take initiatives on increasing employment opportunities, improving the status of urbanization, reduce economic instability, and build the family support structure in the community. Also, the ease of availability of these poisons should be minimized and licensed usage of these substances among the handlers should be practiced. Appropriate guidance on substance handling must be considered. This study will help to understand the clinical features and the organ involvement of specific poisoning which help the treating physician to manage cases timely & effectively which in turn reduce morbidity and mortality rate.

SUMMARY

This study was conducted after obtaining permission from Institutional Ethics Committee. This was a cross-sectional study done to assess the clinicopathological features of the poisoning in living and dead and to find out the significance of Case history, circumstantial evidence, and autopsy findings in any case of poisoning from KLE Hospital, Belagavi.

A convenient sampling technique was used and 163 live and 34 dead cases were included in the study. Data were collected by using the proforma which consists of baseline variables like age, gender, religion, marital status and clinical parameter values such as Total Count, B. Urea, S. Creatinine, T. Bilirubin, SGOT, and SGPT, treatment for live and Histopathology report, PDC report and RFSL report for deceased cases.

A total of 197 cases were considered for the study, where 163 (82.7%) cases survived and 34 (17.3%) cases deceased. Mean \pm SD age was 30.75 \pm 15.62 years and around 53% of the cases belonged to 21-40 years of age followed by <20 years of age (26%). A Maximum of 93% were Hindus followed by Muslims 5%, Christian 1% and Jain 1%. In both cases, a maximum of ingestion occurred in a home of about 79% followed by farm at about 14%, hospital 3% and others 5%.

Almost 94% of the deceased cases accounted for suicide and 3% accounted for homicide and accidental death. Nearly 15% of the cases already had a history of attempting suicide.

About one-fourth of the cases consumed the unknown compound and 23% of poisoning was due to snake bites. Organophosphorus, Paraquat, Paracetamol, benzodiazepine, mosquito repellent liquid contributed 10%, 6%, 4%, 2%, 1% respectively in survived cases. About 44% of cases were ingested paraquat, followed by organophosphorus (18%) and rodenticide (12%) in deceased cases. Based on the clinical features in survived cases (n=163), most of the poisoning cases were reported vomiting (28%), abdominal pain (20%), fever (13%), headache (12%), and increased urination (9%), throat pain (9%) and others (12%). Based on the clinical features in deceased cases (n=34), maximum number of patients had various combinations of clinical features together. Common clinical features observed were vomiting (38%), throat pain (29%), drowsiness (26%), breathlessness (24%), and abdominal pain (24%). Among survived cases (n=163) about one-fourth of the cases consumed the unknown compound and 23% of poisoning were due to snake bites. Organophosphorus, Paraquat, Paracetamol, benzodiazepine, mosquito repellent liquid contributed 10%, 6%, 4%, 2%, 1% respectively. Among deceased cases (n=34), 44% of cases were ingested paraquat, followed by organophosphorus (18%) and rodenticide (12%) & others (16%).

Multiple organs congested were observed in most of the cases. Common congested organs observed were the Brain in 82% of cases, in 50% of cases observed with lung congestion with pulmonary edema and hemorrhage followed by liver congestion (50%) and kidney congestion (15%).

A maximum of cases had injections via IV fluids and some of the cases had bowel wash, mucoprone gel, whole blood transfusion, hemodialysis, antibiotics & Anti-

snake venom IV as a part of their treatment. About 50% of the patients had psychiatry counseling.

Baseline characters such as age, gender, religion, marital status, place of ingestion, and clinical features have no association with the virulence of the poisoning cases ($p < 0.05$).

There was a significant association found between clinical features and the type of compound ingested with $p < 0.01$. There was a significant difference exists between platelet count, WBC count, and electrolytes of survived and deceased cases with $p < 0.05$.

BIBLIOGRAPHY

1. Pillay VV. Modern Medical Toxicology. Jaypee brothers medical publishers;2013.
2. ICD10. International Classification of Diseases- 10th version: Poisoning. [Internet]. Accessed on 01/09/2022. Available at: <https://www.icd10data.com/ICD10CM/Codes/>
3. Aggarwal NK, Aggarwal BBL. Trends of poisoning in Delhi. J Ind Acad for Med. 1998;20:32-6.
4. Murray CJL, Lopez AD. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020. [Global Burden of Disease and Injury Series. Volume 1]. Cambridge MA, Harvard School of Public Health, 1996.
5. Murray CJL, Lopez AD. Global Burden of Disease Study – Summary. Lancet 1997;349:1269-76.
6. WHO. Fact sheet on Suicide. [Internet]. Accessed on 01/09/2022. Available at [HTTPS](https://www.who.int/news-room/fact-sheets/detail/suicide).
7. Accidental death and suicides in India 2021. National Crime Records Bureau. [Internet]. Accessed on 01/09/2022. Available at: <https://www.who.int/news-room/fact-sheets/detail/suicide>.
8. Asghar A, Anees M, Mahmood KT. Accidental Poisoning in Children. J Biomed Sci and Res. 2010;2:284-9.
9. Accidental death and suicides in India 2021. National Crime Records Bureau. [Internet]. Accessed on 01/09/2022. Available at <https://www.who.int/news-room/fact-sheets/detail/suicide>.

10. Dash SK, Raju AS, Mohanty MK, Patnaik KK, Mohanty S. Sociodemographic profile of poisoning cases. *J Indian Acad Forensic Med.* 2005;27:133-8.
11. Bamathy B, Punnagai K, Amritha CA, Chellathai DD. Incidence and patterns of acute poisoning cases in an emergency department of a tertiary care hospital in Chennai. *Biomed Pharmacol J.* 2017;10:1285-91.
12. Chatterjee S, Verma VK, Hazra A, Pal J. An observational study on acute poisoning in a tertiary care hospital in West Bengal, India. *Perspect Clin Res.* 2020;11(2):75.
13. Das RK. Epidemiology of Insecticide poisoning at AIIMS Emergency Services and role of its detection by gas-liquid chromatography in diagnosis. *Medico-Legal Updat Int J.* 2007;7:49-60.
14. Unnikrishnan B, Singh B, Rajeev A. Trends of acute poisoning in south Karnataka. *Kathmandu Univ Med J* 2005;3:149-54.
15. Srivastava A, Peshin SS, Kaleekal T, Gupta SK. An epidemiological study of poisoning cases reported to the national poisons information center, All India Institute of Medical Sciences, New Delhi. *Hum Exp Toxicol* 2005;24:279-85.
16. Sharma R, Neelanjana, Rawat N, Panwar N. Mortality and morbidity associated with acute poisoning cases in north-east India: A retrospective study. *J Family Med Prim Care* 2019;8:2068-72.
17. Siddesh RC, Dey B. Histopathological changes in lungs, liver, and kidneys in cases of death due to agricultural poisoning in a tertiary care center: A cross-sectional study. *J. Indian Acad. Forensic Med.* 2021;43(2):135-9.
18. Adhikari SK, Chowdhuri S, Mukhopadhyay P. A Study on the Histopathological Changes in Cases of Pesticide Poisoning and Proposed Diagnostic Algorithm. *Indian J. Forensic Med. Toxicol.* 2021;1:15(2).

19. Sutay SS, Tirpude BH. The pattern of histopathological changes of liver in poisoning. *J Indian Acad Forensic Med.* 2008;30(2):63-8.
20. Kumar S, Gupta S, Bansal YS, Bal A, Rastogi P, Muthu V, Arora V. Pulmonary histopathology in fatal paraquat poisoning. *Autopsy Case Rep.* 2021;24:11.
21. Sathish, K., Shaha, K.K., Patra, A.P. et al. Histopathological profile of fatal snake bite autopsy cases in a tertiary care center in South India. *Egypt J Forensic Sci* 2021;11:3
22. Sampathkumar K, Yesudas S. Hair dye poisoning and the developing world. *J. Emerg. Trauma Shock.* 2009;2(2):129.
23. World Health Organization. *Poisoning Prevention and Management.* Geneva: WHO 2012. [Internet]. Accessed on: 10th September 2022. Available from: <http://www.who.int/ipcs/poisons/en/>.
24. Mew EJ, Padmanathan P, Konradsen F, Eddleston M, Chang S-S, Phillips MR, et al. The global burden of fatal self-poisoning with pesticides 2006-15: a systematic review. *J Affect Disord.* 2017;219:93–104.
25. World Health Organization. *Global Burden of Disease: 2004 update.* Geneva: WHO 2008. [Accessed on: 10th September 2022] Available from: https://apps.who.int/iris/bitstream/handle/10665/43942/9789241563710_eng.pdf
26. Mowry B, Spyker A, Cantilena R, Bailey E, Ford M. 2012 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 30th Annual Report. *Clin Toxicol (Phila).* 2011;51:949-1229.

27. Mittal C, Singh S, Kumar-M P, Varthya SB. Toxicology of poisoning exhibited in an Indian population from 2010 to 2020: a systematic review and meta-analysis. *BMJ open*. 2021 1;11(5):e045182.
28. Groholt B, Ekeberg O, Wickstrom L, Haldorsen T. Young suicide attempters: a comparison between a clinical and an epidemiological sample. *J Am Acad Child Adolesc Psychiatry*. 2000;39:868–75.
29. Desalew M, Aklilu A, Amanuel A, Addisu M, Ethiopia T. Pattern of acute adult poisoning at Tikur Anbessa specialized teaching hospital: A retrospective study in Ethiopia. *Hum Exp Toxicol*. 2011;30:523-27.
30. Fliege H, Lee JR, Grimm A, Klapp BF. Risk factors and correlates of deliberate self-harm behavior: a systematic review. *J Psychosom. Res*. 2009;66:477-93.
31. Hanssens Y, Deleu D, Taqi A. Etiologic and demographic characteristics of poisoning: a prospective hospital-based study in Oman. *J Toxicol: Clin Toxicol*. 2001;39:371–80.
32. Toxicology: Classification of poisons. [Accessed on: 10th September 2022] Available from: <https://legaldesire.com/toxicology-classification-of-poisons/>
33. Lalit P C, Mamta P. Assessment and Diagnosis of Poisoning with Characteristics Features in Living or Dead. *J Forensic Sci & Criminal Inves*. 2018;10(4): 555796 0012
34. Chandran J, Krishna B. Initial management of the poisoned patient. *Indian J. Crit. Care Med*. 2019;23(4):234.
35. World Health Organization. Poisons information, prevention, and management. Geneva: WHO 2014. [Accessed on: 10th September 2022] Available from: <https://www.who.int/teams/environment-climate-change-and->

[health/chemical-safety-and-health/incidents-poisonings/prevention-and-management-of-cases-of-poisoning.](#)

36. He XH, Wu JY, Li CS, Su ZY, Ji XF, Han Y, et al. Evaluation of respiratory dysfunction in a pig model of severe acute dichlorvos poisoning. *Chin Med J.* 2012; 125(20):3612–8.
37. Akhgari M, Mobaraki H, Etemadi-Aleagha A. Histopathological study of cardiac lesions in methamphetamine poisoning-related deaths. *DARU J. Pharm. Sci.* 2017;25(1):1-9.
38. Singh J. Assessment of gross mucosal findings of the stomach in cases of fatal poisoning. *Indian J. Forensic Community Med.* 2016;3(4):263-66.
39. Srihari C, Ramakrishnan TV, Aditya M. Epidemiological profile of poisoning patients in the emergency department of a tertiary care teaching hospital in South India. *Int J Med Res Rev.* 2017;5(03):212-22.
40. Chaudhari VA, Das S, Sahu SK, Devnath GP, Chandra A. Epidemiol-toxicological profile and reasons for fatal suicidal poisoning: A record-based study in South India. *Journal of family medicine and primary care.* 2022;11(2):547.
41. Goswami O, Mahanta P, Kalita D, Konwar R, Yadav DS. A three-year study on acute poisoning cases brought for medico-legal autopsy in a north-eastern city of India. *Open Access Emerg. Med.* 2021;13:45.
42. Jailkhani SM, Naik JD, Thakur MS, Langare SD, Pandey VO. Retrospective analysis of poisoning cases admitted in a tertiary care hospital. *Int J Recent Trends in Sci Tech.* 2014;10:365-8.

43. Singh NK, Shubhendu K, Mahto T, Chaudhary AK, Gawasker SP. A comparative study of ligature marks in cases of Hanging and strangulation autopsied at RIMS, Ranchi. *J. Med. Dent. Sci.* 2018;17(8):1-5.
44. Banerjee I, Tripathi SK, Roy AS. Clinico-epidemiological characteristics of patients presenting with organophosphorus poisoning. *North Am J Med Sci.* 2012;4:147-50.
45. Chatterjee S, Verma VK, Hazra A, Pal J. An observational study on acute poisoning in a tertiary care hospital in West Bengal, India. *Perspect Clin Res.* 2020;11:75-80.
46. Dash SK, Sitarama Raju A, Mohanty MK, Patnaik KK, Mohanty S. Sociodemographic profile of poisoning cases. *J Indian Acad For Med.* 2005;27:133-8.
47. Ahuja H, Mathai AS, Pannu A, Arora R. Acute poisonings admitted to a tertiary level intensive care unit in northern India: *J. Clin. Diagnostic Res.* 2015;9(10):UC01.
48. Bureau National Crime Records, Government of India, Ministry of home affairs. Accidental Deaths & Suicides in India-2018. [Accessed on: 10th September 2022] Available from: <https://ncrb.gov.in/sites/default/files/chapter-2-suicides-2018.pdf>.
49. Mohanty S, Sahu G, Mohanty MK, Patnaik M. Suicide in India—A four-year retrospective study. *J For Leg Med.* 2007;14:185-9.
50. Sharma BR, Harish D, Sharma V, Vij K. Poisoning in northern India: Changing trends, causes, and prevention thereof. *Med Sci Law.* 2002;42:251-7.

51. Rajapakse T, Griffiths KM, Christensen H. Characteristics of non-fatal self-poisoning in Sri Lanka: A systematic review. *BMC Public Health*. 2013;13:1-5.
52. Patel DJ, Tekade PR. Profile of organophosphorus poisoning at maharani hospital, Jagdalpur, Chhattisgarh: a three years study. *J Indian Acad forensic Med*. 2011;33:102-5.
53. Waghmode AH, Mohite P, Ninave S, Bodkha P, Kotkar S. Current Trends of Poisoning Cases Admitted at Tertiary Care Hospital. *Indian J. Forensic Med. Toxicol.* 2021;1:15(3).
54. Khosya S, Meena SR. Current trends of poisoning: An experience at a tertiary care hospital Hadoti region, Rajasthan, India. *J Clinic Toxicol*. 2015;6(2):298.
55. Chugh SN, Aggarwal HK, Mahajan SK. Zinc phosphide intoxication symptoms: analysis of 20 cases. *Int J Clin Pharmacol Ther*. 1998;36(7):406-7.
56. Banerjee I, Tripathi SK, Roy AS. Clinico-epidemiological characteristics of patients presenting with organophosphorus poisoning. *North Am J Med Sci*. 2012;4:147-50.
57. Banday TH, Tathineni B, Desai MS, Naik V. Predictors of morbidity and mortality in organophosphorus poisoning: A case study in a rural hospital in Karnataka, India. *North Am J Med Sci*. 2015;7:259-65.
58. Muhammad R, Afridi MAR, Ali Z, Asghar M, Sebtain A, Amer K, Rahim A, Ullah N, Alam I. Etiological and clinical profile of patients presenting with acute poisoning to a teaching hospital. *J Postgrad Med Inst*. 2018; 32(1): 54-9.
59. Verma R. Profile of patients with acute aluminum phosphide poisoning in a tertiary care institute of Haryana India. *Int J Interdis Stud*. 2016; 03:24-30.

60. Panchal M, Trivedi D. Clinical Profile in Patients of Organophosphorous Poisoning. *Int J Sci Res.* 2016;5:97-9.
61. Ather NA, Ara J, Khan EA, Sattar RA, Durrani R. Acute organophosphate insecticide poisoning. *J Surg Pak.* 2008;13:71-4.
62. Kori RK, Thakur RS, Kumar R, Yadav RS. Assessment of Adverse Health Effects Among Chronic Pesticide-Exposed Farm Workers in Sagar District of Madhya Pradesh, India. *Int J Nutr Pharmacol Neurol Dis.* 2018;8:153-61.
63. Suresh MN, Reddy KY, Kumar CR. Clinical Profile and Outcome of Patients Admitted With Rodenticide Poisoning. *J. Med. Dent. Sci.* 2020;19(4):51-5.
64. Budhathoki S, Poudel P, Shah D, Bhatta NK, Dutta AK, Shah GS, et al. Clinical profile and outcome of children presenting with poisoning or intoxication: a hospital-based study. *Nepal Med Coll J.* 2009;11(3):170-5.
65. Prado-Lu D, Leilanie J. Pesticide exposure, risk factors, and health problems among cut-flower farmers: a cross-sectional study. *Journal J. Occup. Med. Toxicol.* 2007;2(1):1-8.
66. Soogarun S, Wiwanitkit V, Suwansaksrit J. A trend of platelet indices in patients with green pit viper toxin. *Clin Appl Thromb Hemost.* 2003;9(4):337-9.
67. Kumar S, Agrawal S, Raisinghani N, Khan S. Leukocyte count: A reliable marker for the severity of organophosphate intoxication. *J. lab. physicians.* 2018;10(02):185-8.
68. Mathai A, Bhanu MS. Acute aluminum phosphide poisoning: Can we predict mortality? *Indian J. Anaesth.* 2010;54(4):302.

69. Hu X, Guo R, Chen X, Chen Y. Increased plasma prothrombin time is associated with poor prognosis in patients with paraquat poisoning. *J. Clin. Lab. Anal.* 2018;32(9):e22597.
70. Usha M, Bp SK, Jose SM, Sebastian EJ, Wagle L. Developing a Standard Treatment Protocol Towards Organophosphorus Poisoning for Emergency Department in a Hospital, India. *Journal of Basic and Clinical Pharmacy.* 2017;8.
71. Mathew R, Jamshed N, Aggarwal P, Patel S, Pandey RM. Profile of acute poisoning cases and their outcome in a teaching hospital of north India. *J Family Med Prim Care.* 2019;8:3935-9.
72. Jain AK, Nigam M, Garg SD, Dubey BP, Arora A. Aluminium phosphide poisoning autopsy findings. *JIAFM.* 2005;27(1):35-9.
73. Akhgari M, Mobaraki H, Etemadi-Aleagha A. Histopathological study of cardiac lesions in methamphetamine poisoning-related deaths. *DARU J. Pharm. Sci.* 2017;25(1):1-9.
74. Sutay SS, Tirpude BH. The pattern of histopathological changes of liver in poisoning. *J Indian Acad Forensic Med.* 2008;30(2):63-8.
75. Manish KN, Bhawna B. Pesticide poisoning – an epidemiological and histopathological study. *Pac. j. med. health sci.* 2013;3-9.
76. Saleki S, Ardalan FA, Javidan-Nejad A. Liver histopathology of fatal phosphine poisoning. *Forensic Forensic Sci. Int..* 2007 Mar 2;166(2-3):190-3.
77. Singh S, Sharma BK, Wahi PL. The spectrum of acute poisoning in adults (10 years experience) *J Assoc Physicians India.* 1984;32:561–3

78. Ramesha KN, Rao KB, Kumar GS. Pattern and outcome of acute poisoning cases in a tertiary care hospital in Karnataka, India. *Indian J Crit Care Med.* 2009;13:152–5.
79. Sarkar D, Shaheduzzaman M, Hossain MI, Ahmed M, Mohammad N, Basher A. Spectrum of acute pharmaceutical and chemical poisoning in northern Bangladesh. *Asia Pac J Med Toxicol.* 2013;2:2–5.
80. Thomas M, Anandan S, Kuruvilla PJ, Singh PR, David S. Profile of hospital admissions following acute poisoning – Experiences from a major teaching hospital in South India. *Adverse Drug React Toxicol Rev.* 2000;19:313–7.
81. Bamathy B, Punnagai K, Amritha CA, Chellathai DD. Incidence and patterns of acute poisoning cases in an emergency department of a tertiary care hospital in Chennai. *Biomed Pharmacol J.* 2017;10:1285–91.
82. Gupta A, Kumar A, Joshi A. Sociodemographic profile of poisoning cases in a tertiary care teaching hospital of Uttarakhand. *Ann Int Med Den Res.* 2017;3:ME01–3.
83. Gargi J, Tejpal HR, Rai G, Chaudhary R, Chanana A. A retrospective autopsy study of poisoning in the northern region of Punjab. *J Punjab Acad Forensic Med Toxicol.* 2008;8:17–19.
84. Jagadeesan M, Nithyananthan P, Banupriya M, Mahendrakumar K, Prasanna K, Kannan R. A study on clinical profile of paraquat poisoning in a tertiary care hospital. *Int J Adv Med.* 2017;4:1088–91.
85. Cherukuri H, Pramoda K, Rohini D, Thunga G, Vijaynarayana K, Sreedharan N, et al. Demographics, clinical characteristics and management of herbicide poisoning in tertiary care hospital. *Toxicol Int.* 2014;21(2):209.

86. Celine TM, Antony J. A profile of acute poisonings: A retrospective study. *J Sci Soc.* 2015;42:156–60
87. Kumar SV, Venkateswarlu B, Sasikala M, Kumar GV. A study on poisoning cases in a tertiary care hospital. *J Nat Sci Biol Med.* 2010 Jul;1(1):35-9.
88. Vanishree, Chavan VR, Arshad M, Raghunandan M, Faizuddin A study on pattern of acute poisoning in an emergency department of a tertiary care hospital. *Asian J Pharm Clin Res.* 2016;9:361–3.
89. Cander B, Dur A, Yildiz M, Koyuncu F, Girisgin AS, Gul M, et al. The prognostic value of the Glasgow coma scale, serum acetylcholinesterase, and leukocyte levels in acute organophosphorus poisoning. *Ann Saudi Med.* 2011;31:163–6.
90. Kumar S, Agrawal S, Raisinghani N, Khan S. Leukocyte count: A reliable marker for the severity of organophosphate intoxication? *J Lab Physicians.* 2018;10(2):185-188.
91. Datir SB, Petkar M, Farooqui JM, Makhani CS, Hussaini SN, Chavan KD, et al. Study of autopsy findings in cases of acute poisoning. *J. Forensic Leg. Med.* 2015;24(1):1-5.
92. Job C: A retrospective study of poisoning cases in the Thrissur district of Kerala for the year 1995. *JIST* 2009;5(1):23-27.

ANNEXURES

ANNEXURE I - INFORMED CONSENT

“AN OBSERVATIONAL STUDY ON CLINICOPATHOLOGICAL FEATURES OF POISONING IN LIVING AND DEAD”

Investigator: Reg.no:BF0120002.

PG Student, Department of Forensic Medicine and Toxicology, J.N.
Medical College, KAHER, Belagavi-590010.

Guide: _____, Professor and Head, Department of Forensic
Medicine & Toxicology, J.N. Medical college, KAHER, Belagavi -590010.

You are hereby requested to involve yourself in this study titled “**An observational study on clinicopathological features of poisoning in living and dead**” conducted by KLE Hospital and Medical Research Center, Belagavi.

Introduction:

Since poisoning is a very easy method to kill another person or to kill ourselves, its incidence becomes more. In case of poisoning most of the time the victim will be unconscious, and diagnosis will depend on the history, clinical features, laboratory investigation of vomitus or gastric lavage contents and in dead the diagnosis will depend on the histopathological examination of the visceral organs. So, in this present study you will be helping us to assess the characteristic features of poisoning in case of both living and dead to come to a valuable diagnosis.

Methodology: Investigator will observe the history, clinical features, laboratory findings in case of living victims of poisoning and histopathological features in case of dead victims and all these will be tabulated in preformed proforma sheet.

Possible benefits: By this study you can provide time effective in diagnosing any type of poisoning in living victims.

Possible risks: There is no risk involved in our study.

Cost of participation: The cost of the study will be entirely borne by the researcher. You will not have any cost for your participation in this study.

Legal rights: By signing this consent form, you are not waiving off any of your legal rights.

Privacy and Confidentiality: The results of the study may be published for scientific purposes. However, your identity will not be revealed and all information collected will be coded so that, no one other than the investigator will know your identity.

Withdrawal from the study: You can withdraw from the study at any point of time if you wish to do.

Authorization to publish the results: The researcher may use the information gathered from this study for presentation or publication in scientific journals. However, your personal identity will not be revealed.

Questions:

If you have any questions about the rights as a research participant you may contact **Dr. HARSHA HEGDE**, Chairperson, Institutional Ethics Committee for Human Subjects Research, J.N. Medical College, Scientist D, icmr, National Institute of Traditional Medicine, Belagavi – 590010, or **Dr. (Mrs) N.S. MAHANTSHETTI**, MD, Principal, J.N. Medical College, Belagavi-590010, Ph no: 0831-2471350.

CONSENT STATEMENT

“I have read / have been explained in my own understandable language about the contents in this form and my queries have been clarified by the investigator and I have been told that I /my relative (specify relation) have the right to withdraw from participating in this study at any point of time. I have been assured that confidentiality will be maintained and will be used only for this study and my identity shall never be revealed in future”.

I hereby give my consent for (self/my relative) participation in the study voluntarily and not under the influence of the investigator or any other influence.

Name of the participant.

Signature.

Name of the interviewer

Signature.

Signature of the guide.

Date: __/__/____

Place: _____

ANNEXURE II-QUESTIONNAIRE

TITLE: “An observational study on clinicopathological features of poisoning in living and dead”

Patient Information: IP/OP No: Age: Sex:(M/F) Marital Status:(Married/Single), Occupation:.....Income:.....

Religion: DOA:DOD:

History:

Date & Time of ingestion –

Place of ingestion -

Route of entry –

Informant -

Quantity –

Reason for ingestion –

Intentional or accidental exposure

If any member of the family has chronic diseases (hypertension, diabetes, etc.), missing tablets or any empty pill bottles or other material was found around him

Past history –

Personal history –

Family history -

Lab Investigations

Name..... Age..... IP No:

Date	
<u>Hematology</u> Haemoglobin Platelet count WBC count Red cell count	
<u>Biochemistry</u> FBS PPBS Urea Creatinine Total Bilirubin Direct Bilirubin Indirect Bilirubin SGOT SGPT ALP Serum albumin	
<u>Cardiac Enzymes</u> CPK CPK MB LDH	
<u>Serum Electrolytes</u> Sodium Potassium Bicarbonate Chlorides	

<p><u>Clotting factors</u></p> <p>CT</p> <p>BT</p> <p>PT/INR</p> <p>APTT</p> <p>D-Dimer</p>	
<p>Serum cholinesterase level</p>	

In case victim is dead

Diagnosis of poisoning of the deceased is done mainly by the following:

1. Full clinical history (if any) should be taken from relative or people present with the victim at the time of incidence.
2. Record should be made of the drugs, medications to which the deceased had access, empty bottles, foils of drugs should be searched and collected from the scene of crime.
4. Collect case sheets from MRD section
5. Histopathological report

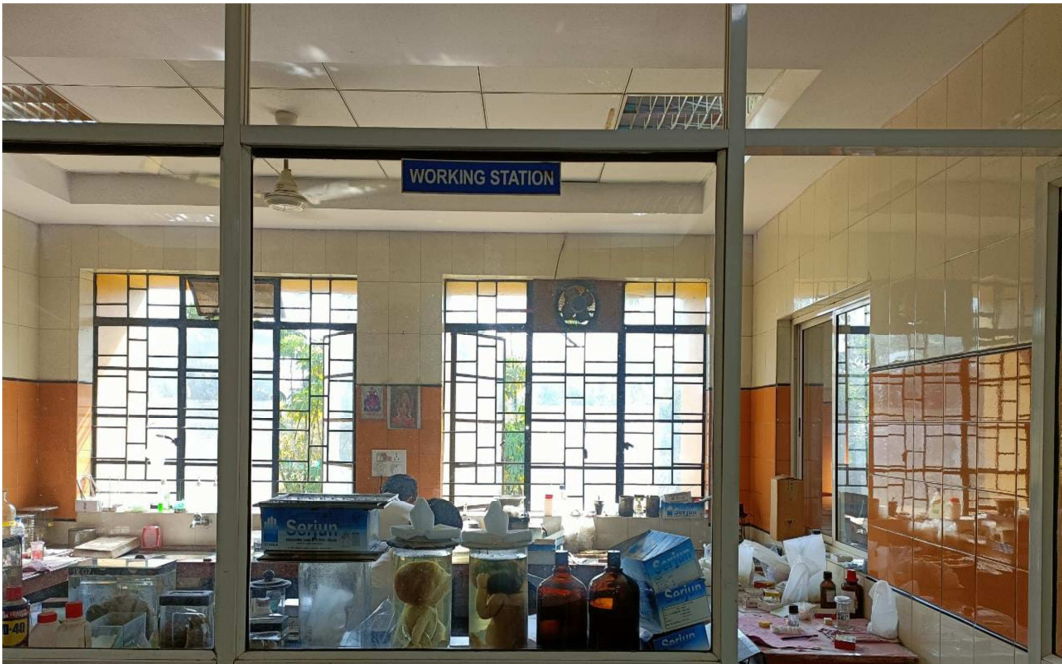
ANNEXURE III – PHOTOGRAPHS







HISTOPATHOLOGY LAB



ANNEXURE IV - KEY TO MASTER CHART

- 1) Sex : 1) Male 2) Female
- 2) Religion : 1) Hindu 2) Christian 3) Muslim 4) Jain
- 3) Place of ingestion : 1) Home 2) Farm 3) Hospital 4) others
- 4) Marital status : 1) Single 2) Married
- 5) Compound ingested : 1) Unknown
2) Snake bite
3) Organophosphorus
4) Paraquat
5) Paracetamol
6) Benzodiazepine
7) Mosquito repellent liquid
8) Others
- 6) Intent : 1) Suicidal 2) Homicidal 3) Accidental
- 7) Past history of suicide : 1) Yes 2) No
- 8) Treatment : 1) IV fluids & Antibiotics
2) Gastric lavage with specific treatment
- 9) PM report : 1) Multiorgan failure 2) Single organ failure
- 10) RFSL report : 1) Positive 2) Negative
- 11) Histopathological report : 1) Multiple organs 2) Single organ
- 12) PDC report : 1) Positive 2) Negative

ANNEXURE V - MASTER CHART FOR LIVE CASES

Sl. No	Age	SEX	RELIGION	PLACE OF INGESTION /BITE	COMPOUND Ingested	CLINICAL FEATURES	DURATION OF STAY	TREATMENT	Haemoglobin	Platelet count (in lakhs)	WBC count	Red cell count	FBS	Urea	Creatinine	Total Bilirubin	Direct Bilirubin	SGOT	SGPT	ALP	Serum albumin	Sodium	Potassium	Bicarbonate	Chlorides	CT	BT	PT/INR
1.	30	2	1	1	1	1	2 days	2	13.1	2.95	10500	5.01	52	10	0.64	0.14	0.11	14	14	70	3.1	143	4.38	17	110	11.1	13.5	1.28
2.	22	1	1	1	1	2	1 day	2	15.6	2.54	10100	4.5	100	10	0.98	0.45	0.2	15	14	63	4.2	143	4.29	25	107	11.2	14.2	1.01
3.	58	2	1	1	1	1	2 days	2	11.6	3.32	9500	4.34	101	15	0.76	0.48	0.19	11	10	71	3.9	141	4.32	25	105	11.4	13.2	1.28
4.	2	1	3	1	1	2	3 days	2	9.7	3.64	12300	4.17	103	31	0.49	0.3	0.1	25	11	243	3.4	137	2.69	26	103	11.2	14.6	1.28
5.	24	2	1	1	1	2	7 days	2	14.1	3.14	9000	4.01	102	16	0.55	0.3	0.1	34	13	57	4.1	137	4.1	13	107	12.2	13.5	1.23
6.	24	1	1	1	4	2	11 days	2	17.1	3.44	15400	5.4	106	93	2.97	2.12	0.11	17	24	70	4.6	137	3.86	26	95	11.7	14.9	1.28
7.	55	1	4	2	1	1	10 days	2	15.6	2.53	15800	8.22	127	25	0.69	1.97	0.11	28	25	98	5.2	136	4.58	18	103	11.8	11.7	1.04
8.	40	1	1	1	4	2	11 days	2	12.8	2	14800	4.13	92	66	6.04	0.33	0.14	28	10	55	3.4	140	3.28	24	102	12.3	14.7	1.28
9.	22	2	1	1	1	2	6 days	2	12.9	3.17	11190	4.81	1.8	14	0.61	0.6	0.5	30	25	74	3.9	135	3.9	26	107	11.6	13.6	1.25
10.	22	2	1	2	4	2	3 days	2	9	2.77	11190	4.49	92	66	6.04	0.33	0.14	28	10	55	3.9	140	3.28	24	103	11.7	13.5	1.28
11.	70	1	1	1	1	2	2 days	2	12	2.4	8000	3.81	97	72	2.08	0.4	0.1	30	15	72	3.3	133	4.25	17	101	11.7	13.8	1.28
12.	32	2	1	1	1	2	3 days	2	10.9	3.11	5800	4.5	110	25	0.92	0.22	0.1	12	12	53	3.8	138	4.25	20	106	11.2	12.4	1.11
13.	35	1	1	2	1	2	3 days	2	11.9	2.67	5800	5.6	113	13	0.88	0.47	0.16	27	19	100	4.6	144	4.47	25	107	11.2	12.4	1.11
14.	24	1	1	1	1	2	2 days	2	14.7	2.57	13500	5.09	120	30	1	0.55	0.19	32	29	97	5.1	144	4.09	21	104	11.2	12.3	1.28
15.	21	1	1	2	4	2	4 days	2	14.6	2.5	16200	4.5	112	239	13.48	1.5	1.47	76	84	136	3.1	143	4.45	12	101	11.3	14.3	1.34
16.	18	1	1	1	1	1	12 days	2	9.9	2.6	9400	5.6	124	35	0.3	0.4	0.2	113	142	164	3.9	134	4.5	21	102	11.2	12.3	1.26
17.	16	2	1	1	1	2	14 days	2	13.4	3.62	16500	5.09	191	19	0.5	0.91	0.34	27	21	120	4.6	137	3.66	19	97	11.25	15	1.34
18.	58	1	1	1	1	2	11 days	2	11.7	2.21	14710	4.5	135	62	1.8	1.4	0.7	167	87	230	35	130	4.2	20	98	11.52	14.2	1.30
19.	21	2	1	1	1	2	4 days	2	10.2	1.88	10610	5.6	119	20	0.38	0.7	0.22	23	12	67	4.7	139	4.32	20	107	11.7	13.7	1.17
20.	32	1	1	1	1	2	6 days	2	14.4	3.14	8700	5.21	109	22	0.86	0.86	0.8	12	11	68	4.7	139	4.25	20	105	11.5	13.9	1.28
21.	24	2	1	1	1	1	4 days	2	13.7	1.55	6900	5.14	86	13	0.5	0.58	0.26	24	18	32	4.1	139	3.93	17	107	11.2	13.7	1.04
22.	25	1	1	1	1	1	10 days	2	16.6	2.39	18400	4.5	92	54	2.07	0.46	0.24	97	29	95	4.2	144	3.88	15	104	11.9	12.3	1.28
23.	21	1	1	1	4	2	6 days	2	16	2.81	10200	5.6	111	14	0.85	0.57	0.19	26	17	88	4.9	139	4.28	15	101	11.2	12.2	1.09
24.	31	1	1	1	4	2	11 days	2	13.7	2.87	11000	4.98	130	30	1.1	0.5	0.2	12	15	44	2.7	133	3.1	33	103	12.5	12.3	0.98
25.	21	1	1	2	2	2	13 days	2	12.3	1.23	7560	4	105	12	0.3	1	0.4	14	10	59	2.9	135	4.2	20	105	12.5	13.6	1.4

26.	21	1	1	1	1	1	5 days	2	15.3	2.5	12100	5.45	73	30	1.1	0.5	0.2	12	15	44	2.7	133	3.1	25	103	12.5	12.3	0.98
27.	30	2	1	1	1	2	4 days	2	9	1.44	10000	4.5	80	38	0.86	7.2	4.76	823	3409	149	2.5	147	3.37	18	118	11.2	48.8	4.45
28.	25	1	3	1	1	1	5 days	2	13.6	2.88	15900	5.6	105	16	0.46	0.4	0.1	23	16	58	4.2	140	4.79	24	106	11.2	20.3	1.28
29.	63	2	1	1	1	2	2 days	2	12.1	2.06	11200	5.09	120	16	0.55	0.99	0.3	18	13	57	3.7	137	3.57	20	100	11.2	20.2	1.28
30.	35	1	1	1	1	2	11 days	2	16.7	2.49	14000	4.5	252	22	1.3	0.5	0.19	36	22	97	5	146	2.98	25	18	11.2	20.1	1.28
31.	22	1	1	1	1	2	4 days	2	13.6	2.88	15900	5.6	105	16	0.46	0.4	0.1	23	16	58	4.2	140	4.79	24	106	12.0	13.2	1.28
32.	36	1	1	2	3	2	19 days	2	13.5	2.8	12200	5.6	152	29	0.35	1.3	0.37	63	43	101	3.9	149	4.32	24	106	12.1	13.6	1.28
33.	31	1	1	2	1	1	2 days	2	13.4	2.59	6400	5.09	193	11	0.53	0.56	0.19	14	28	80	3.3	143	3.78	70	110	12	11.2	1.07
34.	70	2	1	1	1	1	5 days	2	12.2	418000	13600	4.5	199	44	1.29	0.46	0.17	25	26	212	4.5	139	4.39	15	104	11	13	1.09
35.	23	2	1	1	3	1	12 days	2	11.6	3.29	20500	5.6	109	12	0.49	0.37	0.13	25	15	85	4.3	133	3.71	16	98	12	13	1.09
36.	21	2	1	1	3	2	8 days	2	13.5	3.34	16200	4.26	119	22	0.61	0.7	0.17	20	23	63	4.4	142	3.92	15	106	11.5	13.5	1.09
37.	35	2	1	1	1	2	4 days	2	11.7	3.31	13100	4.99	95	22	0.8	0.17	0.06	14	6	70	3.9	144	4.1	22	106	12.5	13.6	1.09
38.	40	1	1	1	1	2	10 days	2	13.3	2.58	9900	4.5	103	15	0.9	0.77	0.26	18	12	76	4.2	141	4.26	22	104	12.6	13.5	1.09
39.	36	1	1	1	1	2	13 days	2	11.3	2.52	5690	5.6	103	28	1.03	0.56	0.37	18	13	71	3.5	142	5.17	17	108	12.5	13.6	0.97
40.	21	2	3	1	1	2	2 days	2	6.8	2.35	8400	4.76	158	26	0.31	0.7	0.53	0.24	26	25	104	140	4.09	19	104	11.4	13.5	1.3
41.	22	1	1	1	1	2	2 days	2	17.8	2.72	10700	6.33	109	17	1.25	0.95	1.16	19	22	62	4.4	143	4.6	27	111	11.5	12.6	1.3
42.	15	2	3	1	1	1	2 days	2	12.4	3.6	14500	4.6	158	13	0.46	0.56	0.21	17	15	80	4.1	138	4.31	96	22	11.6	12.6	1.09
43.	40	1	1	1	3	1	6 days	2	15.2	2.73	16700	4.53	109	26	1.09	0.79	0.37	24	22	82	5	147	3.93	17	109	11.9	13.6	1.19
44.	52	1	1	1	3	1	10 days	2	16.4	1.75	20800	6.01	158	22	0.7	0.53	0.24	26	25	104	4.8	146	4.1	20	106	11.6	13.5	1.02
45.	38	1	1	1	1	2	11 days	2	14.6	1.37	11800	4.92	109	12	0.9	0.3	0.1	37	20	85	3.5	152	4.2	20	119	11.3	13.5	1.02
46.	33	1	1	1	1	2	6 days	2	7.9	1.45	11800	4.5	171	31.3	1.73	0.46	0.23	8	6	63	3.2	138	5.4	19	96	11.6	13.5	1.02
47.	24	1	1	1	1	2	7 days	2	14.4	4.48	9600	5.6	97	11	0.78	1.23	0.38	23	14	78	4.6	146	3.57	15	106	11.6	14.2	1.02
48.	33	1	1	1	1	1	1 day	2	14.4	4.48	9600	5.09	108	14	0.76	0.42	0.18	22	22	101	4.5	137	4.1	19	103	11.6	14.3	1.13
49.	13	1	1	1	1	2	2 days	2	9.9	2.41	8600	4.58	107	20	0.56	0.33	0.13	23	10	390	4.4	142	4.01	9	106	12.5	15.2	1.28
50.	27	1	1	1	1	1	2 days	2	13.4	2.14	11700	4.96	107	10	0.71	0.46	0.12	24	22	1.3	4.2	140	4.6	22	108	11.2	11.5	1.03
51.	21	2	1	1	1	1	1 day	2	11	2.67	10600	3.08	61	12	0.76	0.42	0.18	22	22	101	3.5	142	3.19	19	111	11.6	11.6	1.20
52.	7	2	1	1	1	2	3 days	2	10.7	1.28	7600	3.28	103	20	0.3	0.83	0.44	228	65	110	3.3	140	2.93	26	102	10.6	11.6	2.63
53.	18	2	1	1	1	2	8 days	2	13.3	4.19	7700	4.49	172	18	0.4	0.31	0.13	23	14	85	4.7	136	4.23	17	103	11.3	11.6	1.36
54.	56	1	1	1	1	1	2 days	2	12.3	1.7	5300	4.36	180	20	0.73	0.4	0.30	33	24	39	4.1	136	3.93	20	105	12.3	14.3	1.30
55.	40	1	4	2	3	2	2 days	2	6.7	2.32	11100	4.5	130	17	0.95	0.66	0.22	42	19	81	3.6	140	4.78	19	104	11.0	14.2	1.07
56.	21	2	1	1	1	2	4 days	2	9.1	3.52	17000	5.6	126	19	0.58	0.2	0.1	15	10	74	4	141	3.76	20	109	10.9	13.2	1.09
57.	25	2	1	1	1	2	1 day	2	10.6	2.93	10700	5.02	132	10	0.52	0.3	0.1	20	18	72	3.9	135	3.86	25	101	10.3	12.9	1.30
58.	24	1	1	1	1	1	2 days	2	12.4	4.19	21400	4.41	130	17	0.52	0.3	0.1	44	11	249	4.6	141	4.57	20	104	11.2	15.9	1.20
59.	10	2	1	1	1	2	7 days	2	10.4	97000	9600	3.75	129	13	0.37	0.53	0.25	246	72	154	2	140	3.17	26	104	11.2	12.7	1.13
60.	25	2	1	1	3	2	1 day	2	12.4	4.19	21400	4.41	128	17	0.52	0.3	0.1	44	11	249	4.6	141	4.57	20	104	11.2	15.9	1.20
61.	21	1	1	1	3	2	5 days	2	15.9	2.87	22100	5.51	93	14	0.85	0.69	0.21	25	22	79	4.9	141	4.24	20	105	11.2	12.5	1.11
62.	64	1	1	3	1	2	1 day	12.1	4.42	6900	4.7	4.5	114	8.25	5.17	5.03	351	272	197	3.6	141	3.96	16	104	100	11.2	12.5	1.11
63.	5	2	1	1	1	1	7 days	2	9.5	3.13	25600	5.6	72	23	0.2	12.9	12.85	105	232	240	2.2	132	3.91	30	98	11.2	12.5	1.11
64.	44	2	1	1	4	1	6 days	2	11.4	2.62	10600	5.09	109	18	0.01	0.34	0.12	15	12	82	4	137	3.65	28	98	11.2	12.5	1.12
65.	19	2	1	1	1	1	3 days	2	11.4	2.62	10600	4.5	109	18	0.01	0.34	0.12	15	12	82	4	137	3.65	28	98	11.2	12.5	1.12
66.	26	2	1	1	1	2	1 day	2	9.3	3.1	5900	5.6	80	17	0.68	0.68	0.52	15	11	54	3.9	140	4.23	23	105	11.2	12.5	1.11
67.	70	2	1	1	1	2	6 days	2	12.1	4.42	6900	4.7	100	114	8.25	5.17	5.03	351	272	197	3.6	141	3.96	16	104	11.2	12.5	1.11
68.	20	1	1	1	1	2	1 day	2	14.6	2.24	12800	5.3	84	18	1.12	1.08	0.4	24	17	103	3.4	146	4.46	24	110	11.2	12.5	1.11

69.	35	1	1	1	1	1	7 days	2	17.7	2.35	14100	6.34	107	37	1.72	1.23	0.47	107	102	56	3.6	138	6.04	17	99	11.2	15.5	1.38	
70.	19	2	2	1	1	2	5 days	2	12.3	2.65	7800	4.32	106	15	0.62	0.52	0.14	24	12	67	3.5	141	4.39	19	106	11.2	12.5	1.11	
71.	52	1	1	1	1	2	7 days	2	9.6	4.24	7790	4.35	109	13	1.2	1.4	0.7	157	150	77	2.4	141	4.43	29	108	14.5	15.4	1.07	
72.	50	1	1	1	1	2	2 days	2	13	1.65	10100	4.5	101	260	1.11	4.9	3.3	396	228	106	3.2	136	5.7	30	102	11.2	12.5	1.11	
73.	29	2	1	3	4	2	2 days	2	13	1.65	10100	4.5	190	260	1.11	4.9	3.3	396	228	108	3.2	136	5.7	29	101	11.2	12.5	1.11	
74.	14	1	1	1	1	2	2 days	2	13	1.65	10100	4.5	130	260	1.11	4.9	3.3	396	228	113	3.2	136	5.7	28	103	11.2	12.5	1.11	
75.	19	2	1	1	1	1	6 days	2	13.9	2.74	7650	4.07	106	23	0.6	1.3	0.4	26	22	73	3.4	139	4.2	26	106	13.4	15	1.12	
76.	8	1	1	1	1	2	1 day	2	13	2.21	10560	4.84	103	13	0.8	0.37	0.14	39	28	79	3.8	139	3.9	22	103	11.2	13	1.16	
77.	22	1	1	1	1	2	1 day	2	15.6	2.54	10100	5.38	99	10	0.98	0.45	0.27	15	14	63	4.2	143	4.29	25	107	11.2	12.9	1.1	
78.	37	2	3	1	1	2	6 days	2	13	2.21	10560	4.84	94	13	0.8	0.37	0.14	39	28	79	3.8	139	3.9	22	103	11.2	13	1.16	
79.	55	1	1	1	3	2	2 days	2	11.8	6	22320	3.99	75	35	0.9	0.4	0.2	54	21	63	4.2	143	4.29	25	107	11.2	12.9	1.1	
80.	23	2	1	1	1	2	4 days	2	14.2	2.59	12680	4.69	94	46	0.74	0.9	0.3	50	59	261	3.5	138	3.6	35	103	11.2	19.2	1.30	
81.	16	1	1	1	1	1	2 days	2	14.4	2.38	8420	4.8	75	20	0.6	2.5	0.5	28	20	80	3.2	139	3.4	24	105	11.2	13	1.16	
82.	66	2	1	1	1	1	2 days	2	11.2	3.11	12260	4.17	196	36	0.63	0.23	0.13	11	15	80	3.2	139	3.4	24	105	11.2	15.1	11.35	
83.	18	2	1	1	4	2	1 day	2	12.7	4.33	8700	3.93	156	49	1.56	0.33	0.18	23	12	53	3.4	135	4.3	31	103	11.2	15.1	11.35	
84.	54	1	1	4	1	2	2 days	2	13.8	1.69	9300	4.96	140	13	0.88	0.6	0.28	24	32	117	3.2	132	3.29	27	90	11.2	15.1	11.35	
85.	22	2	1	1	1	2	3 days	2	13.4	3.22	19300	5.25	132	11	0.75	0.75	0.27	21	14	125	4.7	135	4.3	31	103	11.2	15.1	11.35	
86.	40	2	1	1	1	2	4 days	2	10.7	2.92	13600	4.66	140	29	1.52	0.48	0.21	39	53	117	3.2	132	3.29	27	90	11.2	15.1	11.35	
87.	20	2	1	1	1	2	3 days	2	12.2	1.28	14500	3.88	258	19	0.61	1.04	0.29	20	23	56	3.9	135	3.24	15	102	11.2	15.1	11.35	
88.	32	1	1	1	1	2	6 days	2	12.1	2.54	12510	4.3	200	26	1	0.6	0.3	43	35	150	3.2	132	3.8	94	101	11.2	15.1	11.35	
89.	19	2	1	1	1	1	2 days	2	13	3.74	23000	4.5	94	18	0.64	0.27	0.13	40	17	81	4.4	140	3.52	20	103	11.2	15.1	11.35	
90.	27	1	1	1	1	2	4 days	2	16	4.46	12100	5.6	75	11	0.94	0.6	0.18	18	10	104	4.9	140	4.09	17	102	11.2	15.1	11.35	
91.	28	2	1	1	1	2	7 days	2	12.1	1.15	8400	5.09	94	13	0.52	0.25	0.07	13	18	67	4.3	135	4.3	31	103	11.7	12.9	1.1	
92.	24	1	1	4	1	2	7 days	2	14.7	2.87	15400	4.81	75	18	0.98	2.03	0.51	38	14	72	4.4	137	4.58	24	101	11.2	14.8	1.26	
93.	70	1	1	1	1	2	6 days	2	12	2.4	8000	3.81	94	72	2.08	0.4	0.1	30	15	72	3.3	137	4.25	17	101	11.2	11.9	1.06	
94.	17	2	1	1	1	1	2 days	2	12.4	2.09	5900	4.22	94	20	0.44	0.2	0.07	22	11	75	4.5	135	4.3	31	103	11.2	13.1	1.17	
95.	52	1	1	1	3	2	8 days	2	2	14.7	2.87	15400	75	21	18	0.98	2.03	0.51	38	14	72	4.4	137	4.58	24	101	11.2	14.8	1.26
96.	27	1	1	1	1	2	5 days	2	11.4	1.49	6000	3.87	103	14	0.26	0.27	0.14	95	31	34	1.9	142	2.97	18	120	14.5	15.9	1.1	
97.	34	1	1	1	1	1	20 days	2	16	1.29	14600	5	178	47	1	0.6	0.2	27	17	103	3.8	4.6	136	4.49	22	99	16.3	1.2	
98.	66	2	1	1	1	1	1 day	2	9	2.93	7900	4.5	198	43	0.65	0.25	0.16	11	13	64	3.9	135	4.3	31	103	14.5	15.9	1.1	
99.	35	1	1	1	1	2	8 days	2	16.2	2.36	11000	5.6	138	44	1.03	1.7	0.4	42	24	96	4.6	136	4.49	22	99	14.5	15.9	1.1	
100.	25	1	3	1	1	2	4 days	2	14.5	2.08	10280	5.09	125	26	1	1.3	0.4	213	177	62	4.2	137	4.2	24	103	14.5	15.9	1.1	
101.	24	1	1	1	1	1	8 days	2	14.7	2.3	15400	4.81	101	18	0.98	2.03	0.51	38	14	72	4.4	137	4.58	26	101	11.7	14.8	1.26	
102.	24	1	1	1	1	1	6 days	2	15.1	1.39	7400	4.69	93	18	0.88	0.58	0.24	32	43	82	4.5	136	4.08	26	100	14.5	15.9	1.1	
103.	26	1	1	1	1	1	4 days	2	14.1	2.61	5700	4.72	65	11	1	0.9	0.2	79	43	113	4.1	142	3.9	28	110	14.5	15.9	1.1	
104.	22	2	1	1	1	2	1 day	2	13	2.64	6100	3.34	117	18	0.56	0.94	0.24	19	14	91	4.6	143	4.18	19	113	14.5	15.9	1.1	
105.	40	2	1	1	1	2	3 days	2	9.5	2.76	6050	3.67	130	22	0.7	0.5	0.2	16	15	72	3.5	143	4.18	19	113	14.5	15.9	1.1	
106.	18	1	1	2	1	2	4 days	2	14.4	2.33	1030	4.85	97	20	0.91	0.61	0.04	49	23	62	4.1	143	4.01	17	110	14.5	15.9	1.1	
107.	17	1	1	1	3	2	4 days	2	10.9	2.39	49700	4.5	98	42	0.44	0.87	0.56	26	27	121	3.2	130	3.38	30	89	14.5	15.9	1.1	
108.	29	1	3	1	1	2	4 days	2	15.6	3.01	13400	5.6	105	18	1.25	0.67	0.2	21	19	80	4.9	139	4.32	19	97	11.7	11.6	0.19	
109.	22	2	1	1	1	2	5 days	2	8.3	2.77	9200	5.09	84	11	0.64	0.34	0.12	19	10	69	4.4	138	4.18	21	102	11.7	13.8	1.18	
110.	35	2	1	1	1	2	12 days	2	12.9	3.67	29800	4.5	140	37	0.98	1.2	0.3	36	27	111	4.1	139	3.64	18	102	11.7	13.3	1.14	
111.	20	1	1	1	3	2	4 days	2	13.9	2.9	19000	5.6	92	18	0.95	0.36	0.09	27	19	94	4.3	141	4.44	23	103	11.7	13.3	1.14	

112.	31	1	1	1	1	1	3 days	2	16.5	2.3	13400	5.09	130	14	0.92	0.84	0.27	12	15	69	2.4	147	4.05	21	114	11.7	13.3	1.14
113.	23	2	1	1	1	2	4 days	2	14	2.36	6200	4.63	102	12	0.71	0.74	0.25	18	10	58	4.8	141	3.83	104	24	11.7	13.3	1.14
114.	40	2	3	1	3	2	13 days	2	13.6	2.87	22200	4.94	137	17	0.64	0.34	0.12	19	15	86	4.6	135	2.98	21	100	11.7	13.3	1.14
115.	18	2	1	1	1	2	4 days	2	12.4	4.71	16700	4.5	101	13	0.76	0.36	0.09	27	19	94	4.3	135	2.98	21	100	14.5	15.9	1.1
116.	20	2	1	1	1	2	7 days	2	9.4	4.19	13500	5.6	127	20	0.93	0.4	0.14	38	29	74	3.2	135	4.78	13	110	14.5	15.9	1.1
117.	22	1	1	1	1	1	3 days	2	13.9	2.44	9000	5.09	120	16	0.67	0.7	0.29	22	14	150	4.5	139	4.5	25	103	11.7	13	1.11
118.	22	2	1	1	1	2	6 days	2	12.5	2.9	11000	4.25	101	10	0.59	0.61	0.28	16	21	68	4.1	142	4.17	23	106	11.7	12	1.03
119.	38	2	1	1	1	2	5 days	2	12.4	2.29	7500	4.8	76	16	0.64	0.43	0.1	22	25	91	3.6	142	4.17	20	110	11.7	12.1	1.03
120.	44	2	1	1	1	2	2 days	2	11.6	2.33	5500	4.34	132	22	0.91	0.41	0.13	18	17	100	3.8	145	4.74	24	111	11.7	11.6	0.99
121.	35	1	1	1	1	2	3 days	2	14.5	2.04	15100	4.98	84	36	0.91	2.03	0.63	72	26	19	5.1	143	4.59	17	107	11.7	13	1.11
122.	55	1	1	1	1	1	3 days	2	14.3	1.93	19300	4.71	122	18	0.83	2.2	0.23	43	21	94	5.2	137	4.6	17	98	11.7	13	1.11
123.	46	1	1	1	1	2	2 days	2	13.9	3.06	10600	4.8	105	19	0.78	1.63	0.42	22	20	118	4.1	143	4.73	23	108	14.5	15.9	1.1
124.	19	2	1	1	3	2	5 days	2	11.7	2.37	5700	4.5	62	33	0.48	0.62	0.22	24	10	71	4.5	150	4.32	17	115	11.7	13	1.11
125.	19	2	1	1	1	1	3 days	2	12.1	2.73	8080	5.6	84	14	4.6	0.6	0.2	15	10	65	4.8	136	3.5	25	100	14.5	15.9	1.1
126.	1	1	1	1	1	2	2 days	2	11.2	4.09	9000	5.09	122	31	0.27	0.1	0.05	44	25	283	4.4	136	4.06	29	102	11.7	13	1.11
127.	14	1	1	2	2	2	3 days	2	11.9	3.55	8100	4.51	105	19	0.46	1.26	0.5	25	10	385	4.7	137	4.01	27	102	14.5	15.9	1.1
128.	28	2	1	1	1	2	5 days	2	10.1	1.44	9600	3.04	84	8	0.4	0.7	0.2	17	10	95	3.5	128	3.3	25	107	15.4	12.5	1.23
129.	58	2	1	2	2	2	10 days	1	4.9	8.8	11400	1.79	115	253	8.42	0.56	0.28	38	56	65	2.7	132	4.24	12	98	11.7	13.9	1.19
130.	42	2	1	1	2	2	5 days	2	12.3	3.35	14770	4.63	123	20	0.7	0.4	0.2	34	41	85	3.8	141	3.6	32	100	14.5	19.08	1.31
131.	6	1	1	1	2	1	1 day	2	10.6	4.25	14400	5.83	150	16	0.32	0.22	0.16	37	13	227	4.1	137	3.6	18	101	11.2	12.6	1.13
132.	11	2	1	2	2	2	9 days	2	7.9	1.21	13400	2.58	163	35	2.61	7.63	0.3	15	18	229	3.6	129	5.91	28	92	11.7	13	1.11
133.	26	1	1	1	2	2	3 days	1	15.2	1.56	10900	4.5	134	33	0.77	1.95	0.27	46	29	110	4.6	131	4.98	22	98	14.4	26.5	1.85
134.	48	2	1	2	2	1	2 days	2	10.5	1.23	11300	5.6	87	10	0.68	1.63	0.31	94	44	68	2.3	133	5.13	13	104	11.2	11.4	1.02
135.	17	1	1	1	2	1	2 days	2	14	2.58	25800	5.09	100	31	0.97	0.3	0.22	93	18	229	3.6	146	4.13	26	112	11.2	19.9	1.75
136.	63	1	1	1	2	2	6 days	2	9.2	1.15	10300	3.11	103	1.87	8.26	1.96	0.9	94	44	68	2.3	117	3.82	13	86	14.5	15.9	1.1
137.	16	1	1	1	2	2	10 days	1	11.8	1.8	4900	4.5	106	16	0.5	0.2	0.1	24	20	77	3.2	139	4	25	110	11.2	19.9	1.75
138.	28	1	1	2	2	1	7 days	2	15.3	1.5	14200	5.6	236	38	1.38	3.86	0.22	78	19	36	3.3	138	3.9	25	103	11.2	12.6	1.24
139.	1	1	1	1	2	2	3 days	2	7.6	5.41	13000	5.09	280	29	0.25	94	44	68	2.3	94	44	136	4.18	21	104	11.2	12.8	1.14
140.	72	1	1	1	2	2	7 days	2	10.8	2.39	9200	4.26	210	23	0.7	2.2	0.5	36	16	71	3.2	140	4.1	29	101	4.7	2.08	2.02
141.	40	1	1	2	2	2	4 days	2	13.8	4.02	7000	4.63	649	25	0.66	0.93	0.66	78	19	36	3.3	134	4.6	18	104	14.4	12	1.30
142.	33	1	1	1	2	2	9 days	1	15.7	2.09	9400	5.63	98	15	1.05	0.33	0.1	18	23	90	4.5	141	4.43	107	21	14	23.7	1.69
143.	16	1	1	2	2	2	9 days	2	15.1	3.33	17800	5.5	213	26	1.29	0.52	0.23	66	47	127	4	137	4.82	22	101	11.7	11.9	1.02
144.	32	1	1	2	2	1	15 days	2	10.5	2.3	10.6	4.5	150	16	0.9	0.7	0.2	51	140	138	2.5	129	3.6	28	106	12.6	11.08	0.75
145.	47	1	1	2	2	2	3 days	2	14.3	2.09	20000	5.6	130	20	1.01	1.33	0.16	32	21	107	4	140	4.61	21	106	11.2	20.3	1.81
146.	30	1	1	1	2	2	7 days	2	13.1	2.77	6200	5.09	77	30	1.17	0.81	0.23	31	16	89	4.3	140	4.72	23	105	11.2	10.7	0.96
147.	35	1	1	1	2	2	3 days	2	16	2.49	9200	5.49	103	20	0.6	0.9	0.3	39	32	116	4.2	139	2.8	39	110	14.6	15.6	1
148.	29	1	1	2	2	2	6 days	2	16.5	7.1	20200	5.47	149	26	0.82	3.15	0.47	39	33	51	4.7	137	3.97	23	102	11.2	12	1.9
149.	43	1	1	1	2	2	6 days	2	12.9	2.2	16800	4.8	70	2.52	13.75	0.28	0.18	27	20	61	3.2	134	5.27	12	96	11.2	11.2	3
150.	42	1	1	2	2	2	13 days	2	14.8	48000	7660	4.41	140	18	0.9	0.3	0.9	52	39	90	3.7	136	4	23	106	14.5	23.1	1.67
151.	44	1	1	1	2	2	3 days	2	8	33600	9770	4.19	186	10	0.62	2.26	0.66	38	16	95	4.3	133	4.79	20	99	111.2	14.9	1.33
152.	18	1	1	1	2	1	3 days	2	14.3	220000	7200	5.13	99	17	0.67	0.5	0.21	21	29	88	4.8	140	3.91	24	104	11.2	12.5	1.12
153.	25	1	3	1	2	2	5 days	2	9.8	148000	8900	5.13	99	17	0.67	0.5	0.21	21	27	201	3.3	137	4.2	25	109	14.5	15.9	1.1
154.	50	1	1	1	2	2	3 days	2	17.4	301000	16300	5.41	131	34	0.86	2.81	0.49	26	16	80	3.9	137	4.96	18	104	1.16	11.2	1.2

155.	45	1	1	1	2	2	3 days	2	16.2	95000	5100	5.13	99	27	0.92	1.93	0.71	53	40	68	4.2	139	3.52	25	104	11.2	12.9	1.15
156.	35	1	1	1	2	2	3 days	2	3.2	800000	4500	1.26	99	200	4.61	1.31	1.08	98	36	261	2.3	135	4.24	95	95	11.2	16.1	1.42
157.	7	1	1	1	2	2	2 days	2	12.1	2.57	10100	5	88	21	0.56	94	44	68	2.3	94	44	139	4.38	26	104	11.8	11.2	1.05
158.	13	1	1	1	2	1	10 days	2	12.8	4.13	12200	0.97	100	19	0.5	0.6	0.2	17	26	182	38	135	4.7	25	100	1.16	12.5	1.20
159.	21	1	1	1	2	2	4 days	2	15.4	1.64	17900	177	4.5	19	1.02	3.28	0.26	29	24	90	4.1	139	3.84	20	105	11.2	12.8	1.14
160.	13	1	1	2	2	2	3 days	2	12.4	2.48	12000	4.35	5.6	26	0.49	1.24	0.45	43	19	246	3.5	138	3.9	25	107	11.2	16.8	1.48
161.	23	1	1	2	2	2	3 days	2	14.4	2.26	17000	4.83	5.09	21	0.67	0.73	0.21	22	11	90	4.3	139	4.96	25.6	105	11.2	13	1.16
162.	56	1	1	2	2	2	13 days	2	12.1	1.17	16000	4.2	283	34	0.72	1.38	0.37	24	20	81	3.7	145	5.01	14	118	11.2	14.6	1.3
163.	51	1	1	2	2	1	10 days	2	8.1	1.7	14700	3.1	451	64	2.44	0.77	0.26	23	12	60	2.7	135	4.26	11	110	11.2	12	1

ANNEXURE VI - MASTER CHART FOR DEAD CASES

S. No	Age(yrs)	Sex	Religion	Marital Status	Place of ingestion	type of compound consumed	Intent	past history	clinical features	Hb	Urea	Cholinesterase	WBC	creatinine	Platelet count (in lakhs)	SGOT	SGPT	Sodium	Potassium	Chlorides	ALP	Bilirubin	Bicarbonate	PDC report	PM report	RFSL report	Histopathology report	Days of survival
1	19	2	1	1	1	4	1	2	1	10.8	10	9153	8800	130	2.95	14	14	143	4.38	110	200	0.14	17	1	2	1	2	2
2	28	2	1	2	1	3	1	2	1	11.5	10	236	13000	0.83	2.54	15	14	143	4.29	107	63	0.45	25	2	1	2	1	10
3	35	1	1	2	1	1	1	2	1	12.6	15	500	8500	0.9	3.32	11	10	141	4.32	105	71	0.48	25	2	1	1	1	1
4	56	1	1	2	1	1	1	2	1	10.6	31	460	8500	08	3.64	25	11	137	2.69	103	243	0.3	28	2	1	1	1	1
5	20	2	1	1	1	4	1	2	1	12.8	16	9153	7800	130	3.14	34	13	137	4.1	107	57	0.3	13	2	1	2	1	11
6	15	2	1	1	1	3	1	2	1	16.1	93		29000	4.56	3.44	17	24	137	3.86	95	70	2.12	26	1	1	1	1	2
7	20	1	1	1	1	1	1	2	1	14	25		12000	0.9	2.53	28	25	136	4.58	103	98	1.97	18	2	1	1	1	1
8	23	1	1	1	1	4	1	2	1	14.7	40		21800	2	2	94	44	68	2.3	94	44	68	23	1	2	1	2	3
9	30	1	1	2	1	4	1	2	1	11.5	14		24000	1.16	3.17	30	25	135	3.9	107	74	0.6	25	1	2	1	2	13
10	43	1	1	2	1	4	1	2	1	14.8	66	9153	8700	102	2.77	28	10	140	3.28	109	55	0.33	24	1	2	1	2	1
11	17	2	1	1	1	1	1	2	1	11.1	72		20400	0.81	2.4	30	15	133	4.25	101	72	0.4	17	2	1	1	1	1
12	5	1	1	1	2	1	3	2	1	12.3	25		12000	0.72	3.11	12	12	138	4.25	106	53	0.22	20	2	1	2	1	1
13	35	1	3	2	3	1	1	2	1	14.8	13	9691	9200	0.93	2.67	27	19	144	4.47	107	100	0.47	25	1	1	1	1	1
14	50	2	1	2	1	3	1	2	1	13.5	30	6013	7500	08	2.57	32	29	144	4.09	104	97	0.55	21	2	1	2	1	1
15	23	2	1	1	2	4	1	2	1	13.9	239		6800	0.7	2.5	76	84	143	4.45	101	136	1.5	12	1	2	1	2	1
16	17	2	1	1	1	4	1	2	1	12.7	35		10700	7.6	2.6	113	142	134	4.5	102	164	0.4	21	2	1	2	1	1
17	30	1	1	2	1	1	1	2	1	12.6	19	590	8500	5.0	3.62	27	21	137	3.66	97	120	0.91	19	1	1	1	1	1
18	14	2	1	1	2	4	1	1	1	11.4	62		13500	1.34	2.21	167	87	130	4.2	98	230	1.4	25	2	1	2	1	13
19	36	2	1	2	1	4	1	1	1	12	20		6900	2.5	1.88	23	12	139	4.32	107	67	0.7	20	2	1	2	1	4
20	45	1	1	2	1	3	1	2	1	14.8	22	206	10620	1.54	3.14	12	11	139	4.25	105	68	0.86	20	1	1	1	1	2
21	23	1	1	1	1	4	1	2	1	12.9	13		10000	2.7	1.55	24	18	139	3.93	107	32	0.58	17	1	2	1	2	3
22	25	1	1	1	1	4	1	2	1	12	54		22200	2.6	2.39	97	29	144	3.88	104	95	0.46	15	1	1	1	1	1
23	21	2	1	1	1	3	1	2	1	14	14		6800	2.5	2.81	26	17	139	4.28	101	88	0.57	15	1	1	2	1	1
24	19	2	1	1	1	4	1	1	1	13	30		32200	2.3	2.87	12	15	133	3.1	103	44	0.5	18	1	1	1	1	1
25	14	1	1	1	1	4	1	1	1	12.1	12		16000		1.23	14	10	135	4.2	105	59	1	25	2	1	2	1	14

26	28	2	1	2	1	1	1	2	1	11.6	30	402	7500	1.5	2.5	12	15	133	3.1	103	44	0.5	19	2	1	1	1	1
27	36	1	1	2	1	1	1	2	1	10.8	38	106	9620	1	1.44	823	3409	147	3.37	118	149	7.2	18	2	1	1	1	1
28	16	1	1	1	1	4	1	2	1	11.5	16		8400	3.51	2.88	23	16	140	4.79	106	58	0.4	24	1	1	1	1	3
29	41	1	1	2	1	4	1	2	1	14.5	16		10400	4.51	2.06	18	13	137	3.57	100	57	0.99	20	1	1	2	1	3
30	29	2	1	2	1	1	1	2	1	13.9	22		6800	0.7	2.49	36	22	146	2.98	18	97	0.5	29	1	1	2	1	1
31	1	1	1	1	1	1	2	2	1	10.3	29		25600	0.94	94	44	68	2.3	94	44	68	2.3	25	1	1	2	1	2
32	24	2	1	2	1	1	1	2	1	3.5	29		24000	0.5	2.8	63	43	149	4.32	106	101	1.3	24	1	1	2	1	1
33	18	1	1	1	1	4	1	2	1	13	11		32200	0.6	2.59	14	28	143	3.78	110	203	0.56	70	1	1	2	1	10
34	27	1	1	2	1	4	1	2	1	16.4	44		22800	0.97	418000	25	26	139	4.39	104	212	0.46	15	2	1	2	1	1