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Hair Dye Poisoning Patterns among Population in Nellore State Andhra Pradesh

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Abstract

Background: Hair Dyes are chemicals that are used to change hair colour. Hair colouring has become irresistible fascination to improve physiognomy especially people having grey hair. Hair dyeing is an ancient art and hair colourants are rapidly growing globally. But sometimes it is used to commit suicide. Hair dye poisoning occurs when someone swallows' dye or tint used to colour hair. Morbidity and mortality due to poisoning have been known to pose a significant burden on the health.

Aims and Objectives: To study the incidence and demographic features of hair dye poisoning in people who are admitted in Narayana Medical College Hospital, Nellore district State Andhra Pradesh South India.

Type of Study: This is a two years prospective study.

Place of study: Hair dye poisoning admitted in Narayana Medical College Hospital between the periods July 2012- June 2014.

Material and Methods: All patients admitted and managed for hair dye poisoning were retrieved and data collected. Age, sex, incidence, residence, education and marital status were all recorded on the prepared proforma.

Observation and Discussion: In our study, age wise distribution of 76 cases of paraphenylenediamine (PPD) hair dye poisoning revealed that maximum cases (56.6%) were in the age group 21–30 years with 27.96 ± 11.24 years mean and standard deviation respectively. Hair dye poisoning was common among females (76% of all cases). The incidence of hair dye poisoning was 154.84 patients of hair dye poisoning/1000 cases of all poisoning/year from July 2012 to June 2013 and 112.90 patients of hair dye poisoning/1000 cases of all poisoning/year during July 2013 – June 2014. Rural people (52.60%) consumed hair dye poison more than urban population. More common in under matriculation. Maximum persons (78.9% of all cases) were married.

Conclusion: Trend of hair dye consuming is increasing now a days among young, rural population. It is common among female, married persons and increasing burden on health care institution.

Keywords: Hair dye poisoning; Super vasmol poisoning; Paraphenylenediamine.

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Introduction

Dye is a natural or synthetic substance used to add a colour to or change the colour of something. Hair Dyes are chemicals that are used to change hair colour. Hair colouring has become irresistible fascination to improve physiognomy especially people having grey hair. Hair dyeing is an ancient art and hair colourants are rapidly growing globally. But sometimes it is used to commit suicide. Hair

dye poisoning occurs when someone swallows' dye or tint used to colour hair. Morbidity and mortality due to poisoning have been known to pose a significant burden on the health care institution for a long time. Globally suicide rates have increased by 60% in the last fifty years. Suicide now ranks among the three leading causes of death in the age group between 15 and 44 years.[1] Poisoning by hair dye ingestion is known in African countries. Its systemic toxicity was first documented by Nott H.W dating back to 1924, the victim was owner of a Beauty parlor.[2] Many reports have followed since then from African and the Middle East countries. Suliman SM et al studied 150 cases in between 1983 and 1993 at Khartoum teaching hospital in Sudan and published their study in 1995, noting the clinical and biochemical aspects.[3]

Ayoub Filali et al have undertaken a retrospective study of acute systemic poisoning of paraphenylenediamine (PPD), a principal component of hair dye, in Morocco between 1992-2002 and reported 374 cases, noting demographic aspects. It was found that hair dye poisoning was the second common cause of hospitalization in the I.C.U of the Casablanca University Hospital in 1999 and the first cause for admission in the Emergency Unit (Portes Medicales) of Rabat University Hospital in Moocco.[4] A A Elagmel et al have undertaken a retrospective study of hair dye poisoning complications and management in Khartoum, Sudan during June 2008 to December 2008.[5] In India, P. K. Jain et al. have conducted a prospective study of ingestion of hair dye poisoning in Northern India between July 2004 to March 2009 and clinical manifestations, management, prognosis and outcome were studied.[6] Many case reports are published since then in South India.

In recent years, incidence of hair dye poisoning is on the increase in Andhra Pradesh especially in Hyderabad, Secunderabad, Kadapa, Chittoor and Nellore district. Udaykiran Gella et al conducted a prospective study on prevalence of poisoning cases - focus on hair dye poisoning and he mentioned that 50 people die every year due to hair dye poisoning in Kadapa region.[7] No cases of hair dye poisoning was admitted to Narayana Medical College Hospital until 2004. After that there is increase in frequency in the past 10 years. Raghu Kondle et al8 have conducted a retrospective study of 50 cases admitted in NMCH, during years 2008 -2011.

Aims and Objective

As stated earlier, globally suicides rates have increased by 60% in the last fifty years. Suicide now ranks among the 3 leading causes of death in the young age group and nowadays hair dyes is used to commit suicide. It is emerging as a potential suicidal poison. Morbidity and mortality due to hair dye poisoning have been known to pose a significant burden on the health care institution for a long time. Poisoning is a medicolegal problem also which is alarming and a constant threat to the society. To encounter this problem in a given area, knowledge about hair dye poison is essentials for public and health professional. With this broad view in mind, this study was carried out involving the cases of hair dye poisoning admitted in Narayana Medical College Hospital between the periods July 2012 - June 2014, to achieve the following aims:

- To study the incidence of hair dye poisoning.
- To study demographic features of hair dye poisoning.

Materials and Methodology

Study design: This is a Prospective study which describes incidence and demographic features in hair dye poisoning patients.

Study Settings: Emergency department, HDU, ICU and Medical wards of Narayana medical college and hospital, chinthareddy Pallem, Nellore, a tertiary care teaching hospital.

Ethical approval: The study was approved by the Institutional Ethics Committee of Narayana Medical college Hospital, Nellore.

Subjects

a. Inclusion criteria: All patients who were brought to emergency department and those who were admitted into the HDU, ICU and medical wards of the hospital, with the alleged cause of hair dye ingestion were included in the study after the following exclusion criteria were ruled out.

b. Exclusion criteria: Patients with the following features were excluded from the study

- Those who consumed any other toxic substance or alcohol along with hair dye.
- Known diabetics, hypertensive, asthmatic's and epileptics.
- Those with any significant illness including renal, hepatic or cardiac disease.
- Those with any substance abuse like alcohol, tobacco or other drug abuse.
- Those who were on some form of medical or radiation therapy or surgical intervention within past 3 months of admission.

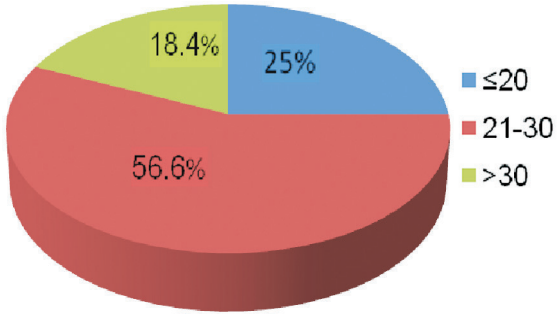
This study was carried out during the period July 2012 - June 2014. Patients of alleged hair dye ingestion were taken up for the study after the exclusion criteria were ruled out. Informed consent was obtained from every patient or patient's relatives. Age, sex, incidence, residence, educational status and marital status were recorded on the prepared proforma.

Observations and Results

In this prospective study a total 558 poisoning cases admitted in Narayana Medical College Hospital, Nellore during the July 2012 to June 2014. Out of 558 cases 76 Super vasmol poisoning cases were included in present study after exclusion criteria were ruled out. Details of patients like age, sex, incidence, residence, education status, marital status were noted. The above details are statistically analyzed and presented below as:

Table 1: Age wise distribution of patients.

Age Group (years)	Frequency	Percent (%)	Mean ± S.D	Range
≤ 20	19	25.0	27.96 ± 11.24	–
21 – 30	46	56.6	–	–
>30	11	18.4	–	55.00
Total	76	100.0	–	–



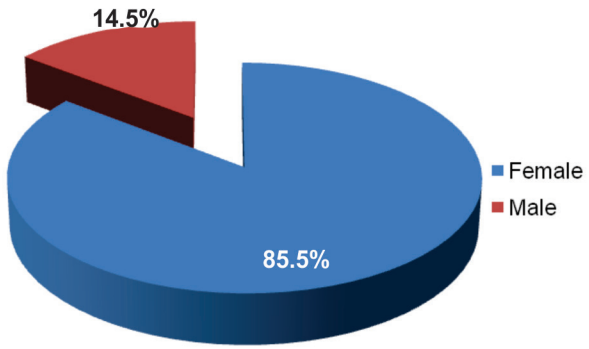
Graph **1:** Age wise distribution of patients.

In our study it was observed that maximum number of hair dye poisoning cases found in the age group 21-30 years (56.6%) followed by the age group ≤ 20 years as depicted in table no.1 and Graph no.1

Table 2: Sex wise distribution of patients.

Sex	Frequency	Percent
Female	65	85.5
Male	11	14.5
Total	76	100.0

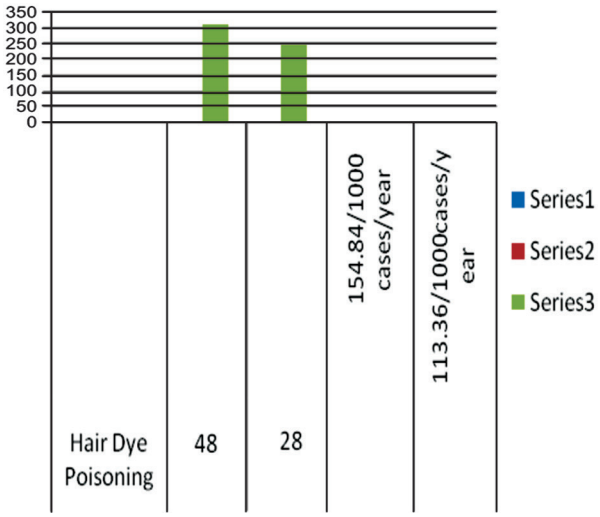
In our study we observed that females (85.5%) outnumbered males (14.5%) as depicted in table no. 2 and graph no. 2.



Graph 2: Sex wise distribution of patients.

Table 3: Incidence of Hair Dye Poisoning.

No. of Poisoning Cases	July 2012 – June 2013	July 2013 – June 2014	Incidence (July2012-June2013)	Incidence (July2013-June2014)
Hair Dye Poisoning	48	28	154.84/1000 cases/year	112.90/1000 cases/year
Total Poisoning	310	248		

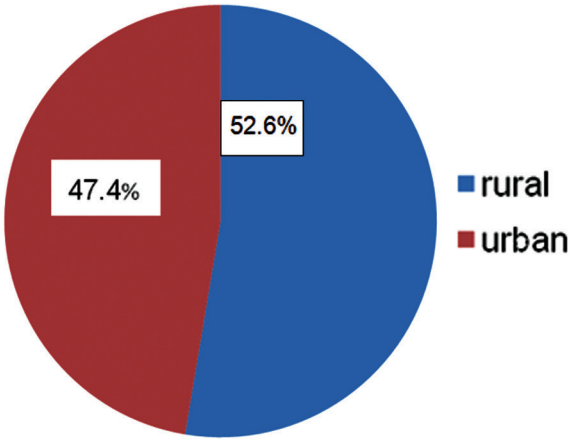


Graph 3: Incidence of Hair Dye Poisoning.

In our study the incidence of super vasmol hair dye poisoning was found 154.84 hair dye poisoning cases/1000 cases of all poisoning/year during July 2012 - June 2013 and 113.36 hair dye poisoning cases/1000 cases of all poison/year during July 2013 - June 2014 as depicted in table no. 3 and bar diagram no. 3

Table 4: Group distribution based on their residence.

Residence	Frequency	Percent
Rural	40	52.6
Urban	36	47.4
Total	76	100.0

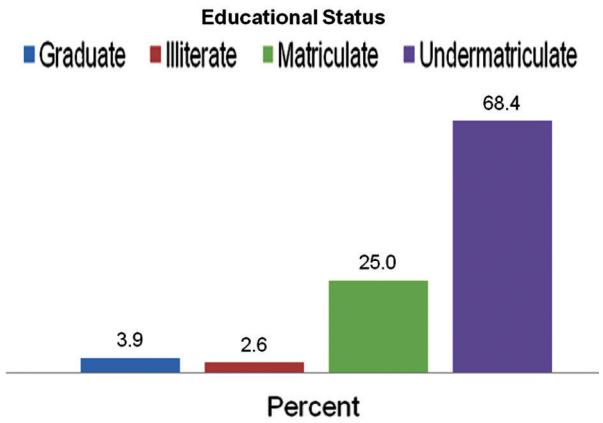


Graph 4: Based on their Residence.

It was observed that majority of patients (52.6%) who consumed hair dye poison, belonged to rural area as depicted in table no.4 and graph no.4

Table 5: Educational status wise distribution of patients.

Educational Status	Frequency	Percent
Graduate	3	3.9
Illiterate	2	2.6
Matriculation	19	25.0
Undermatriculation	52	68.4
Total	76	100.0

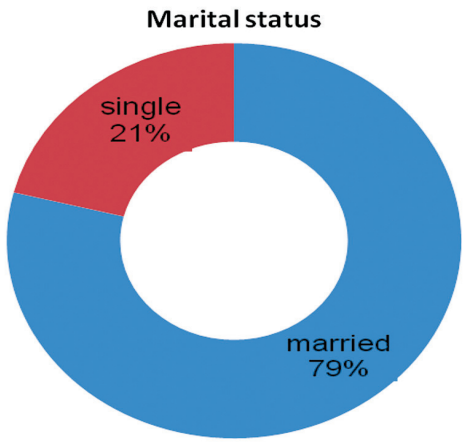


Graph. 5: Educational status.

It was observed that majority of patients (68.4%) were under matriculation standard followed by (25%) matriculation standard as depicted in table no. 5 and graph no. 5.

Table 6: Marital status wise distribution of patients.

Marital Status	Percent
Married	78.9
Single	21.1
Total	100.0



Graph 6: Based on marital status.

Maximum no. of victim (79%) of hair dye poisoning belonged to the married category as depicted in the table no. 6 and graph no. 6.

Discussion

In our study, age wise distribution of 76 cases of PPD hair dye poisoning revealed that maximum cases (56.6%) were in the age group 21–30 years with 27.96±11.24 years mean and standard deviation respectively. Manisha sahay et al[9] had found similar mean age with standard deviation 26.9±4.95 years among patients in their study. R. Ram et al[10] had found mean age with standard deviation 23.2±7.6 years among patients in their study. P. Suneetha et al[11] had also found similar mean age with standard deviation 25.1±9.1 years among patients in their study. Mary Nirmal S et al[12] had found mean age with standard deviation 24.7±6.51 years among patients in their study. Hatem Kallel et al[13] had found similar mean age with standard deviation 27.9 ± 16.8 years among patients in their study.

Bashir Anmed et al[14] had found similar mean age with standard deviation 25.87 ± 5.59 among patients in their study M. A. Akbar et al15 had found mean age with standard deviation 25.5±4.56 years among patients in their study. Study conducted by, Udaykiran Gella et al[7] revealed that hair dye poisoning was more common between the subjects of 12-25 years of age. Study conducted by D. Radhika et al[16]. Revealed that hair dye poisoning is more common between the subjects of 26 - 35 years of age. Study conducted by P. K. Jain et al6 revealed that hair dye poisoning is more common between the subjects of 15 - 25 years of age.

Hence, we can say majority of studies have similar finding regarding age group. Sex wise distribution in our study revealed that hair dye poisoning was more common among females (76%

of all cases). The same pattern was found in Manisha Sahay et al[9] with 80%, Udaykiran Gella et al[7] with 69.95%, D. Radhika et al[16] with 64.77%, P. K. Jain et al[6] with 71.96%, P. Suneetha et al[11] with 70.94%, Sachin S. Soni et al17 with 60%, Mary Nirmala S. et al[12] with 64.81%, Hatem Kallel et al[13] with 63.15%, Bashir Ahmed et al14 with 87.5%, M. A. Akbar et al[15] with 100%, S. M. Suliman et al[3] with 80% and A. A. Elagmel et al[5] with 80.5% female proportion in their study.

Hence, we can say majority of studies have similar finding regarding sex wise distribution of patients. It was observed in our study that the incidence of hair dye poisoning was 154.84 patients of hair dye poisoning/1000 cases of all poisoning/ year from July 2012 to June 2013 and 112.90 patients of hair dye poisoning/1000 cases of all poisoning/ year during July 2013 – June 2014.

We found 76 cases of hair dye poisoning among total number of 558 poisoning cases in Narayana Medical College Hospital, Nellore during a period from July 2012 to June 2014. Udaykiran Gella et a[17] have collected a total number of 680 poisoning cases at RIMS Hospital Kadapa (A.P.) during the period March 2011 to September 2011 and they found that 480 patients among them had consumed super vasmol hair dye poisoning. Hence, we can say hair dye poisonings are notably large in size in this region. Residence wise distribution of hair dye poisoning revealed that more rural people (52.60%) consumed hair dye poison than urban population. Study conducted by C. Sugunakar et al18 and Bashir Ahmed et al[14] also showed similar result.

Hence, we can say this might be due to hair dye is cheap and easily available in market. In our study education status wise distribution of hair dye poisoning revealed that maximum persons were Under Matriculation (68.4% of all cases). Udaykiran Gella et al[7] found that 60% of all case belonged to literate category and remaining 40% are illiterate category. Hence, we can say hair dye poisoning is common in people having low level of education. In our study, marital status wise distribution of patients showed that maximum persons (78.9% of all cases) were married. However, Bashir Ahmed et al[14] found that 56.3 % cases were married. A. A. Elagmel et al[5] study had revealed that only 26% case was married. More prevalent in married people might be because hair dye poisonings are more common in young age group between 20–35 years.

Summary and Conclusion

The incidence of Super vasmol 33 hair dye poisoning has been on a surge for the past 2 - 3 years as has been observed by the increase in number of cases being admitted into the hospitals. The incidence of super vasmol hair dye poisoning was found 154.84 hair dye poisoning cases/1000 cases of all poisoning/ year during July 2012 - June 2013 and 113.36 hair dye poisoning cases/1000 cases of all poison/year during July 2013 - June 2014. Maximum number (56.6%) of hair dye poisoning cases was found in the age group 21 - 30 years followed by the age group ≤ 20 years. Females (85.5%) outnumbered males (14.5%). Majority of patients (52.6%) who consumed hair dye poison, belonged to rural area. Majority of patients (68.4%) were under matriculation followed by (25%) matriculation. Maximum no. of victim (79%) was married.

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