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"A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING HEAT STROKE AND ITS MANAGEMENT AMONG HIGH SCHOOL STUDENTS STUDYING IN SELECTED SCHOOLS OF AHMEDABAD CITY."

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ABSTRACT
Study: "A study to assess the effectiveness of structured teaching programme on knowledge regarding heat stroke and its management among high school students studying in selected schools of Ahmedabad city"
Background: Heat stroke is an important weather hazard associated with excess mortality and morbidity. Heat related illnesses are increasing with increased global warming. It is a very common illness in high school students affecting over 90% of males and 80% of females in all ethnic groups. It significantly affects physical and psychosocial wellbeing.
Objectives: To evaluate the effectiveness of structured teaching programme on knowledge regarding heat stroke and its management among high school students studying in selected schools of Ahmedabad City.
Methodology: Quantitative research approach was used with pre-experimental (one group pre-test and post-test) research design.60 samples were selected by Non-probability convenience sampling technique and structured knowledge questionnaire was developed.
Results: According to the findings, the mean post-test Knowledge score was significantly higher than the mean of pre-test knowledge score with mean difference of (8.43) the calculated "t" value (35.96) was greater than the tabulated value (2.00) at 0.05 level of significance therefore the null hypothesis H_0 was rejected and research hypothesis H_1 was accepted and it revealed that the structure teaching programme was effective in increase the knowledge of heat stroke and its management among high school students. The findings also revealed that a significant association has been found between gender and year of study. Hence, the research hypothesis H_2 was accepted.
Conclusion: Structured teaching programme regarding heat stroke and its management was effective in improving knowledge about heat stroke and its management among high school students.

INTRODUCTION

*"Heat stroke is an important and useful addition to the library on climate change; bring insights from deep-time ecological research to help illuminate the dire forecasts of which we're already so aware."– **David Quammen***

Heat, energy that is transferred from one body to another as the result of a difference in temperature. Heat stroke is a heat related health condition. It is a condition caused by your body overheating, usually because of prolonged exposure to or physical exertion in high temperature.

Heat is exchanged with the environment in four ways: conduction, convection, radiation and evaporation. Conduction refers to heat loss through direct contact with a cooler object. Convection is the dissipation of heat when

relatively cool air passes over exposed skin. Radiation is the release of heat from the body directly into the environment. Evaporation through perspiration is the body's most effective method of cooling under most circumstances.

Heat stroke is defined typically as hyperthermia exceeding 41°C (106°F) and anhidrosis associated with an altered sensorium. Heat stroke is also called as '**sun stroke'**.

Depending on its cause, heat stroke may be categorized as either Classic (Passive) or Exertional. Both types are derived from failure to dissipate excessive body heat, but their underlying mechanisms differ. Classic heat stroke is caused by environmental exposure and results in core hyperthermia above 41°C (106°F). This condition primarily occurs in the elderly and those with chronic illness. Classic heatstroke can develop slowly over several days and can present with minimally elevated core temperatures. It is associated with central nervous system dysfunction including delirium, convulsions and coma making it difficult to distinguish from sepsis, whereas exertional heatstroke is associated with physical exercise and results when excessive production of metabolic heat overwhelms physiological heat-loss mechanisms. It is a condition primarily affecting active persons. It is characterized by rapid onset—developing in hours—and frequently associated with high core temperatures.

The symptoms of heat stroke are; high body temperature: a core temperature of 106°F (41°C) or higher, altered mental state or behavior: confusion, agitation, slurred speech, irritability, delirium, seizure and coma, alteration in sweating, skin may feel dry or slightly moist, nausea and vomiting, flushed skin, rapid breathing, racing heart rate, headache.

High school students are in the transitional phase of growth and development between childhood and adulthood. High school students are at high risk for heatstroke if they overdress or do intense physical activity in hot weather without drinking enough liquids. Heatstroke also can happen when a child is left in or gets trapped in a car on a hot day especially in school vans in India. When the outside temperature is 93°F (33.9°C), the temperature inside a car can reach 125°F (51.7°C) in just 20 minutes, quickly raising body temperature to dangerous levels. High school students with ongoing health problems or those who take certain medicines may be more likely to have heat-related illnesses. It is a very common illness in high school students affecting over 90% of males and 80% of females in all ethnic groups. It significantly affects physical and psychosocial wellbeing. It is a medical emergency that can lead to elevated morbidity and mortality rates. It is one of the distressing conditions that affect the majority of the adolescents.

Heat related illnesses are increasing with increased global warming. Greater awareness regarding the same will help in recognizing and treating these disorders at an early stage. Public education on heat illnesses, behavioral changes, enforced rests and fluid protocols, acclimatization and ready availability of cooling facilities in hot aspects will help decrease morbidity and mortality due to heat stroke, because the mortality and morbidity rate from heat stroke are related to duration of temperature. When treatment is delayed, the mortality rate may be as high as 80% if early diagnosed it can be reduced to 10%. India is a place where the temperature rises during summer in many regions which make people suffer and prone for heat stroke. Specially the area of western coast i.e. Gujarat, Rajasthan and Maharashtra. During summer in Gujarat there are some areas where temperature raises above 41°C (106°F) i.e. Ahmedabad, Deesa, Bhuj, Surat, Porbandar and Veraval.

Prevalence rate of heat related illnesses is more in high school students due to the exposure to the extreme heat during summer. Hence it is very essential for high school students to have enough amount of knowledge regarding heat stroke and its management so we can reduce the morbidity and mortality rates related to heat stroke.

OBJECTIVES OF STUDY WERE,

1. To assess the level of pre-test knowledge score regarding heat stroke and its management among high school students studying in selected schools of Ahmedabad city.
2. To assess the post-test level of knowledge score regarding heat stroke and its management among high school students studying in selected schools of Ahmedabad city.
3. To evaluate the effectiveness of structured teaching program by comparing pre-test and post-test knowledge score after administration of structured teaching program regarding heat stroke and its management among high school students studying in selected schools of Ahmedabad city.
4. To find out the association between selected demographic variables with pre-test knowledge score regarding heat stroke and its management among high school students studying in selected schools of Ahmedabad city.

METHODOLOGY FOR RESEARCH

Quantitative research approach was used with pre-experimental (one group pre-test and post-test) research design. 60 samples were selected by Non -probability convenience sampling technique and structured knowledge questionnaire was developed.

RESULT

ANALYSIS AND INTERPRETATION OF THE DEMOGRAPHIC VARIABLES OF THE SAMPLES

Table-4.1 Frequency and percentage wise distribution of samples based on demographic variables [N=60]

DEMOGRAPHIC VARIABLES		NO. OF SAMPLES	PERCENTAGE (%)
AGE	13 years	06	10.00
	14 years	14	23.33
	15 years	11	18.33
	16 years	11	18.33
	17 years	11	18.33
	18 years	07	11.67
GENDER	Male	27	45.00
	Female	33	55.00
RESIDENTIAL AREA	Urban	46	76.67
	Rural	14	23.33
SOURCE OF TRAVEL	By walking	16	26.67
	By bicycle	15	25.00
	By motorbike	10	16.67
	By car	05	8.33
	By school van/ bus	14	23.33
DISTANCE FROM HOME	500 meters to 1 kilometer	20	33.33
	1 kilometer to 2 kilometers	11	18.33
	2 kilometers to 3 kilometers	06	10.00
	3 kilometers to 4 kilometers	07	11.67
	More than 4 kilometers	16	26.67
YEAR OF STUDY	9th standard	17	28.33
	10th standard	13	21.67
	11th standard	17	28.33
	12th standard	13	21.67
SOURCE OF INFORMATION ON HEAT STROKE	Newspaper	18	30.00
	Social media	21	35.00
	Mass media	13	21.67
	Magazines	08	13.33

Table 4.1 shows that out of 60 samples, in age, maximum 14 (23.33%) samples were from 14 years of age and minimum 6 (10%) samples were from 13 years of age. In gender, maximum 33 (55%) samples were female and a minimum 27 (45%) samples were male. In residential area, maximum 46 (76.17%) samples were from urban area and minimum 14 (23.33%) samples were from rural area. In source of travel, maximum 16 (26.67%) samples came to school by walking and a minimum 5 (8.33%) samples came to school by car. In distance from home, maximum 20 (33.33%) samples belong to 500 meters to 1 kilometer and a minimum 06 (10%) samples belong to 2 kilometers to 3 kilometers. In year of study, maximum 17 (28.33%) samples belong to $9^{th}$and 11^{th}standard and minimum 13 (21.67%) samples belong to 10^{th} and 12^{th} standard. In source of information on heat stroke, maximum 21 (35%) samples got information from social media and a minimum 08 (13.33%) samples got information from social media on heat stroke.

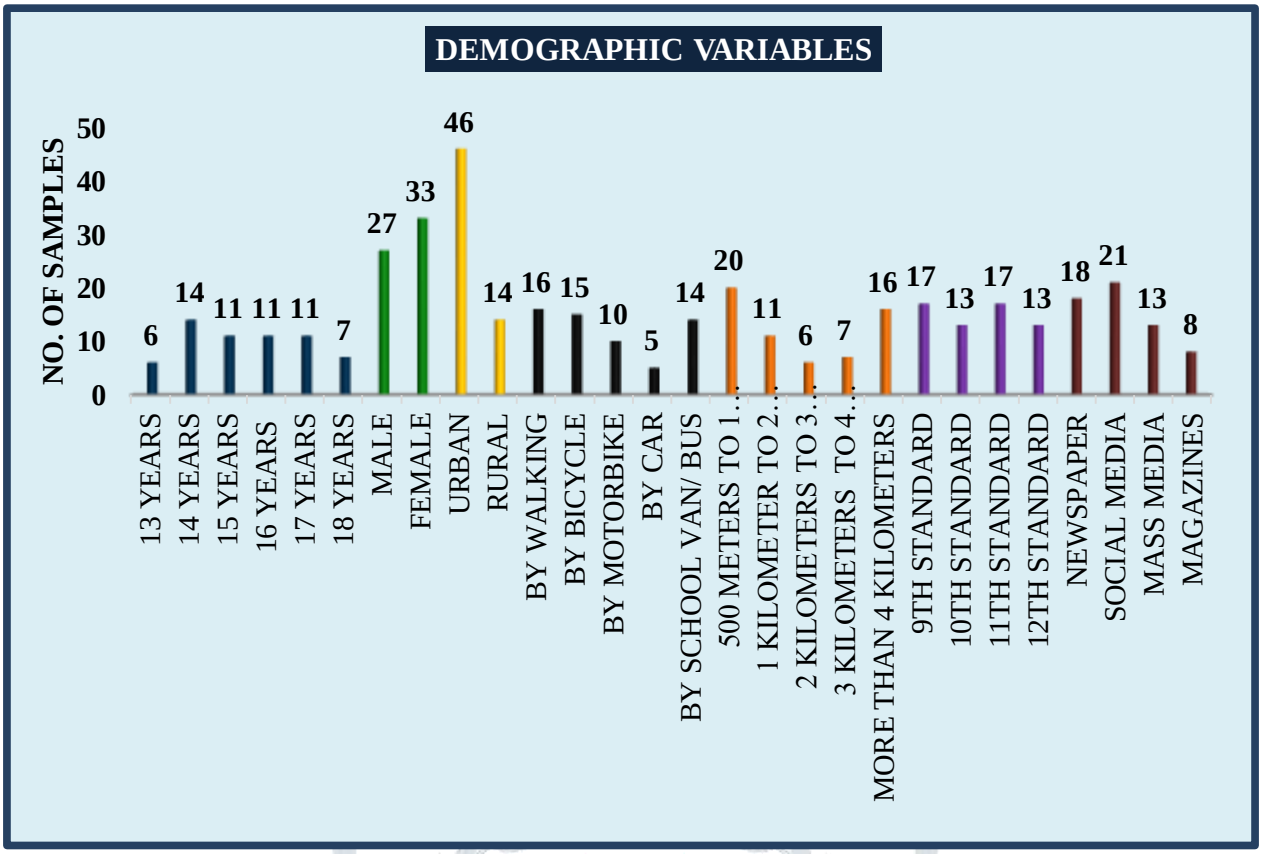

Figure-5: Bar graph showing the frequency wise distribution of demographic variables of high school students

ANALYSIS AND INTERPRETATION OF THE DATA COLLECTED ON STRUCTURED KNOWLEDGE QUESTIONNAIRE OF SAMPLES

Table - 4.2.1 Frequency and percentage of the pre-test and post-test knowledge score measured by structured knowledge questionnaire regarding heat stroke and its management. [N=60]

KNOWLEDGE SCORE	PRE-TEST		POST-TEST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
POOR (0-15)	50	83.33%	02	3.33%
AVERAGE (16-25)	10	16.66%	50	83.33%
GOOD (26-30)	0	0%	08	13.33%
TOTAL	60	100	60	100

Table 4.2.1 Shows that 50 (83.33%) samples had poor, 10 (16.66%) samples had average and 0 (0%) samples had good knowledge as per their pre-test knowledge scores whereas 2 (3.33%) samples had poor, 50 (83.33%) samples had average and 8 (13.33%) samples had good knowledge as per their post-test knowledge scores.

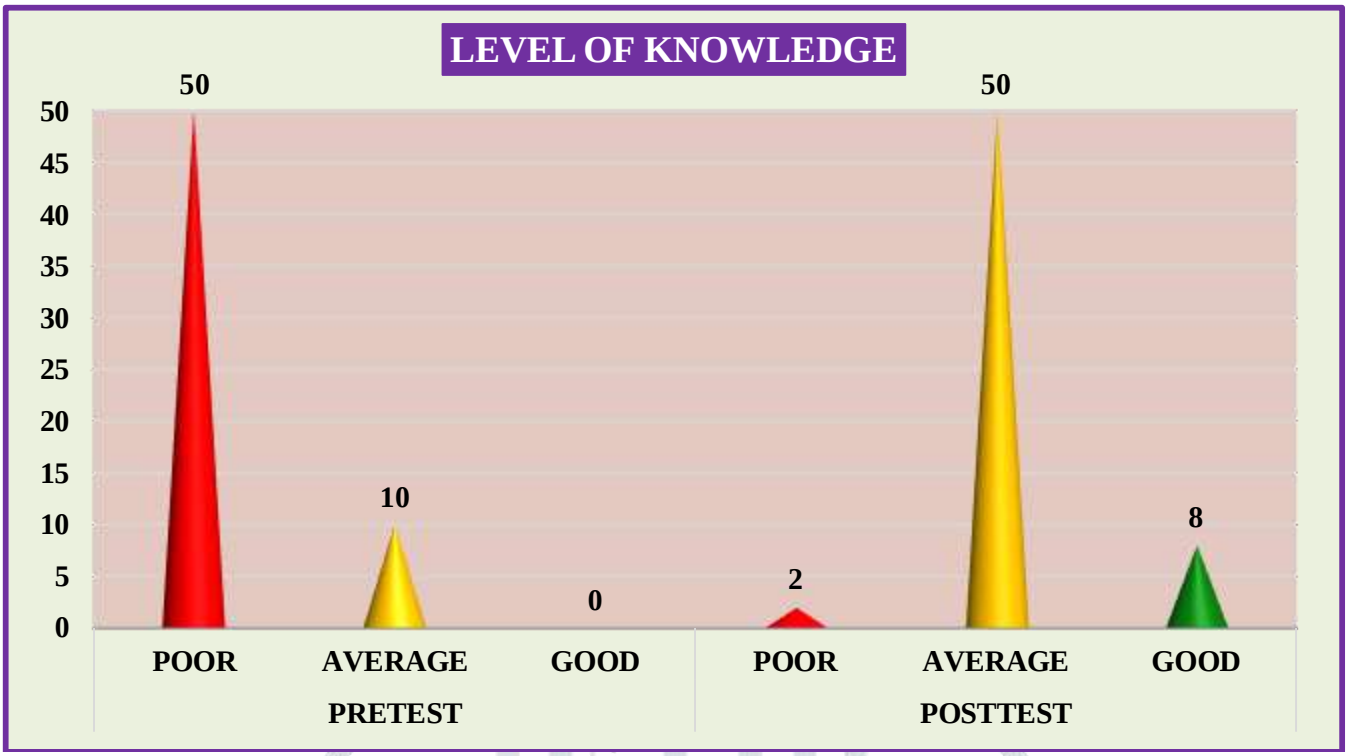

Figure 6:- Bar graph shows the comparison of pretest and post test knowledge score of high school students

Table 4.2.2: Area wise mean, mean percentage, percentage gain and mean difference of pretest and post test scores of samples on heat stroke and its management among high school students [n = 60]

Sr. No.	Content (Area)	Maximum Score	Pre-test Knowledge Score		Post-test Knowledge Score		Mean Difference	% Gain
			Mean Score	Mean %	Mean Score	Mean %		
1	Introduction	9	3.9	43.33	6.70	74.44	2.800	31
2	Causes	4	1.90	47.50	2.50	62.50	0.600	15
3	Types	4	2.10	52.50	3.10	77.50	1.000	25
4	Clinical Manifestations	4	1.70	42.50	2.60	65.00	0.900	23
5	Diagnostic Evaluations	1	0.10	10.00	0.70	70.00	0.600	60
6	Complications	1	0.20	20.00	0.70	70.00	0.500	50
7	Management	7	3.00	42.86	5.10	72.86	2.100	30
	Total	**30**	12.90	43.00	21.40	71.33	8.500	28

Table 4.2.2 shows the pre-test and post-test knowledge scores obtained by the samples on heat stroke and its management among high school students.

The area-wise result related to introduction, Pre-test mean score was 3.9 (43.33%) and Post-test mean score was 6.7 (74.44%). Hence the difference noted was 2.80 and the percentage gain in this area is 31%. The area-wise result related to causes, Pre- test mean score was 1.90 (47.50%) and Post-test mean score was 2.50 (62.50%). Hence the difference noted was 0.60 and the percentage gain in this area is 15%. The area-wise result-related types, Pre- test mean score was 2.10 (52.50%) and Post-test mean score was 3.10 (77.50%). Hence the mean difference noted was 1.00 and the percentage gain in this area is 25%. The area-wise result-related clinical manifestations, Pre- test mean score was 1.70 (42.50%) and Post-test mean score was 2.60 (65%). Hence the mean difference noted was 0.90 and the percentage gain in this area is 23%. The area-wise result-related diagnostic evaluation, Pre- test mean score was 0.10 (10%) and Post-test mean score was 0.70 (70%). Hence the mean difference noted was 0.60 and the percentage gain in this area is 60%. The area-wise result-related complications, Pre- test mean score was 0.20 (20%) and Post-test mean score was 0.70 (70%). Hence the mean difference noted was 0.50 and the percentage gain in this area is 50%. The area-wise result-related management, Pre- test mean score was 3.0 (42.86%) and Post-test mean score was 5.10 (72.86%). Hence the mean difference noted was 2.10 and the percentage gain in this area is 30%.

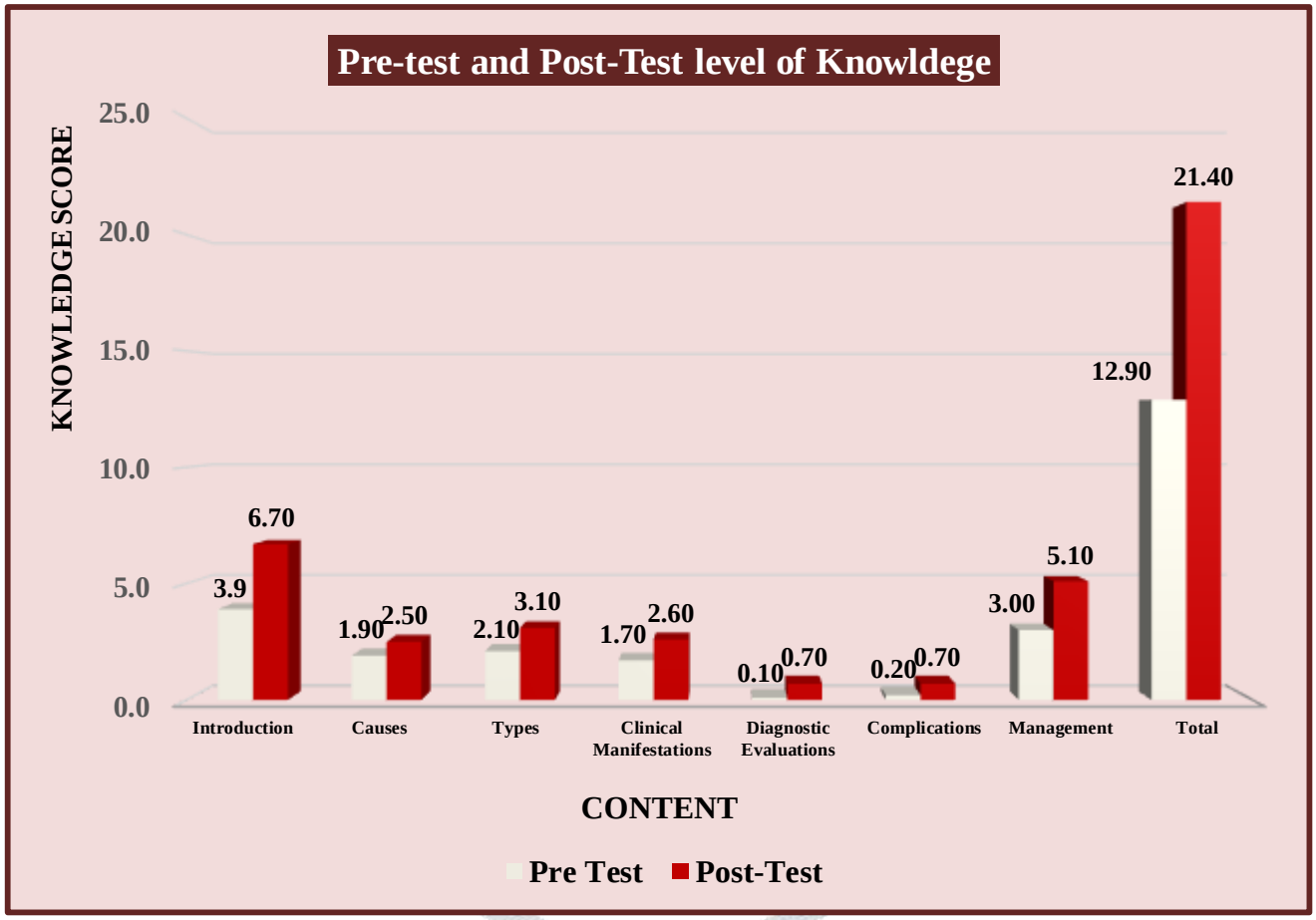

Figure 7:- Bar graph showing the area wise pre-test and post-test knowledge scores of samples on heat stroke and its management

Table 4.2.3 Mean, Standard Deviation (SD), Calculated 't' test value and Degree of freedom of the Pre-test and Post-test Knowledge scores of samples. [N=60]

Knowledge Test	Mean	Mean Difference	Standard Deviation	Calculated t test	DF	Table Value	S/NS
Pre-Test Knowledge	12.87	8.43	2.85	35.96	59	2.00	**Significant**
Post-Test Knowledge	21.30		3.41				

Table 4.2.3 shows the Pre-test and post-test knowledge scores obtained by the respondents on heat stroke and its management. The mean pre-test knowledge score was 12.87 and the mean post test knowledge score was 21.30.The mean difference between pre-test and post-test knowledge score was 8.43.The table also shows that the standard deviation of pre-test score of knowledge was 2.85 and standard deviation of post-test score of knowledge was 3.41.The calculated "t" value was 35.96 and the tabulated "t" value was 2.00 at 0.05 level of significance.

Above table reveals that the mean post-test knowledge score was significantly higher than the mean pre-test knowledge scores. The calculated "t" value (t= 35.96) was greater than the tabulated "t" (t=2.00). Therefore, the null hypothesis H_0 was rejected and the research hypothesis was accepted which indicates that the structured teaching program was effective in gaining the knowledge among the samples. Investigator concluded that there was significant increase in the mean post-test knowledge score as compared to the mean pre-test knowledge score after administration of structured teaching program on knowledge regarding heat stroke and its management which indicates that the structured teaching program was effective.

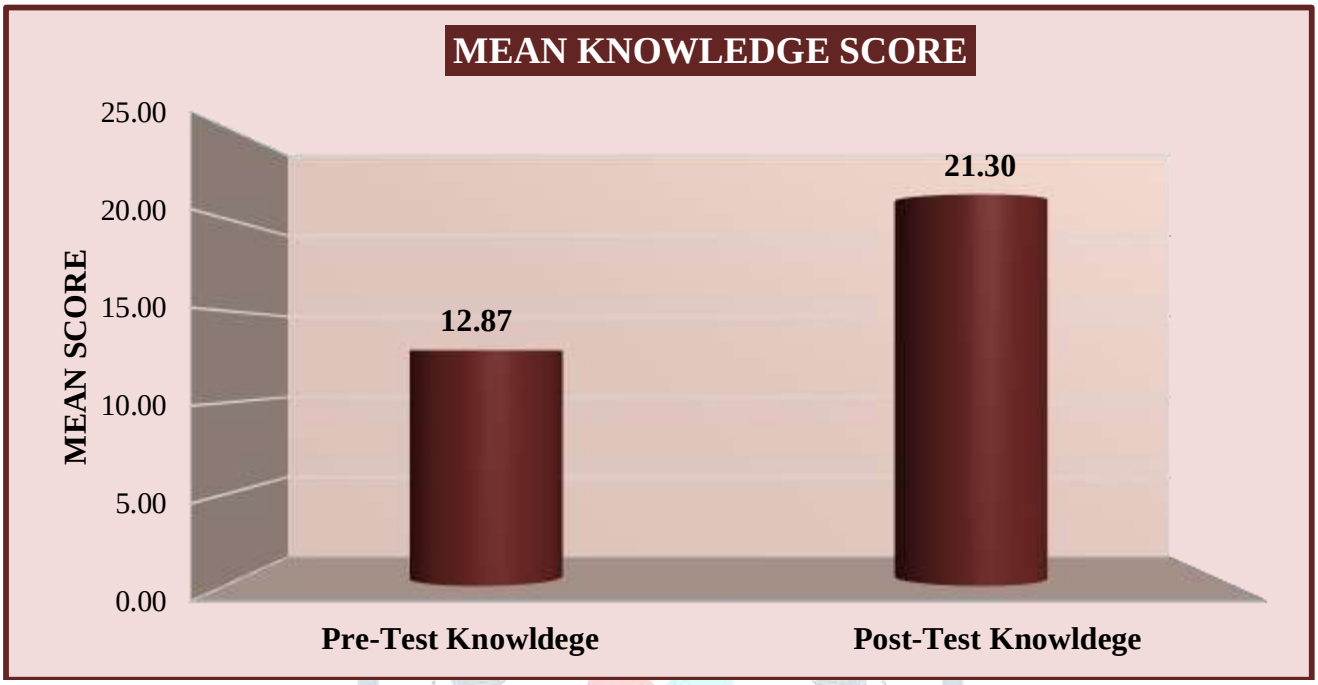

Figure 8:- Bar graph showing the mean pre-test and mean post-test knowledge scores of samples on heat stroke and its management

ANALYSIS AND INTERPRETATION OF THE DATA RELATED TO ASSOCIATION BETWEEN PRE-TEST KNOWLEDGE SCORES WITH SELECTED DEMOGRAPHIC VARIABLES OF THE SAMPLES.

Table 4.3 Association of Pre-test knowledge score with selected demographic variables. [N=60]

Demographic variables		Pre-test		Total	Chi square	DF	Table value	S/NS
		Poor	Average					
Age	13 years	06	0	6	9.132	5	11.07	NS
	14 years	14	0	14				
	15 years	10	1	11				
	16 years	8	3	11				
	17 years	7	4	11				
	18 years	5	2	7				
Gender	Male	26	1	27	5.938	1	3.84	S
	Female	24	9	33				
Residential area	Urban	40	6	46	1.863	1	3.84	NS
	Rural	10	4	14				
Source of travel	By walking	14	2	16	2.829	4	9.49	NS
	By bicycle	14	1	15				
	By motorbike	7	3	10				
	By car	4	1	5				
	By school van/ bus	11	3	14				
Distance from home	500 meters to 1kilometer	17	3	20	1.323	4	9.49	NS
	1 kilometer to 2 kilometers	10	1	11				
	2 kilometers to 3 kilometers	5	1	6				

	3 kilometers to 4 kilometers	6	1	7				
	More than 4 kilometers	12	4	16				
Year of study	9th standard	17	0	17	12.420	3	7.82	S
	10th standard	13	0	13				
	11th standard	12	5	17				
	12th standard	8	5	13				
Source of information on heat stroke	Newspaper	14	4	18	3.485	3	7.82	NS
	Social media	17	4	21				
	Mass media	13	0	13				
	Magazines	6	2	8				

Table 4.3 shows the association of the demographic variables of the samples.

For age of the samples with the pre-test knowledge scores, the calculated value of chi square (X_2) 9.132 was less than 11.07, the table value of chi square (X_2) at the 5 degree of freedom and 0.05 level of significance. Therefore, age has no significant association with the knowledge of the samples.

For gender of the samples with the pre-test knowledge scores, the calculated value of chi square (X_2) 5.938 was more than 3.84, the table value of chi square (X_2) at the 1 degree of freedom and 0.05 level of significance. Therefore, gender of the samples has a significant association with the knowledge of the samples.

For residential area of the samples with the pre-test knowledge scores, the calculated value of chi square (X_2) 1.863 was less than 3.84, the table value of chi square (X_2) at the 1 degree of freedom and 0.05 level of significance. Therefore, residential area has no significant association with the knowledge of the samples.

For source of travel of the samples with the pre-test knowledge scores, the calculated value of chi square (X_2) 2.829 was less than 9.49, the table value of chi square (X_2) at the 4 degree of freedom and 0.05 level of significance. Therefore, source of travel has no significant association with the knowledge of the samples.

For distance from home of the samples with the pre-test knowledge scores, the calculated value of chi square X_2) 1.323 was less than 9.49, the table value of chi square (X_2) at the 4 degree of freedom and 0.05 level of significance. Therefore, distance from home has no significant association with the knowledge of the samples.

For year of study of the samples with the pre-test knowledge scores, the calculated value of chi square (X_2) 12.420 was more than 7.82, the table value of chi square (X_2) at the 3 degree of freedom and 0.05 level of significance. Therefore, year of study has a significant association with the knowledge of the samples.

For source of information on heat stroke of the samples with the pre-test knowledge scores, the calculated value of chi square (X_2) 3.485 was less than 7.82, the table value of chi square (X_2) at the 3 degree of freedom and 0.05 level of significance. Therefore, source of information on heat stroke has no significant association with the knowledge of the samples.

This indicates that from selected demographic variables only two variables gender and year of study of the samples have a significant association with the knowledge of the samples and no any other demographic variables have a significant association with the knowledge of the samples.

DISCUSSION

The present study was conducted to assess the knowledge regarding heat stroke and its management among high school students studying in selected school of Ahmedabad city, Gujarat.

The investigators collected the samples by Non-probability convenience sampling technique. The investigators collected the data by using structured knowledge questionnaire to assess the knowledge regarding heat stroke and its management among high school students studying in selected school of Ahmedabad city, Gujarat.

The tool consists of demographic variables, structured knowledge questionnaire to assess the knowledge regarding heat stroke and its management. The main study was conducted in month of November, on 60 students and who met the inclusion criteria, who were selected by non- probability convenience sampling technique. After the selection of samples, the level of knowledge was assessed by using the structured knowledge questionnaire.

The investigators collected the data from students in selected schools who were willing to participate in the study. Then each sample was allotted number and selected required sample size using convenience sampling technique. The selected samples for study were then given test using validated structured knowledge questionnaire. The descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics were used to analyze the data.

The study shows that the mean pre-test knowledge score was 12.87 and the mean post-test knowledge score was 21.30. The mean difference between pre-test and post-test knowledge score was 8.43. The table also shows that the standard deviation of pre-test score of knowledge was 2.85 and standard deviation of post-test score of knowledge was 3.41. The calculated "t" value was 35.96 and the tabulated "t" value was 2.00 at 0.05 level of significance.

It reveals that the mean post-test knowledge score was significantly higher than the mean pre-test knowledge scores. The calculated "t" value (t= 35.96) was greater than the tabulated "t" (t=2.00).

CONCLUSION

The following conclusions can be drawn from the present study findings:

The structured teaching program was found to be effective in terms of knowledge among high school students of selected schools regarding heat stroke and its management. From selected demographic variables only two variables gender and year of study of the samples have a significant association with the knowledge of the samples and no any other demographic variables have a significant association with the pre-test knowledge score of the samples.

CONFLICT OF INTEREST: The authors declare that they have no competing interests.

ETHICS DECLARATIONS:

Ethics approval and consent to participate.

JG College of Nursing, Institute Ethics Committee reviewed this study and granted ethical approval. Consents have been obtained from participants.

CONSENT FOR PUBLICATION: Written consent for publication was obtained from each participant.

LIST OF REFERENCES

BOOKS:

1. Basavanthappa B.T. (2003). **MEDICAL SURGICAL NURSING**, I" edition New Delhi: Jaypee Brothers Medical Publishers.
2. Basavanthappa, B.T. (2007). **NURSING RESEARCH**, 2nd edition, New Delhi: Jaypee Brothers medical publishers.
3. Black M. Joyce (2005). **MEDICAL SURGICAL NURSING**, 7th edition, Missouri: Elsevier Publications.
4. Brunner and Suddartha's (2008), **TEXTBOOK OF MEDICAL SURGICAL NURSING**, 11th edition, New Delhi: Lippincott Publication.
5. Devit Susan (2009). **MEDICAL SURGICAL NURSING**, 9th edition, St. Louis, Missouri Saunders: Elsevier Publications.
6. Lewis, (2009). **ASSESSMENT AND MANAGEMENT OF CLINICAL PROBLEMS**, 5th edition, West line Industrial Drive
7. Nancy and Grove Susan k. (2008). **UNDERSTANDING NURSING RESEARCH BUILDING AN EVIDENCE BASED PRACTICE**, 4th edition, Noida: Elsevier Publications.
8. Neelam Kumari (2010) PV, **A TEXTBOOK OF MEDICAL SURGICAL NURSING**, 1st edition, New Delhi: Jaypee Brothers Medical publisher.
9. Polite, D.F. and Hungler, B.P; (2008). **ESSENTIALS OF NURSING RESEARCH**. 2nd Edition, Philadelphia: Raven Publishers.
10. Suresh K Sharma, (2011). **NURSING RESEARCH AND STATISTICS**, Haryana: Elsevier India Pvt. Ltd.

JOURNALS:

1. Al-Hashimi, A. M., et. al. (2018) Heat Stroke Treatment: A Systematic Review. **Journal of Intensive Care Medicine**, 33(1), 34-42. (King Fahad Medical City, Saudi Arabia).
2. Bouchama, A., & Knochel, J. P. (2002) Pathophysiology of Heat Stroke: A Review of Literature. **New England Journal of Medicine**, 346(25), 1978-1988. (King Faisal Specialist Hospital, Saudi Arabia).
3. Casa, D. J., et. al. (2015). Heat-related illnesses in athletes: A review of the literature. **Journal of Athletic Training**, 50(7), 641-653.
4. Ely, B. R, & Lovering, A. T. (2019). Heat stroke: Physiological responses and treatment considerations in athletes. **Journal of Athletic Training**, 54(10), 1101-1110
5. Sawka, M. N., et al. (2010) The Effects of Heat Acclimatization on Heat Stroke Risk. **Journal of Medicine and Science in Sports and Exercise**, 42(5), 971-978. (US Army Research Institute, USA).
6. Shapiro, Y., & Seidman, D. S. (1990). The effects of heat acclimatization on the cardiovascular system. **Journal of Applied Physiology**, 69(2), 649-655.
7. Wang, Y. C., et. al. (2017) Heat Stroke in the Elderly: A Review of the Literature. **Journal of the American Geriatrics Society**, 65(9), 2044-2051. (National Taiwan University, Taiwan).
8. Yaqub B, & Al Deeb, S. (2018). Heat stroke: Clinical presentation and management. **American Journal of Medicine**, 131(8), 931-936.
9. Yaqub, B., & Al Deeb, S. (2018) Heat Stroke: Clinical Presentation and Management **Journal of Clinical Neuroscience**, 47, 1-6. (King Fahad Medical City, Saudi Arabia).
10. Yogesh Jain, et. al. (2018), Heat stroke: Causes, consequences and clinical guidelines. **The National Medical Journal of India**. 31(4),224-227.

WEBSITES:

1. https://www.amjmed.com/article/0002-9343(69)90151-X/
2. http://www.nmji.in/text.asp?2018/31/4/224/258224
3. https://doi.org/10.1371/journal.pone.0091831
4. www.natajournals.org/doi/pdf/10.4085/1203179
5. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2838469/
6. https://bmcpublichealth.biomedcentral.com/articles/10.1186/512889-016-3241-
7. https://www.who.int/news-room/fact-sheets/detail/climate-change-heat-and-health
8. https://www.hopkinsmedicine.org/health/conditions-and-diseases/heatrelated-illnesses-heat-cramps-heat-exhaustion-heat-stroke
9. https://kidshealth.org/en/parents/heat.html
10. https://ijanm.com/AbstractView.aspx?PID=2014-2-1-8
11. https://www.medicalnewstoday.com/articles/266551
12. https://www.webmd.com/a-to-z-guides/heat-stroke-symptoms-and-treatment
13. https://en.wikipedia.org/wiki/Heat_stroke
14. https://my.clevelandclinic.org/health/diseases/21812-heatstroke
15. https://www.mayoclinic.org/diseases-conditions/heat-stroke/symptoms-causes/syc-20353581
16. https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/healthy+living/protecting+your+health/environmental+health/healthy+in+the+heat/heat-related+illness+signs+symptoms+and+treatment
17. https://www.wbhealth.gov.in/uploaded_files/notice/heat_illnesses.pdf
18. https://www.betterhealth.vic.gov.au/health/healthyliving/heat-stress-and-heat-related-illness
19. https://www.nejm.org/doi/full/10.1056/NEJMcp2210623
20. https://pmc.ncbi.nlm.nih.gov/articles/PMC4923787/
21. https://www.researchgate.net/publication/337234109_Preventing_heat_stroke_and_heat_illness_on_the_workplace_a_study_on_knowledge_attitudes_and_practices_of_safety_representatives_from_Northern_Italy_2016-2017
22. https://pubmed.ncbi.nlm.nih.gov/34078464/
23. https://pubmed.ncbi.nlm.nih.gov/34249854/
24. https://pubmed.ncbi.nlm.nih.gov/27367715/
25. https://meridian.allenpress.com/atej/article/12/3/179/60642/Athletic-Trainers-Attitudes-and-Perceptions
26. https://www.academia.edu/68169885/Assessment_of_Knowledge_of_Healthcare_Professionals_about_Heat_Waves_and_Related_Conditions?uc-g-sw=101761292
27. https://www.researchgate.net/publication/316787064_Heat_strain_and_work_performance_among_traffic_police_officers_in_Kuala_Lumpur
28. https://pmc.ncbi.nlm.nih.gov/articles/PMC6309351/
29. https://images.app.goo.gl/PGZvWTmoaB51ERZB8
30. https://www.news-medical.net/health/What-is-heat-stroke.aspx