Original Research Article

A study of clinic socio demographic profile of the patients admitted and referred with heat related illnesses in last three years at tertiary health care centre of Latur, Maharashtra

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Abstract

Background: In India, generally heat waves are experienced during the summer months of March, April and May, and from time-to-time, deaths due to heat waves have been reported from several parts of the country. **Aim and Objectives:** To Study clinic socio Demographic profile of the patients admitted and referred with heat related illnesses in last three years at tertiary health care centre of Latur, Maharashtra. **Methodology:** This was a cross-sectional study carried out in the patients admitted with heat related illness during the months of March to May -2017 to 2019. In the 3 years duration there were 455 patients were admitted in the ward. In the Government Medical college and Hospital Latur, Maharashtra. All this data was entered to Excel sheet and analyzed by Excel software for Windows 10. **Result:** The majority of the patients were in the age group (Years.) of 36-48 were 29.89%, followed by 48-60 were 14.29%, 24-36 were 12.75%, 60-72 were 10.77%, 1-12 were 9.89%, 12-24 Were 8.57%, >72 were 8.35%, <1 were 5.49%. The majority of the patients were Male i.e. 64.18 % followed by 35.82and were Females. By Occupation Agricultural –laborer were 25.71%, followed by Student -18.68%, Dependant -15.16%, Unemployed were 11.65%, Occupation Not applied in 10.33%, Owner and cultivator 6.59 Others- 6.37%, Employed were 2.86%, Own –business were 2.64%. **Conclusion:** It can be concluded from our study that most of the patients were from the age 36-48 Years. age group, more common in males and by occupation Agricultural laborers and student were mostly affected and Fever, muscle weakness were most common clinical presentation and majority of the patients occurred in the months of May.

Key Words: Heat related illnesses, Heat stroke, Heat exhaustion, Hyperpyrexia.

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INTRODUCTION

In India, generally heat waves are experienced during the summer months of March, April and May, and from time-to-time, deaths due to heat waves have been reported from several parts of the country. Between 2001 and 2012[1], heat stroke accounted for 4% of all deaths from natural calamities, with a marked rise seen in recent years. According to the India Meteorological Department (IMD), over the past half century (1961 to 2010) heat wave[2] frequencies have increased by a third.[3] With the rise in average global temperature, a further increase in the number of hot days and greater frequency and severity

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of heat waves is expected. The risk of morbidity and mortality related to heat stress will continue to increase. Hence, effects of heat stress on human health are becoming an issue of growing concern in India[4] .In India, deaths due to heatstroke rose to more than 2500 in 2015—five times that in 2001.[5] This increase in the number of deaths due to heatstroke is probably related to climate change and increase in frequency and intensity of heatwaves.[6]Being so common problem we have studied various clinical and soico- demographic factors associated with patients heat related illness in the admitted patients of tertiary health care centre**.**

METHODOLOGY

This was a cross-sectional study carried out in the patients admitted with heat related illness during the months of March to May -2017 to 2019. In the 3 years duration there were 455 patients were admitted in the ward. The related data was extracted from the Medical Record Department (MRD) attached to department of Community Medicine of Government Medical college and Hospital Latur, Maharashtra. All details of the patients like age, sex, Occupation, Clinical Features if any were recorded. The no. of patients admitted in the Months of March to May 2017 to 2019 was also noted. All this data was entered to Excel sheet and analyzed by Excel software for Windows 10.

RESULTS

Table 1: Distribution of the patients as per the age

Age	No.	Percentage (%)
<1	25	5.49
1-12	45	9.89
12-24	39	8.57
24-36	58	12.75
36-48	136	29.89
48-60	65	14.29
60-72	49	10.77
>72	38	8.35
Total	**455**	**100.00**

The majority of the patients were in the age group (Years.) of 36-48 were 29.89%, followed by 48-60 were 14.29%, 24-36 were 12.75%, 60-72 were 10.77%, 1-12 were 9.89%, 12-24 Were 8.57%, >72 were 8.35%, <1 were 5.49%.

Table 2: Distribution of the patients as per the sex

Sex		
Male	292	64.18
Female	163	35.82
Total	**455**	**100.00**

The majority of the patients were Male i.e. 64.18 % followed by 35.82and were Females.

Table 3: Distribution as per the Occupation

Occupation	No.	Percentage (%)
Owner and cultivator	29	6.37
Employed	47	10.33
Own –business	12	2.64
Student	85	18.68
Agricultural –laborer	117	25.71
Dependant	69	15.16
Unemployed	53	11.65
Others	13	2.86
Not applied	30	6.59
Total	**455**	**100.00**

By Occupation Agricultural –laborer were 25.71%, followed by Student -18.68%, Dependant -15.16%, Unemployed were 11.65%, Occupation Not applied in 10.33%, Owner and cultivator 6.59Others- 6.37%, Employed were 2.86%, Own –business were 2.64%.

Table 4: Distribution of the patients as per the clinical features of the patients

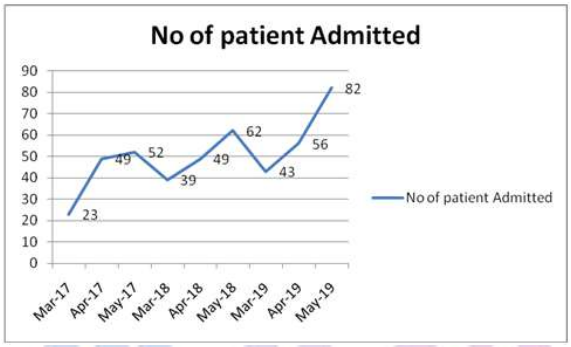
Clinical features	No.	Percentage (%)
Fever	455	100.00
Muscle weakness and Cramps	392	86.15
Dehydration	387	85.05
Tachycardia	252	55.38
Throbbing headache	182	40.00
Confusion	169	37.14
Heat syncope (fainting)	92	20.22

(*More than on clinical features present in a patients so total may be more than 455)

All the patients were having Fever i.e. in 100.00, Muscle weakness and Cramps present in 86.15%, Dehydration were 85.05 %, Tachycardia present in 55.38%, Throbbing headache in 40.00%, Confusion present in 37.14%, Heat syncope (fainting) present in 20.22%.

Table 4: Distribution of the patients as per the monthly (March-May) patients admitted to the hospital

Temperature *	Mar-17	Apr-17	May-17	Mar-18	Apr-18	May-18	Mar-19	Apr-19	May-19	Total
No. of patients Admitted	23	49	52	39	49	62	43	56	82	455



Graph 1: Distribution of the patients as per the monthly (March-May) patients admitted to the hospital

No. of patients Admitted in Mar-17, Apr-17, May-1 were - 23, 49, 52 respectively; Mar-18, Apr-18, May-18 were 39, 49, 62 respectively. Mar-19, Apr-19, May-19 were 43, 56, 82 respectively.

DISCUSSION

Heatstroke (HS) (or sunstroke) is the most serious form of heat-related illness and is a medical emergency. It is caused by an excessive rise in deep body temperature due to thermoregulatory failure and is characterized primarily by hyperthermia usually with core temperature above 40.6°C (105°F), due to environmental heat exposure with lack of thermoregulation and usually complicated with central nervous system dysfunction, metabolic derangement, and coma. HS is the most severe form of the heat-related illnesses so it must be distinguished from heat exhaustion, sepsis, diabetic ketoacidosis, closed head trauma, malignant hyperthermia, encephalitis, cerebral malaria, cerebral hemorrhage, amphetamine and cocaine toxicity, strychnine poisoning etc., This is a distinct form of a fever, where there is a physiological increase in the temperature set point of the body. It carries a high mortality nearly 80% if effective treatment is not given immediately.[7]With the influence of global warming, it is predicted that the incidence of HS cases and fatalities will become more prevalent. Due to temperature extremes in summer (May–June) in the vast expanses of gangetic and peninsular India (Uttar Pradesh, Bihar, Orissa, Madhya Pradesh, Maharashtra, Rajasthan, and Andhra Pradesh heat-related illness assumes an important public health dimension. India faced the worst heat wave in 1998 when 2600 deaths were reported in a span of 10 weeks. Over 1000 people perished in 2002 due to heat wave when the temperature crossed 122°F, in 2003 heat wave 1600 died of which 1200 were reported from Andhra Pradesh. During the 2005 heat wave, primarily affecting Andhra Pradesh, Orissa, and neighboring Bangladesh, mainly women, children, and people below the poverty line, were taken ill. An epidemiologic study in the United States estimated the incidence of heatstroke 17.6–26.5 per 100,000 population. In a similar study in Saudi Arabia, the incidence varied from 22 to 250 cases per 100,000 populations with a crude mortality rate of 50%.[8] The guidelines on when to declare a heat wave vary. The National Disaster Management Authority guidelines combine temperature, humidity and altitude.[9] Heat wave conditions according to IMD are defined as any increase

in temperature above the normal. An increase of >5–6°C is considered to be a moderate heat wave; >7°C as a severe heat wave or >45°C for more than 2 consecutive days Heat exhaustion is associated with fatigue, dizziness, headache, nausea, vomiting, malaise, hypotension and tachycardia and signs of dehydration with core temperature varying from 37°C to 39°C. Infants and newborns may be too hot to touch and drowsy during the day and older children (having played outdoors) may be brought by their parents with adult-like complaints. Unless rehydration is initiated and intravascular volume corrected, it can progressively worsen leading to heatstroke. Other milder manifestations of heat-related stress are heat cramps and heat syncope. Heat cramps (painful and spasmodic contractions of the skeletal muscles) occur in individuals who are doing heavy muscular work in high temperature and humidity due to loss of circulatory sodium and chloride. Heat syncope occurs when standing in the sun due to vasodilatation and pooling of blood in lower limbs leading to reduced cardiac output and is common among armed forces, police personnel and school students.[5] The distinguishing feature of heatstroke is hyperpyrexia (>40 °C) with altered sensorium, hot, red, dry skin and dehydration.[10, 11] Outdoor workers such are mostly associated with heat strokes [12]In our study we have seen that the majority of the patients were in the age group (Years.) of 36-48 were 29.89%, followed by 48-60 were 14.29%, 24-36 were 12.75%, 60-72 were 10.77%, 1-12 were 9.89%, 12-24 Were 8.57%, >72 were 8.35%, <1 were 5.49%. This was found more common in 36-48 Years of age group as this peoples are mostly engaged in the outdoor activity for the income generations hence mostly gets affected form heat related illness The majority of the patients were Male i.e. 64.18 % followed by 35.82and were Females the more no. of males as compared to Females also explained as Males are mostly involved in Outdoor activities. This was similar to Rajiv Lakhotia[13] they found Out of 40 patients, 22 were males and 18 were females. Mean age of males were 45 ± 2.4 years and of females was 41±2.1 years

By Occupation Agricultural –laborer were 25.71%, followed by Student -18.68%, Dependant -15.16%, Unemployed were 11.65%, Occupation Not applied in 10.33%, Owner and cultivator 6.59. From this it was clear that the Agricultural –laborer and student were the most common affected by Occupation as both the occupation demands more exposure not only intensity but the duration also to Sun hence they are vulnerable for the Heat related illness. All the patients were having Fever i.e. in 100.00, Muscle weakness and Cramps present in 86.15 %, Dehydration were 85.05%, Tachycardia present in 55.38%, Throbbing headache In 40.00%, Confusion present in 37.14%, Heat syncope (fainting) present in 20.22%. this was similar to Seema Mahant[14] they found quite similar clinical profile i.e. heat edema, heat tetany, heat syncope, heat cramps, miliaria rubra, heat exhaustion, and heatstroke. No. of patients Admitted in Mar-17, Apr-17, May-1 were - 23, 49, 52 respectively; Mar-18, Apr-18, May-18 were 39, 49, 62 respectively. Mar-19, Apr-19, May-19 were 43, 56, 82 respectively. As the temperature usually highest in May hence more no. of patients are found the May of all the last three years.

CONCLUSION

It can be concluded from our study that most of the patients were from the age 36-48 Years. age group , more common in males and by occupation Agricultural laborers and student were mostly affected and Fever , muscle weakness were most common clinical presentation and majority of the patients occurred in the months of May.

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