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Review Paper

Poisoning death in Bangladesh: seven years study in the CID chemical laboratory

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Abstract

Increasing number of suicide makes it a serious problem of recent days. Suicide makes disorder in society.One of the main reasons behind this drastic increase is that , a person with suicidal tendency get influenced by the suicide of others. But the pattern of suicide such as using components for suicidal cases are changed. From our seven years study it is found that uses of sedative pill and alcoholic substances are increasing compare to pesticide. May be bad smell and unavailability in urban area is responsible for this. It is also found that poisonous death of female victims of age limit 0-20 years and 21-40 years is higher than that of male victims. Whereas it is higher for male victims when we consider the age limit 41years and above. Counseling is important to prevent suicide. Proper employment, public awareness, socio-economic development, family bonding, community education in rural area, and social safety etc. are necessary to prevent from consuming poison.

Keywords: Poison, suicide, pesticide, education, development.

Introduction

In Forensic Medicine all deaths are included in certain manners, namely; natural, suicidal, homicidal, accidental, sudden etc.[1]. Poison is defined as the substance, which is capable of producing injury or death when absorbed. Poisons can be commonly involved in homicidal, accidental or suicidal cases [2,3]. Poisons are classified as organophosphorous compounds, organocarbamets compounds, organochloro compounds, benzodiazepine, methanol, detergent powder, liquid soap, kerosene, dhutura, noxious gases, rat killer, copper sulfate, anti-louse, anti-scabies, acidic compounds etc.

Now-a-days, suicide is frequent, it should marked as a serious problem. Moreover it causes disorder in society. Deliberate self-poisoning has reached epidemic proportions in parts of the developing world where the toxicity of available poisons and sparse medical facilities ensure a high fatality rate[4].Bangladesh is an agro-based country[5].With the advance of time, pesticides are routinely used for modern cultivation [6,7]. Most common organophsphorous compounds such as Chlorpyriphos, Diazinon, Fenthion, Monocrotophos, Phenthoate, Fenitrothion, Quinalphos, Dimethoate, Dichlorvos, Malathion are highly used as pesticide in the agricultural purposes and these are available in the market. Organophosphorus type compounds are frequently used for suicide as these are readily available over the country. Endosulfan and Endrin are common organochlorine compounds which are used for agricultural purposes. Sometimes poisons are intentionally used to occur death of opponent person. On the other hand, it is also taken by people unconsciousness.

Our study focused upon unnatural death occurred by poisoning, what type of poisons are used, what ages people and what types of people are commit to suicide more etc.[8]. This study will help the health planners to take necessary action for accurate management of poisoning cases[9,10].

Methodology

The study is primarily based on descriptive research papers, aims to collect feasible information on unnatural death due to poison in Bangladesh. Thus the study compose of review an analysis of all available sources dealing with poisonous death. This respective study was carried out at office of the Chief Chemical Examiner, Bangladesh Police, CID, Mohakhali, Dhaka during period of January'2012 to December'2018. Completing the postmortem examination, viscera were preserved and sent to the Office of the Chief Chemical Examiner for Toxicological analysis.

After the chemical examination is done, report of viscera were collected and analyzing the report information regarding the age, sex, history of death, the circumstances leading to such deaths were gathered from hospital forms and the concerned Inquest report provided by Investigating Officer. Using these information as base, outcome of the study were found.

Results and discussion

During the period of 2012 to 2018 total number of poisonous death per year showed in the Figure-1. It is found that the highest no. of people died in 2018 and it is 3146.

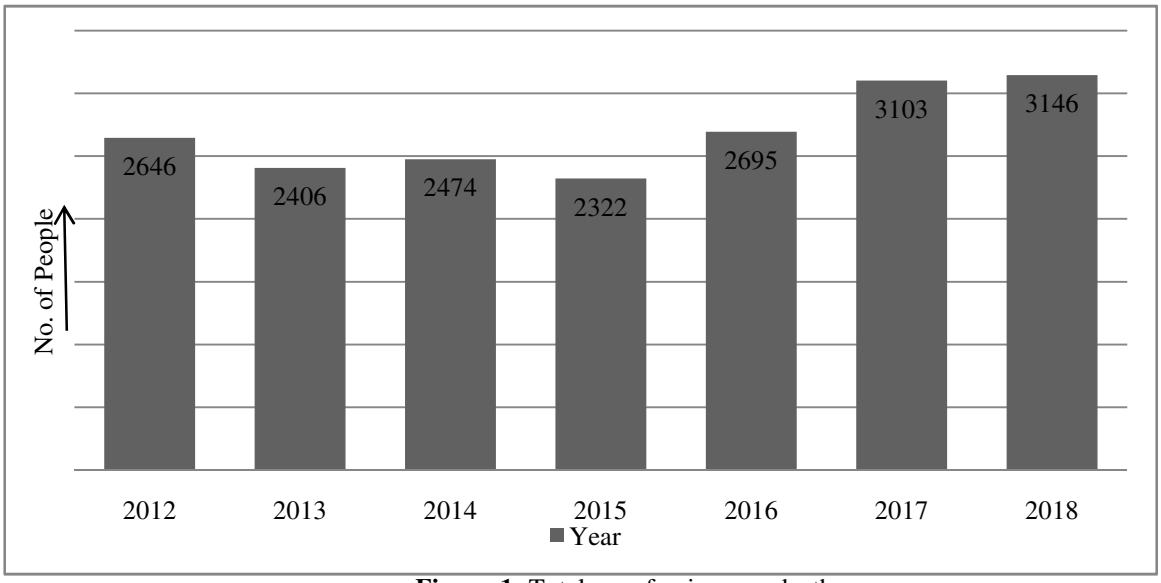

Figure-1: Total no. of poisonous death

Table-1: Summary of studies on poisoning in Bangladesh.

Total no. of death	2012	2013	2014	2015	2016	2017	2018
	2646	2406	2474	2322	2695	3103	3146
Organophosphorous Compound	90.02%	90.69%	89.73%	9.87%	89.13%	88.98%	88.97%
Organocarbamate Compound	2.00%	2.16%	1.89%	1.34%	1.89%	1.93%	1.94%
Organochloro Compound	0.70%	0.33%	0.20%	0.22%	0.26%	0.58%	0.67%
Zinc phosphide Compound	1.89%	1.00%	2.02%	1.46%	1.41%	2.19%	2.32%
Alcoholic Poison	1.97%	1.83%	1.54%	2.15%	1.97%	2.32%	2.45%
Sedativetablet	1.17%	1.75%	1.62%	1.29%	1.86%	2.26%	2.38%
Copper Sulfate	0.30%	0.37%	0.49%	0.39%	0.33%	0.32%	0.38%
Others	1.89%	1.87%	2.51%	2.28%	3.15%	1.42%	0.89%
Total	100%	100%	100%	100%	100%	100%	100%

The Figure-1 further shows that in 2015 mortality due to incidence poisoning is lowest where as it is gradually increases in the next three years. It is an alarming sign for the society.

In the Figure 2 to 8 different types of poison vs no. of people is showed since 2012 to 2018. It is observed that maximum people died due to Organophosphorus poison per year and minimum people died on Organochloro Compound. Endosulfan and Endrin are Organochloro Compounds which are rarely used for committing suicidal death due to the unavailability of these compounds compare to organophosphorous compounds.

In seven years studies, maximum mortality due to organophosphorous poisoning in 2018 numbering 2799. But if we consider per hundred it is highest in 2015 and it is 90.87%. 2.6% mortality have been occurred in 2013 due to organocarbamate poisoning.

From the Figure-4 it is clear that mortality rate due to organochloro poison is gradually decreases from 2012 to 2015, again it is gradually increases.

It is known that Zinc phosphide is an available rodenticide in the country. In Figure-5 it is found that 2.32% mortality occurred in 2018 and it is maximum in seven years studies.

Again, case of death due to alcoholic poison and sedative tablet is maximum in 2018. It may be indicate the change of choice of substances for suicidal purposes.

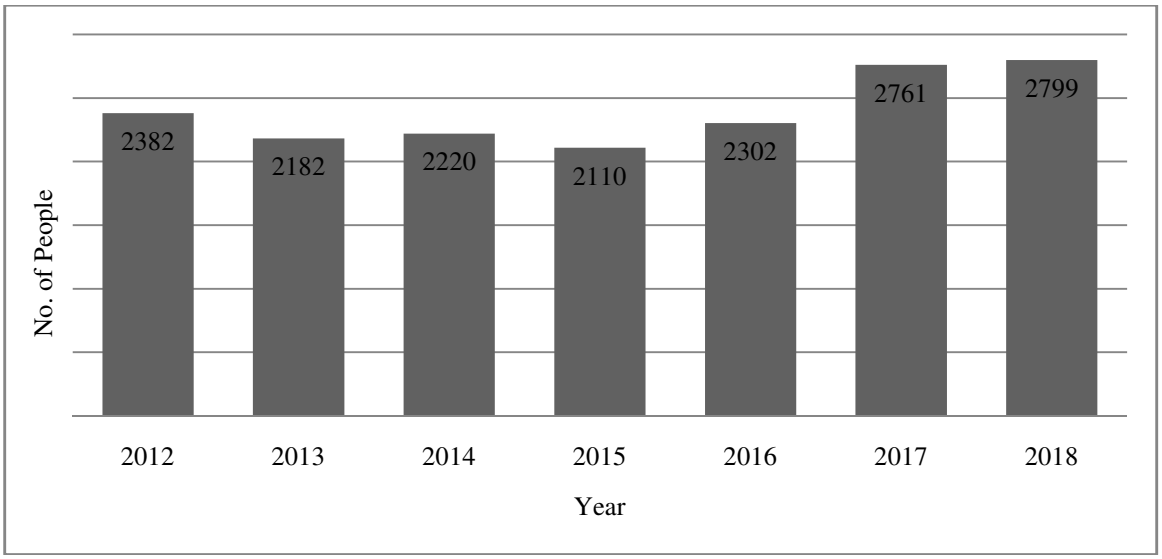

Figure-2: Case of Death due to Organophosphorus poison.

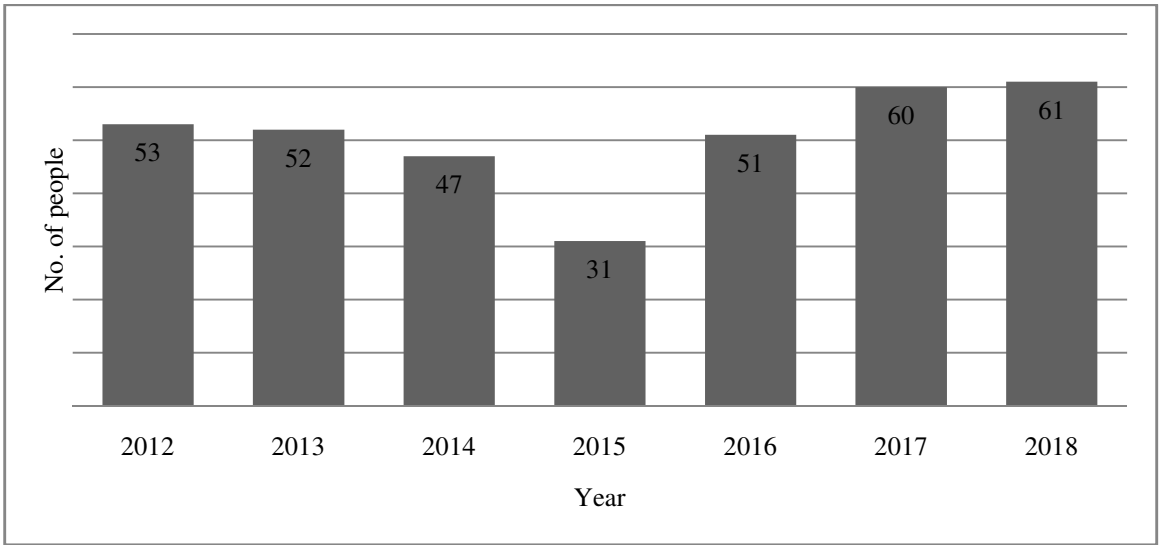

Figure-3: Case of Death due to Organocarbamate poison.

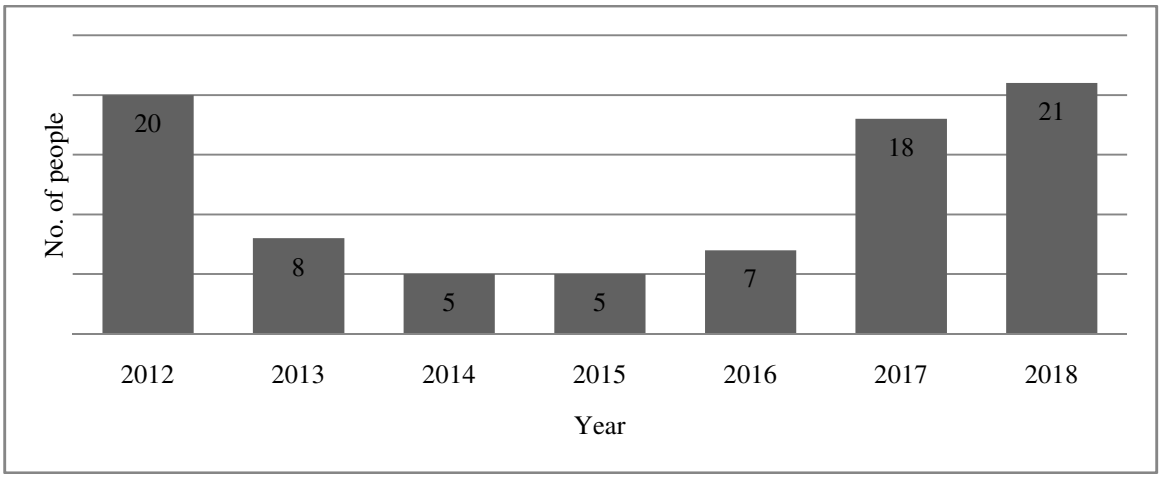

Figure-4: Case of Death due to Organochloro poison.

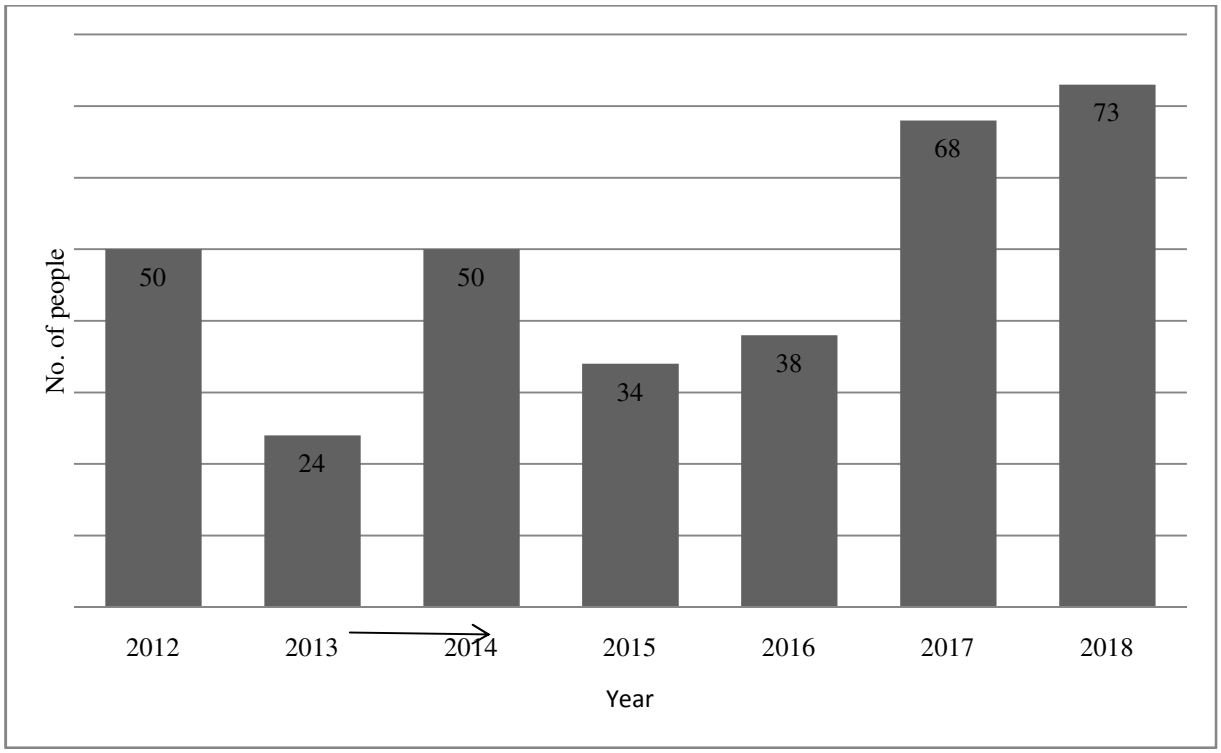

Figure-5: Case of Death due to Rat Killer (Zinc Phosphide) poison.

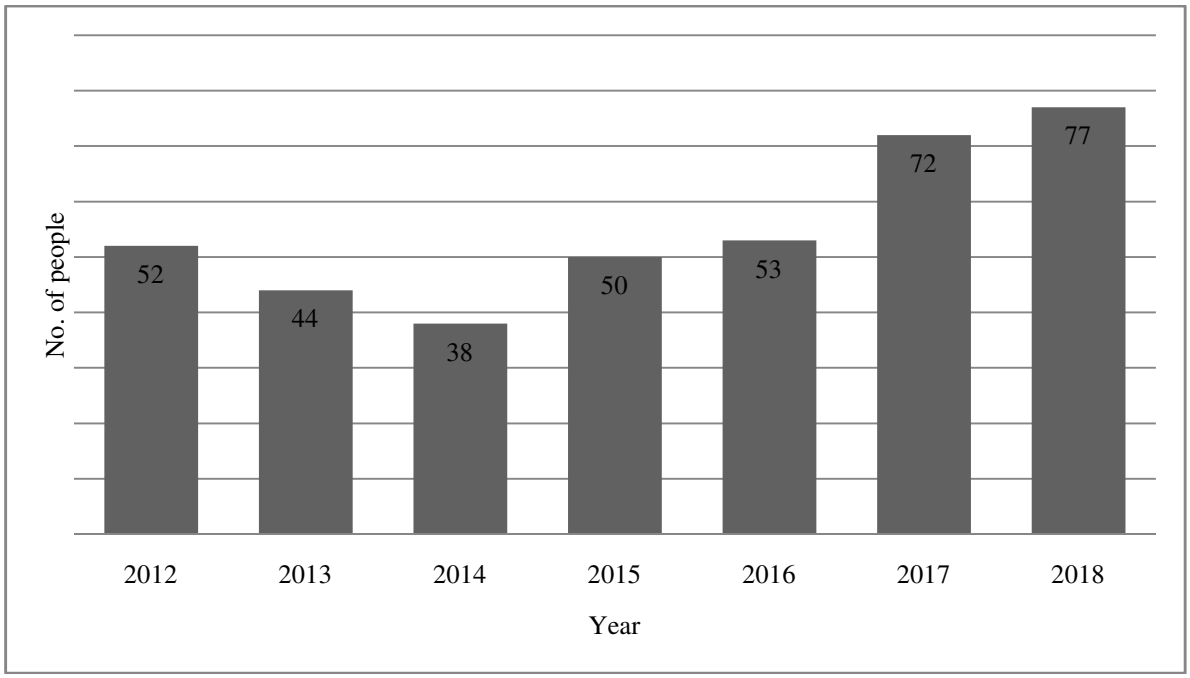

Figure-6: Case of Death due to alcoholic poison.

The Figure-6 shows that mortality due to alcoholic poison is highest in 2018 and it is 2.45% of total poisoning death in 2018.

Poisoning also happened due to sedative intake and no. of mortality is maximum in 2018 and it is showed in Figure-7. It is also found that death due to sedative is gradually increases from 2015.

From Figure-8 it is found that in 2014 and 2018 death occurred due to copper sulfate poisoning.

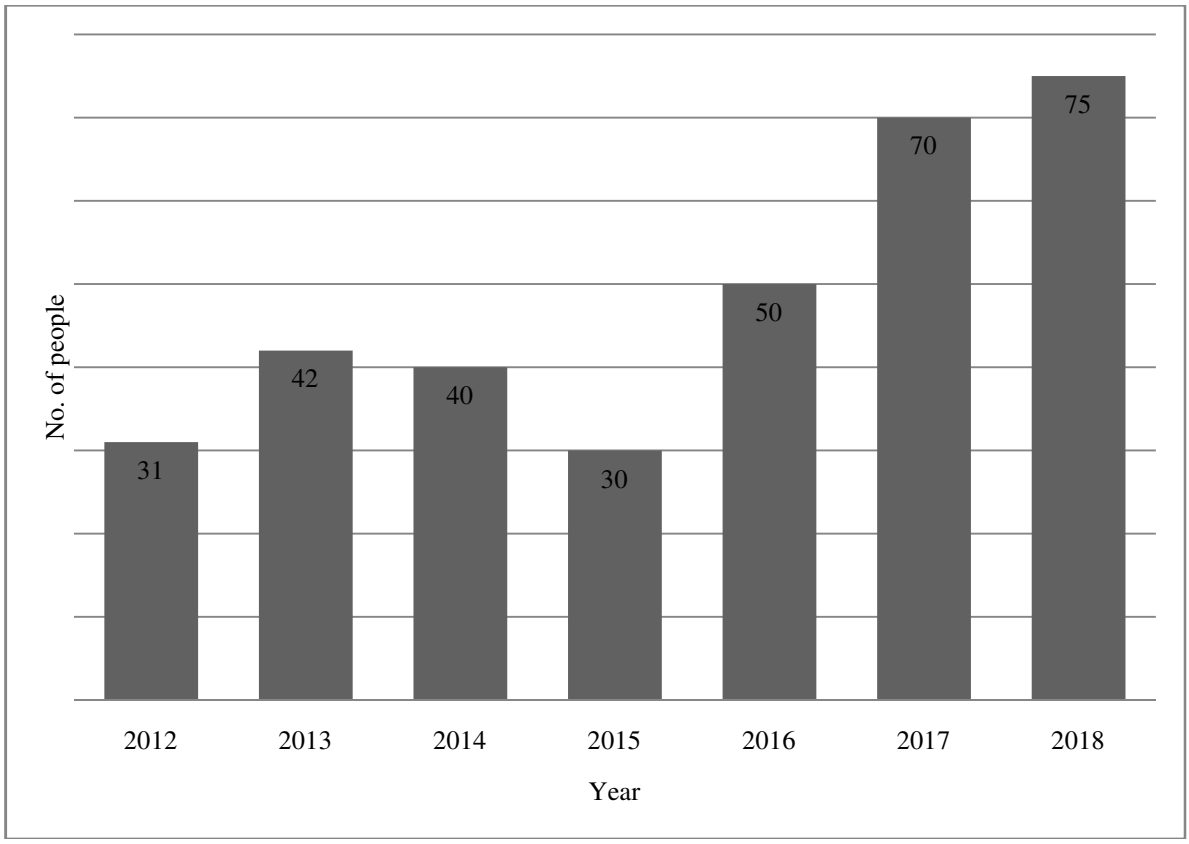

Figure-7: Case of Death due to Sedative tablet (Sleeping pill).

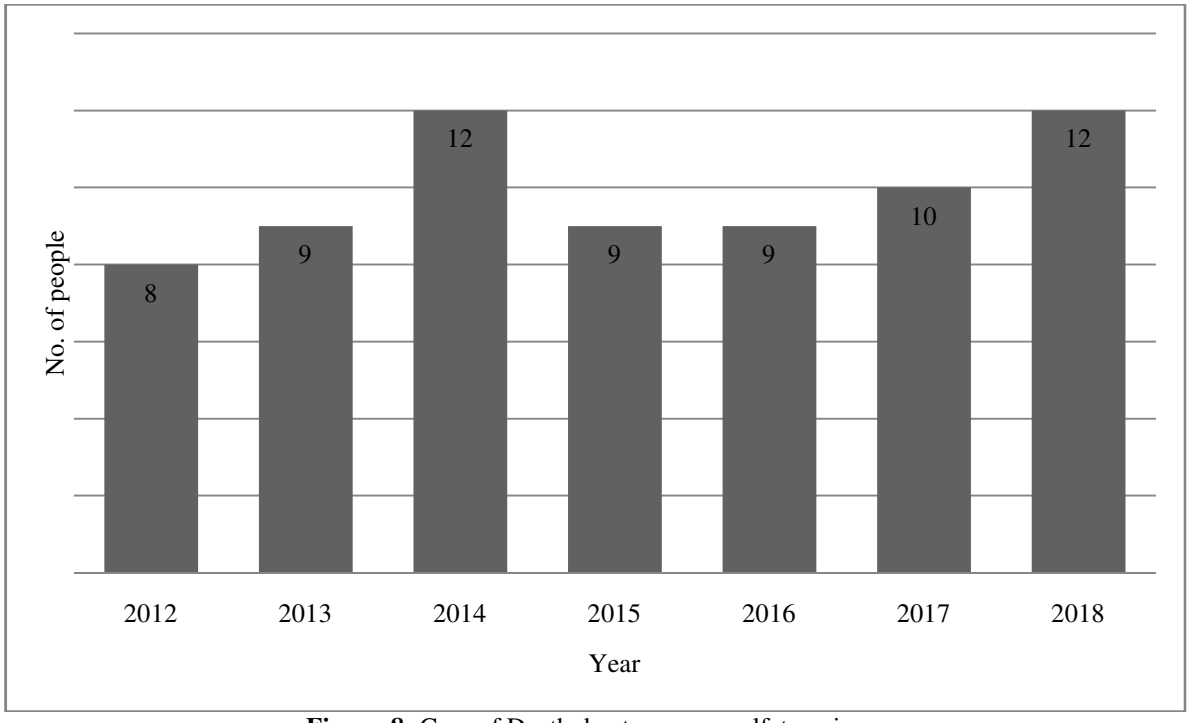

Figure-8: Case of Death due to copper sulfate poison.

From the Figure-9 and 10 it is clear that death rate due to poison of 0-20 years and 21-40 years of female is higher compare to male. Whereas, death rate due to poison of senior male people such as 41-80 years' male is higher compare to female.

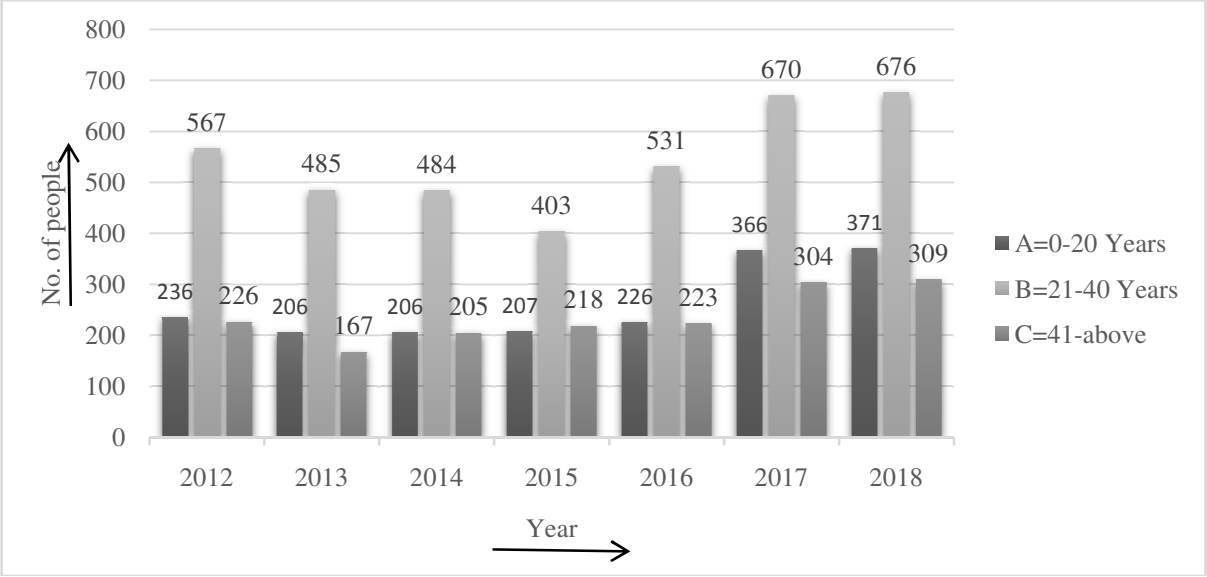

Figure-9: Cases of Death due to organophosphorus poison different ages male person.

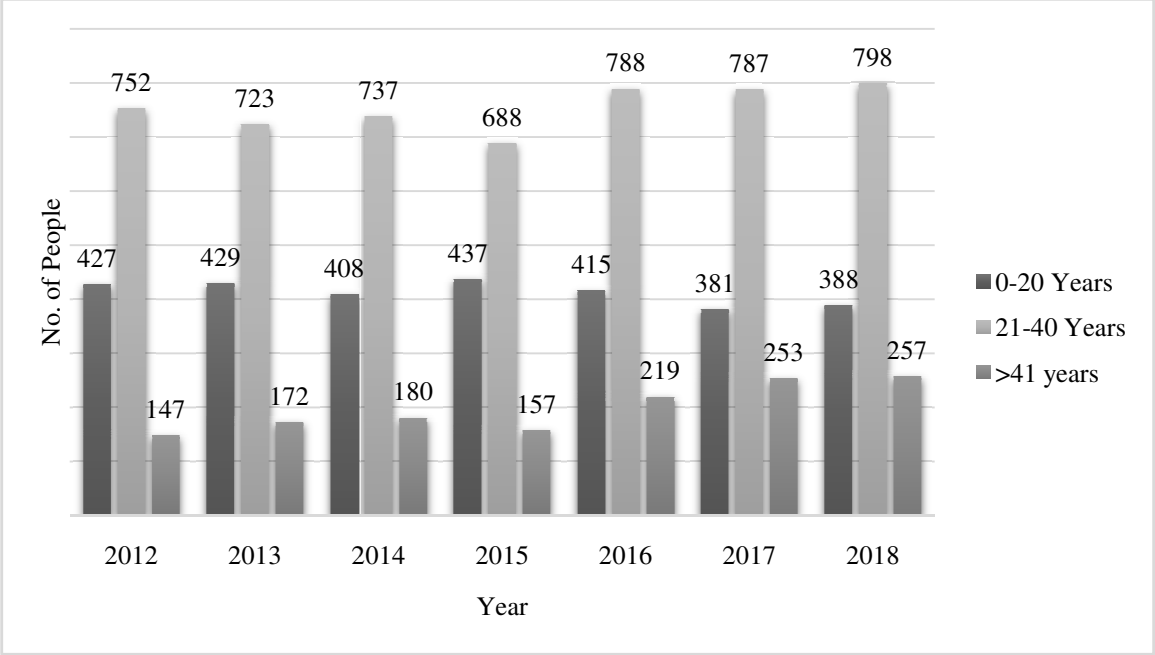

Figure-10: Cases of Death due to organophosphorus poison of different ages female person.

Discussion: Now a day, different pesticides are regularly used for cultivation purposes. All the poisoning cases have reasons for taking poison[11,12]. Pesticides poisoning from occupational, accidental and intentional exposure is a major developing world public health problem[13]. A recent study demonstrated that 44% of all deaths amongst 10-50 year old women in Bangladesh were due to poisoning, the majority following suicidal ingestion of pesticides[14]. Organophosphorous compounds are most common and easily available in village market and it acts as a common component for suicidal purpose after trivial problem from our study it is found that number of death due to poison from 2016-2018 in gradually increases[14]. Among this uses of Organophosphorous compound is excess. On the other hand, uses of sedative pill for suicidal purpose and uses of alcoholic poison for accidental poisonous death is increasing in every year. May be bad smell of pesticides, availability of sleeping pill, easily purchasable i.e. no prescription is required for purchasing sleeping pill etc. matters are responsible for increasing the use of sedative drugs for suicidal purposes. It has been found that heavy metal poisoning is quite unusal and suggested analgesics, particularly paracetamol as the most common cause of deliberate poisonings in adults[16,17].

Poisonous death of female victims of age limit 0-20 years and 21-40 years is higher than that of male victims. Whereas it is higher for male victims when we consider the age limit 41 and above years. For the first case, emotional relationship with loved ones, mental depression, dowry problem, failure in the examination, familial dispute, sexual assault, philandering, domestic oppression, poverty lack of care of parents, problem between parent, isolation and loneliness, bigotry, eve teasing, decreasing social kinship, physical and mental torture etc. are responsible for taking poison for suicidal purpose. In case of second scenario, debt (bankruptcy), financial crisis, mental conflict, religious ignorance of religion, extremism etc. may be responsible for male victims of 41 years above.

Conclusion

In South-East Asia region, pesticides are used for cultivation, chemicals such as paraquat, parathion, acetic acid used for rubber preparation and opium, diazepam, barbiturate arealso used for self-destruction[18]. Counseling is important to prevent suicide. Proper employment, public awareness socio-economic development family bonding, community education in rural area, and social safety etc. are necessary to prevent poisoning cases. At the same time poisonous substances as well as health hazards components should be properly monitored in production, distribution, sale, storage and application.

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