OUTCOME OF DELIBERATE PARAPHENYLINE DI-AMINE INGESTION AMONG YOUNG WOMEN

ABSTRACT

BACKGROUND
Para phenylene diamine (PPD) or black stone, a common hair-dye ingredient in South Asia, has recently emerged as a new means of suicidal attempts in developing countries especially in Asia.
OBJECTIVE To determine the outcome of deliberate Para phenylene di-amine ingestion among young women
METHODOLOGY
This descriptive analysis was conducted upon a sample of 400, young women (aged 18 to 35 years) presenting to the emergency department from June 2019 to December 2021, with deliberate Para phenylene di-amine ingestion. After taking written informed consent, the data was recorded onto a structured questionnaire containing inquiries pertaining to basic biodata, socioeconomic details, time elapsed since ingestion, clinical signs and symptoms and the outcome (within 24 hours).
RESULTS
The mean age of the sample stood at 23 (SD ± 2) years. Out of the total 400 cases of deliberate ingestion reporting to the study setting, 19 were asymptomatic and were discharged after initial care. Among the symptomatic patients, 212 (53%) recovered within 12 hours without need for intensive care, while 139 (34.75%) needed admission to intensive care unit, following which a full recovery was achieved within 24 hours (98 patients) or more (31 patients), while the remaining 10 patients succumbed to the poisoning. 30 patients reached the hospital in critical state and died in the emergency department. CONCLUSIONS The cumulative mortality rate recorded in the research was 10%. Factors such as time between ingestion and presentation to the hospital, the quantity of ingestion and the general health status, affected the outcome of the patient. KEYWORDS Poisoning, Para Phenylene Di Amine, Attempted Suicide, Hair Dye and Toxicity

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1. INTRODUCTION

IN RECENT TIMES, THE INCIDENCE OF DELIBERATE SELF-HARM AND SUICIDE HAS WITNESSED A STEEP RISE OF EPIDEMIC PROPORTIONS ACROSS THE WORLD. DATA FROM THE WORLD HEALTH ORGANIZATION (WHO) REVEALED THAT OVER 0.87 MILLION SUICIDES TOOK PLACE GLOBALLY, WITH MANY MORE CASES OF DELIBERATE SELF-HARM BEING REPORTED: ADDING TO THE ALREADY HIGH RATES OF PREMATURE MORTALITY. [1] AMONG THE MANY METHODS EMPLOYED TO INFLICT DELIBERATE SELF-HARM OR COMMITTING SUICIDE, POISONING REMAINS THE COMMONEST, ESPECIALLY IN THE ASIAN COUNTRIES. [1] THE REGION FACES MARKED SOCIOECONOMIC, DISPARITY AND LOW STANDARDS OF LIVING, [2, 3] SERVING AS A CATALYST FOR POOR MENTAL HEALTH AND EXPLAINING THE REPORTS CLAIMING AN INCIDENCE OF OVER 0.5 MILLION SUICIDAL CASES PER YEAR. IT IS INTERESTING TO NOTE THAT DELIBERATE INGESTION OF POISONS AND TOXIC AGENTS READILY AVAILABLE AT HOME (PESTICIDES AND HAIR DYES) SERVE AS THE MEANS FOR 0.3 MILLION OF THE CASES. [4, 5] MOREOVER, RECENT REPORTS SUGGEST THAT POISONOUS AGENTS READILY AVAILABLE AT HOME SUCH AS PESTICIDES AND HAIR DYES ARE AT PRESENT, THE COMMONEST MEANS OF COMMITTING SUICIDE GLOBALLY. [6] NONETHELESS, A MAJOR PROPORTION OF THE USAGE STEMS FROM THE DEVELOPING WORLD, AND IN COMPARISON, THE AGENTS OF CHOICE IN THE DEVELOPED WORLD USE OTHER PHARMACOLOGICAL AGENTS SUCH AS INSULIN AND PARACETAMOL. [7] THE CUMULATIVE CASE FATALITY (ATTRIBUTED TO POISONING) IS RECORDED TO BE AS HIGH AS 20%, [8] AND THUS, ARE RESPONSIBLE FOR STEEP RISE IN THE PREMATURE MORTALITY RATES WORLDWIDE AND MOST NOTABLY THE RURAL AREAS OF THE DEVELOPING WORLD. [9] PARA PHENYLENE DIAMINE (PPD) OR BLACK STONE, A COMMON HAIR-DYE INGREDIENT IN SOUTH ASIA, HAS RECENTLY EMERGED AS A NEW MEANS OF SUICIDAL ATTEMPTS IN DEVELOPING COUNTRIES ESPECIALLY IN ASIA AND AFRICA. [10, 11] FEMALES DOMINATE THE DEMOGRAPHY OF CULPRITS COMMITTING THE MISUSE OF PPD, PARTICULARLY THE YOUNG-AGED GROUP (15-35 YEARS). [4] MANY VULNERABLE GROUPS ARE IDENTIFIED, TO BE RESPONSIBLE FOR THE STEP RISE IN THE DELIBERATE SELF-HARM AND POISONING CASES IN THE DEVELOPING WORLD; CHIEF AMONG WHICH ARE YOUNG-AGE, FEMALE GENDER, MARRIED INDIVIDUALS, LOW SOCIOECONOMIC CLASS, UNEMPLOYED INDIVIDUALS, AND MENTALLY DISTRESSED INDIVIDUALS. THIS COUPLED WITH THE EASE OF ACCESS TO THE DELETERIOUS AGENTS IS A DEADLY PROBLEM. [12, 13]

THE RATES OF SELF-HARM RATES PEAK IN THE POPULATION OF 15–24-YEAR-OLDS AND ARE GENERALLY HIGHEST AMONG WOMEN DUE TO THE TENDENCY OF YOUNG PEOPLE, PARTICULARLY FEMALES, TO ENGAGE IN IMPULSIVE ACTS OF SELF-HARM. [4] IT HAS BEEN REPORTED THAT DELIBERATE POISON INGESTION IS A COMMON METHOD OF SELF-POISONING AND SUICIDE AND RESEARCH FROM PAKISTAN HAS NOTED THE USAGE OF PARA PHENYLENE DIAMINE AMONG OTHER AGENTS. [14, 15].

2. MATERIAL AND METHODS.

AFTER DUE APPROVAL FROM THE INSTITUTIONAL ETHICAL COMMITTEE, THIS DESCRIPTIVE ANALYSIS WAS CONDUCTED UPON A SAMPLE OF 400, YOUNG WOMEN (AGED 18 TO 35 YEARS) PRESENTING TO THE EMERGENCY DEPARTMENT FROM JUNE 2019 TO DECEMBER 2021, WITH DELIBERATE PARA PHENYLENE DI-AMINE INGESTION. AFTER TAKING WRITTEN INFORMED CONSENT, THE DATA WAS RECORDED ONTO A STRUCTURED QUESTIONNAIRE CONTAINING INQUIRIES PERTAINING TO BASIC BIODATA, SOCIOECONOMIC DETAILS, TIME ELAPSED SINCE

INGESTION, CLINICAL SIGNS AND SYMPTOMS AND THE OUTCOME (WITHIN 24 HOURS). THESE PATIENTS WERE INITIALLY ADMITTED TO THE EMERGENCY DEPARTMENT AND WERE THEN, SHIFTED TO THE DEPARTMENT OF MEDICINE FOR MANAGEMENT.

RESULTS

THE MEAN AGE OF THE SAMPLE STOOD AT 23 (SD ± 2) YEARS. Table 1

AGE GROUP	FREQUENCY	PERCENTAGE
UP TO 20	28	7%
21-25	292	73%
26-30	47	11.75%
31-35	33	8.25%

OUT OF THE TOTAL 400 CASES OF DELIBERATE INGESTION REPORTING TO THE STUDY SETTING, 19 WERE ASYMPTOMATIC AND WERE DISCHARGED AFTER INITIAL CARE. AMONG THE SYMPTOMATIC PATIENTS, 212 (53%) RECOVERED WITHIN 12 HOURS WITHOUT NEED FOR INTENSIVE CARE, WHILE 139 (34.75%) NEEDED ADMISSION TO INTENSIVE CARE UNIT, FOLLOWING WHICH A FULL RECOVERY WAS ACHIEVED WITHIN 24 HOURS (98 PATIENTS) OR MORE (31 PATIENTS), WHILE THE REMAINING 10 PATIENTS SUCCUMBED TO THE POISONING. 30 PATIENTS REACHED THE HOSPITAL IN CRITICAL STATE AND DIED IN THE EMERGENCY DEPARTMENT.

Table 2: OUTCOME

CURED		EXPIRED	
WITHOUT NEED FOR ICU	WITH NEED FOR ICU	DESPITE ICU ADMISSION	EXPIRED BEFORE INTERVENTION
231	129	32	08

TABLE 3- FACTORS AFFECTING SURVIVAL

VARIABLE		CURED	EXPIRED	P VALUE
AGE	UP TO 20	26	02	0.032
	21-25	256	36	0.177
	26-30	46	01	0.112
	31-35	32	01	0.129
	LESS THAN 4 HOURS	208	07(3.4%)	0.127
	MORE THAN 4 HOURS	152	33(21.7%)	0.046
TIME ELAPSED SINCE INGESTION	UP TO 24 HOURS	236	30	0.110
HOSPITAL STAY	MORE THAN 24 HOURS	124	10	0.0493

DISCUSSION

ACCESS TO POISONS IS EFFECTIVELY BEING LIMITED WORLDWIDE. GOVERNMENTAL LAWS AND REGULATIONS BY DRUG AGENCIES HAVE MADE MOST PHARMACOLOGIC AGENTS (WITH POSSIBLE LETHAL AFFECTS ASSOCIATED WITH OVERDOSE) IN-ACCESSIBLE. INDIVIDUALS LOOKING TO AFFLICT SELF-HARM HAVE THUS RESORTED TO NEWER MORE ACCESSIBLE AGENTS; ONE AMONG WHICH IS PARA PHENYLENE DIAMINE. [4, 15] PARA PHENYLENE DIAMINE (PPD) IS A COMMON INGREDIENT IN MANY HAIR-DYES USED IN THE INDIAN SUBCONTINENT AND PARTS OF AFRICA. [10, 11] SINCE FEMALES FEMALES DOMINATE THE DEMOGRAPHY OF CULPRITS COMMITTING THE MISUSE OF PPD (IN THE RANGE OF 56**%** TO 85% SPECIFICALLY IN YOUNG POPULATION), PARTICULARLY THE YOUNG-AGED GROUP (15-35 YEARS). [16 - 19] MANY VULNERABLE GROUPS ARE IDENTIFIED, TO BE RESPONSIBLE FOR THE STEP RISE IN THE DELIBERATE SELF-HARM AND POISONING CASES IN THE DEVELOPING WORLD; CHIEF AMONG WHICH ARE YOUNG-AGE, FEMALE GENDER, MARRIED INDIVIDUALS, LOW SOCIOECONOMIC CLASS, UNEMPLOYED INDIVIDUALS, AND

MENTALLY DISTRESSED INDIVIDUALS. [12, 13] IN THIS RESEARCH, THE MEAN AGE OF THE STUDY SAMPLE WAS 23 YEARS AND FALLS WELL-WITHIN THE AGE BRACKETS REPORTED TO BE COMMON VICTIMS BY PUBLISHED EVIDENCE (IN THE RANGE OF 24.7 TO 27.7 YEARS). [20, 21] STUDIES REPORT THAT PPD MISUSE AND INCUMBENT POISONING IS SPECIFICALLY OBSERVED IN THE YOUNGER AGE (15 TO 24 YEARS). [4, 15] THIS PREPONDERANCE OF YOUNG FEMALES INCLINED TO SELF-POISONING WARRANTS AN IMMEDIATE PUBLIC HEALTH ATTENTION FOR THE STAKEHOLDERS AND POLICY MAKERS. ALTHOUGH THE PRESENT STUDY EXTENDS THE PREVIOUS WORK ON POISONING CASES IN PAKISTAN, THERE ARE SOME LIMITATIONS THAT SHOULD BE ADDRESSED; NAMELY THE FACT THIS WAS A SINGLE CENTER STUDY AND IN FUTURE MORE CENTERS MAY BE INVOLVED, AND A WIDER SAMPLE SIZE BE RESEARCHED.

CONCLUSIONS

THE CUMULATIVE MORTALITY RATE RECORDED IN THE RESEARCH WAS 10%. FACTORS SUCH AS TIME BETWEEN INGESTION AND PRESENTATION TO THE HOSPITAL, THE QUANTITY OF INGESTION AND THE GENERAL HEALTH STATUS, AFFECTED THE OUTCOME OF THE PATIENT.

CONSENT

AS PER INTERNATIONAL STANDARDS OR UNIVERSITY STANDARDS, PATIENTS WRITTEN CONSENT HAS BEEN COLLECTED AND PERSERVED BY THE AUTHOR(
S).

ETHICAL APPROVAL:

AS PER INTERNATIONAL STANDARDS OR UNIVERSITY STANDARDS,WRITTEN ETHICAL APPROVAL HAS BEEN COLLECTED AND PRESERVED BY THE AUTHOR(S).

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