ORIGINAL ARTICLE

Evaluating the HEADS-ED screening tool in pediatric poisoning cases

Manuprakash S K[1], Shashidara V S[2] , Srinivasa B S[3] , Sneha G[4*], Sriranjini K S[5], Nivedita Rathod[6], Rakesh V A[7]

[1]Department ofPediatrics, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[2]Department ofPediatrics, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[3]Department ofPediatrics, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[4]Department ofPediatrics, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[5]Department ofPediatrics, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[6]Department ofPediatrics, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[7]Department ofPediatrics, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

***Corresponding author:Dr. Sneha G**
Department of Pediatrics,
Hassan Institute of Medical Sciences,
Hassan, Karnataka, India
Phone (or Mobile) No.: 9036218672
Email id : snehag2412@gmail.com

INTRODUCTION

India is home to the largest number of adolescents globally, comprising about a fifth of its population (243 million).A meta-analysis reports that 6.5% of the community and 23.3% of school children and adolescents have psychiatric disorders.

India has the highest youth suicide rate globally, and suicide is the leading cause of mortality in this population. The National Mental Health Survey (2015–2016) reported a 7% prevalence of psychiatric disorders in 13–17 years and was nearly equal among both the genders.The overall impact of mental illnesses on society is enormous, and the awareness about the severity of mental health diseases is very poor. Most mental disorders begin before 25 years of age, more often between 11–18 years.The burden associated with common mental disorders (depressive and anxiety disorders) rises in childhood and peaks in adolescence and early to middle age (10–29 years).

A meta-analysis estimated that the global prevalence for any mental disorder among children and adolescents is 13.4%.Multiple factors are associated with poor mental health among adolescents, including domestic violence, child abuse, bullying, peer pressure, substance abuse, human immunodeficiency virus (HIV) infection, and teenage pregnancy.Transition through stressful and unhealthy adolescence with a high burden of mental disorders can impact their health and well-being later in life.

With the COVID-19 national lockdowns, adolescents have gone through acute and chronic stress because of parental anxiety, disruption of daily routines, increased family violence, and home confinement with little or no access to peers, teachers, or physical activity.Thus, it is an opportune time to explore the paradigm of mental health awareness as a means for combating stigma, enhancing prevention, ensuring early recognition, and stimulating simple and practical interventions within the community.

The HEADS-ED tool is an easy-to-use, brief, communimetric -based tool, that is used to guide the clinician psychosocial assessment in the areas of home; education; activities and peers; drugs and alcohol; suicidality; emotions, thoughts, and behaviors; and discharge resources.Each item is rated as a score of 0 (no action needed), 1 (action needed but not immediate), or 2 (immediate action needed).

METHODS

All childrenwith history of consumption of poisonadmitted from December-22 to April- 23 between age group of 10 to 18 years, Department of Paediatrics, HIMS Hospital, Hassan were screened using HEADS ED tool by the principal investigator after obtaining consent from participating individual. The questionnaire is explained by the investigator to the participating individual/guardian in their own understandable language and based on scores obtained, the next step of care will be decided. The HEADS ED toolis a communimetric tool that is used to capture key information and identify areas of need across 7 variables: home; education; activities and peers; drugs and alcohol; suicidality; emotions, thoughts, and behaviors; and discharge resources.Three nonarbitrary ordinal categories are used to indicate level of action required: no action needed (0), action needed but not immediately(1) and immediate action required(2).This screening tool provides a guided clinical severity and scoring system to aid in decision-making of appropriate next step of care.A higher total score indicates a greater need for immediate action[2,3]

RESULTS

Shows gender distribution with majority being females (Table 1).

Shows class of compounds used and most common being organophosphorous (Table 2).

Shows psychiatric diagnosis made and most common being impulsive suicidal attempt followed by accidental consumption (Table 3).

Shows HEAD-ED scoring analysis with maximum patients scoring 2 in parameter suicidality with 80% followed by education with 45% and home with 44.3% (Table 4).

Shows descriptive statistics with mean age being 15.3 (Table 5).

Shows test statistics involving parameters like HR, RR and Spo_2 with respect to age applying Kruskal Wallis H and statistical significance seen in HR and RR (Table 6)

Shows test statistics involving parameters like age, HR, RR and Spo_2 with respect to psychiatric diagnosis applying Kruskal Wallis H and statistical significance is seen with each parameter (Table 7)

Shows test statistics involving parameters of HEADS-ED and applying Kruskal Wallis H statistical significance seen in parameters like HOME, EDUCATION, DRUGS AND ALCOHOL, SUICIDALITY and EMOTIONS/BEHAVIOUR/THOUGHT DISTURBANCES (Table 8)

Shows scoring in ACTIVITY parameter with 18 patients scoring 2 (Graph 1)

Shows scoring in HOME parameter with 31 patients scoring 2 (Graph 2)

Shows scoring in EDUCATION parameter with 32 patients scoring 2 (Graph 3)

Shows scoring in EMOTION/BEHAVIOUR/THOUGHT DISTURBANCE parameter (Graph 4)

Shows scoring in SUICIDALITY parameter with 52 patients scoring 2 (Graph 5)

DISCUSSION

Adolescents form 18% of India's population, and suicide is the third leading cause of adolescent mortality.Only 1% of the pediatric population with mental disorders seeks treatment, due to the scarcity of mental health services and the social stigma.The National Mental Health survey (2015-2016), reported a 7.3% prevalence of mental disorder in adolescents, higher in urban metro regions with similar distribution between males and females.Half of the mental illnesses begin by the age of 14 years.

In 2021, UNICEF reported a two times increase in prevalence of adolescent mental disorders due to pandemic related stressors.The risk of suicides among adolescents in India is 1.3%.Among high school students, the prevalence of suicide ideation is 6.0-21.7% and of suicide attempts is 0.39-8%. In adolescents with mental disorders, the estimated risk of suicide is 47-74%.

In 2020, one adolescent committed suicide approximately every hour with more girls than boys. Hanging, poisoning, drowning and selfimmolation were the main modes of committing suicide. Family problems (35%), break-up in romantic relationships (12%), physical and mental illness (12%) and failure in examinations (10%) were the main causes of suicide in adolescents

There is a need to stepped care approach to pediatric mental healthcare with active involvement of non specialists.As pediatricians share a long standing rapport with families, parents often seek their advice for management of adolescent mental health issues. Majority of the adolescent suicides are impulsive and timely intervention can save young lives

Suicide occurs due to a dynamic interaction between numerous biopsychosocial factors. Ninety percent of suicidal attempts among adolescents are impulsive. Adolescents have a high emotional reactivity due to differential maturation of the parts of the brain in this phase of life which makes them prone to impulsive behavior, especially in emotionally charged situations and conditions of extreme distress.

A major life stressor like a break up of an intimate relationship, academic failure, adverse influences of digital and social media and availability of lethal means of committing suicide can trigger suicide. Our study included 70 poisoning cases in the age group 10 to 18 years with female predominance of 77% and males were 23%. The most common mode of suicide was poison consumption and most common compound being organophosphorous

All the cases were assessed using HEADS-ED psychosocial interviewing framework, in privacy and after explaining the limits of confidentiality. Questions framed were short, non-judgmental and in developmentally appropriate language.Collateral information was obtained from parents and peers.

Referral for a specialized mental health assessment was considered if the total sum score is > 8 and/or the "Suicidality" item is rated as a 2. Out of 70, 56(80%) cases scored 2 for suicidality. The most cause for consumption being impulsive behaviour in 53 (75%) ; accidental in 13 (18%) ; adjustment disorder in 2 (3%) and impulsive behaviour with alcohol abuse in 8 (11%)

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DECLARATIONS

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Conflict of interest: the authors declare no conflict of interest.

Ethical approval: received

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References should be numbered consecutively as they appear in the text. Reference citations in the text should be identified by numbers in superscript after the punctuation marks. All authors should be quoted for papers with up to six authors; for papers with more than six authors, the first six should be quoted followed by et al.

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metformin monotherapy. Diabetes ObesMetab 2006;8(2):156-63.

Book chapter:

O'Brien C. Drug addiction and drug abuse. In: Brunton LB, Lazo JS, Parker KL, eds.Goodman & Gilman's The Pharmacological Basis of Therapeutics. 11th ed. New York, NY: McGraw-Hill; 2005: 607-629.

Website:

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Table 1:

Sex	**N**	**%**
Female	54	77.1%
Male	16	22.9%

Table 2:

CLASS OF COMPOUND	**N**	**%**
3% phosphorous	13	18.6%
carbamate	1	1.4%
cypermethrin	3	4.3%

glyphosate	4	5.7%
kerosene consumption	2	2.9%
multiple tab consumption	11	15.7%
napthalene balls consumption	1	1.4%
organophosphorus	16	22.9%
paint thinner	1	1.4%
propranolol tablets	1	1.4%
silkworm insecticide	1	1.4%
thyroxine tablets	1	1.4%
unknown compound	13	18.6%
unknown tablet consumption	2	2.9%

Table 3:

PSYCHIATRIC DIAGNOSIS	**N**	**%**
Accidental	13	18.6%
Impulsive Suicidal Attempt	53	75.7%

Impulsive Suicidal Attempt and Adjustment Disorder	2	2.9%
Impulsive Suicidal Attempt and alcohol abuse	2	2.9%

Table 4:

HOME				
		%	%	%
0	39	55.7%	55.7%	55.7%
2	31	44.3%	44.3%	100.0%
EDUCATION				
		%	%	%
0	38	54.3%	54.3%	54.3%
2	32	45.7%	45.7%	100.0%
ACTIVITIES				

	N	%	%	%
0	52	74.3%	74.3%	74.3%
2	18	25.7%	25.7%	100.0%
DRUGS & ALCOHOL				
	N	%	%	%
0	62	88.6%	88.6%	88.6%
2	8	11.4%	11.4%	100.0%
SUICIDALITY				
	N	%	%	%
0	14	20.0%	20.0%	20.0%
2	56	80.0%	80.0%	100.0%
EMOTIONS/BEHAVIOUR/THOUGHT DISTURBENCES				
	N	%	%	%
0	69	98.6%	98.6%	98.6%
1	1	1.4%	1.4%	100.0%

Table 5:

Descriptive Statistics						
	N	Min	Max	Mean	SD	Variance
TOTAL	70	0	10	4.16	2.967	8.801
Age	70	10	18	15.33	2.257	5.093
Valid N (listwise)	70					

Table 6:

Test Statistics [a,b]			
	HR	RR	SPO2
Kruskal-Wallis H	18.154	20.730	10.911
Df	6	6	6
p value	0.006	0.002	0.091
a. Kruskal Wallis Test			
b. Grouping Variable: TOTAL			

Table 7:

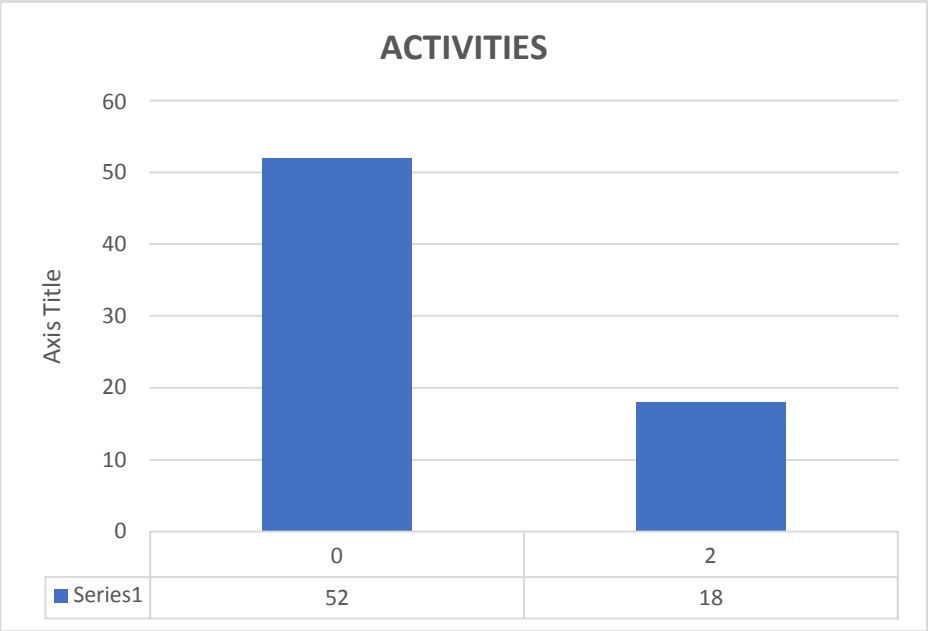
Test Statistics[a,b]

	TOTAL	age	HR	RR	SPO2
Kruskal-Wallis H	31.712	32.876	11.470	18.800	8.898
Df	3	3	3	3	3
p value	0.000	0.000	0.009	0.000	0.031
a. Kruskal Wallis Test					
b. Grouping Variable: VAR00001					

Table 8:

Test Statistics[a,b]					
	TOTAL	age	HR	RR	SPO2
Kruskal-Wallis H	31.712	32.876	11.470	18.800	8.898
df	3	3	3	3	3
p value	0.000	0.000	0.009	0.000	0.031
a. Kruskal Wallis Test					
b. Grouping Variable: VAR00001					

Graph 1:



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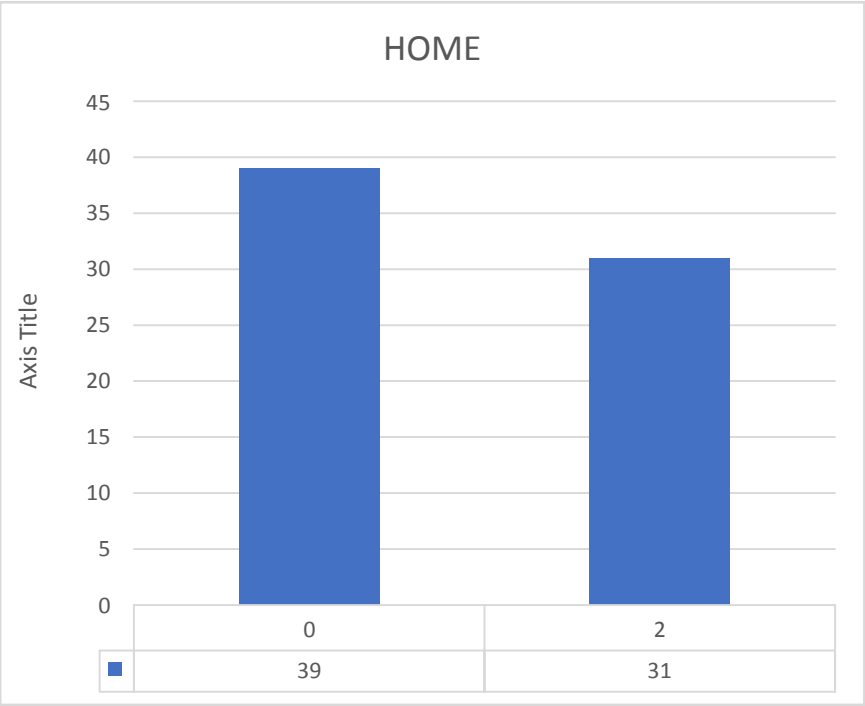

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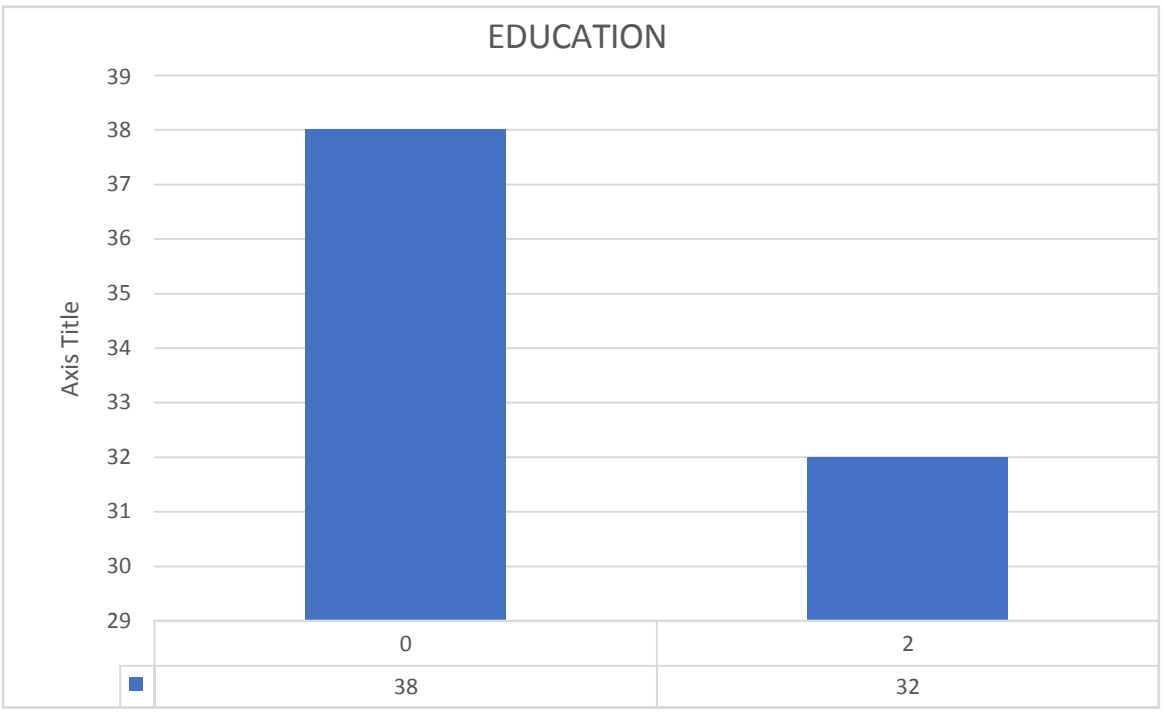

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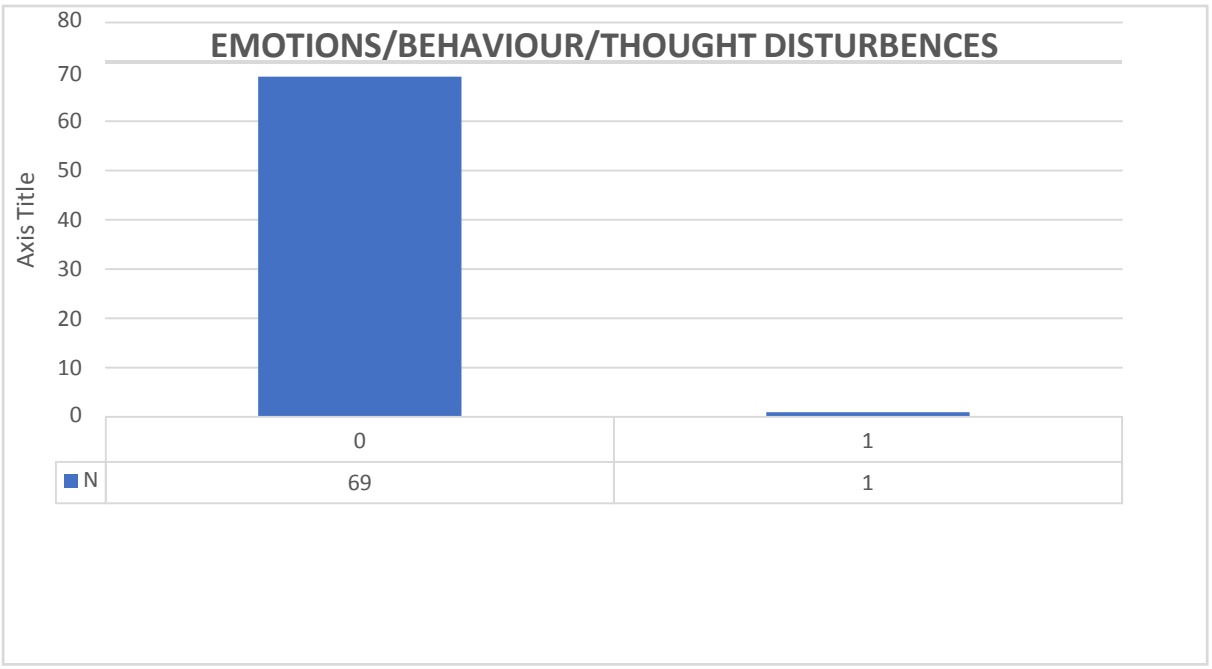
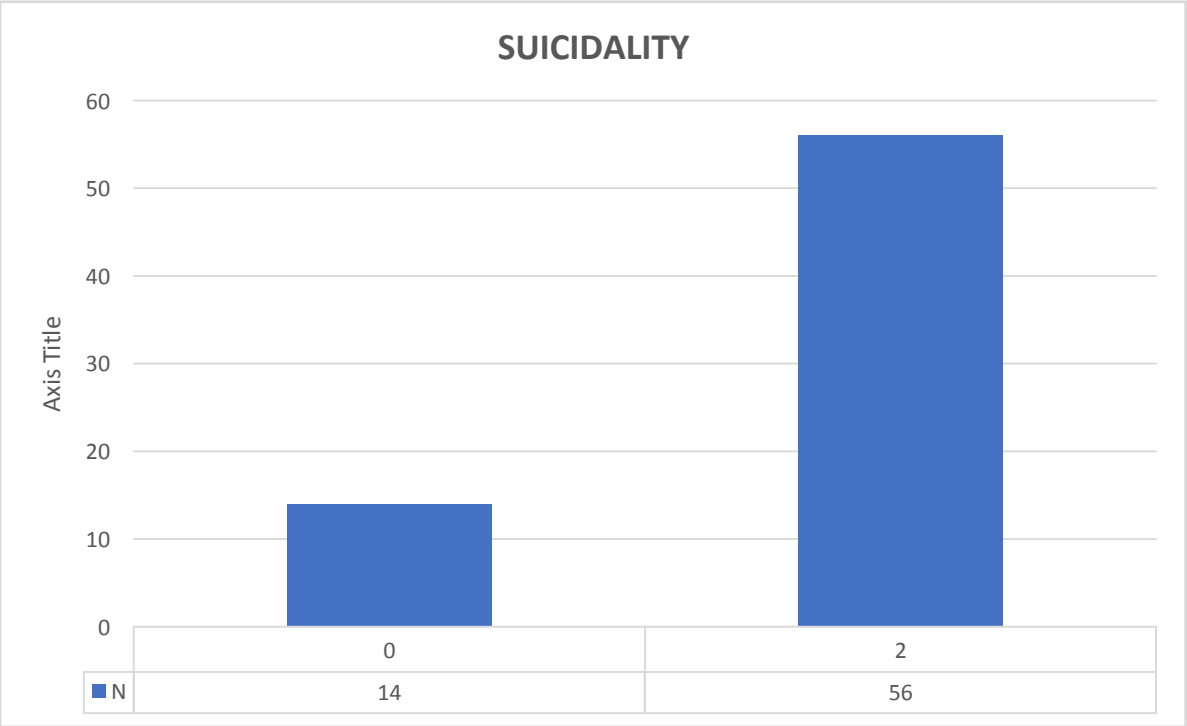


Graph 5:


SUICIDALITY
Axis Title
60
50
40
30
20
10
0
0
2
N
14
56