38. **EFFECTS OF ANEMIA ON COGNITIVE ABILITY IN SCHOOL-GOING ADOLESCENTS IN AN URBAN AREA IN INDIA.**

Devyani V. Pattebahadur[1], Dipak Patil[2].

[1] MBBS. K.J. Somaiya Medical College & Research Centre, Mumbai, India.

[2] MBBS, MD (Preventive and Social Medicine), PGDHA (Hospital Administration). K.J. Somaiya Medical College & Research Centre, Mumbai, India.

https://www.youtube.com/watch?v=0JIMP5FyI7s&t=17229s

INTRODUCTION: Anemia is a major nutritional health problem in India. It poses a significant threat to health due to a decrease in oxygen availability to the body. This predisposes the anemic individual to an increased risk of heart problems, stroke, motor or cognitive developmental delays, infections, and other disturbances. Some studies found a correlation between anemia and low IQ scores while others found no such correlation. The authors decided to perform this study to determine whether such a correlation exists in adolescents, a group that is susceptible to anemia. **METHODS:** This was a cross-sectional study involving 28 school-going adolescents of an urban area in the age group of 12-15 years, selected by simple random sampling. Individuals with a prior diagnosis of a medical or psychiatric condition were excluded. After obtaining permission from school authorities, ethics committee approval, parental consent, and assent, participants were interviewed using pro forma. Hemoglobin estimation was done by using hemoglobin strips. Cognitive status examination was performed by using Malin's Intelligence Scale for Indian Children, Addenbrooke's Cognitive Examination – Revised, and Mini-Mental State Examination. The data was analyzed using Microsoft Excel version 2010. **RESULTS:** 89% of the study population was anemic and 11% was non-anemic. The mean IQ score was 92.4; the mean ACE-R score was 84.2; the mean MMSE score was 26.6. Unpaired t-test was used to analyze the data; tests were done at a 5% significance level. The IQ score +/- standard deviation (SD) in the anemic group was 83.96 +/- 7.74. This score did not reveal any statistically significant difference from the non-anemic group's IQ score ($p = 0.76$). The ACE-R score +/- standard deviation (SD) in the anemic group was 84.04 +/- 7.84. This score did not reveal any statistically significant difference from the non-anemic group's ACE-R score ($p = 0.70$). The MMSE score +/- standard deviation (SD) in the anemic group was 26.48 +/- 1.66. This score did not reveal any statistically significant difference from the non-anemic group's MMSE score ($p = 0.125$). **CONCLUSION**: The findings suggest that the average IQ, MMSE, and ACE-R scores are lower in the anemic group than in the non-anemic group. However, no statistically significant correlation between hemoglobin level and cognitive function was found in this study.

Table. Comparison of cognitive status examination scores in anemic and normal groups.

Parameter	Group	Mean	SD	Standard Error of Mean	p-value by unpaired t-test
MMSE Score	Anemic	26.48	1.66	0.332	0.125
	Normal	27.67	1.53	0.883	
Intelligence Quotient	Anemic	87.22	5.97	1.19	0.76
	Normal	93.02	4.93	2.85	
ACE-R Score	Anemic	84.04	7.84	1.57	0.7
	Normal	85.33	4.93	2.85	
Components of ACE-R:					
Attention & Orientation	Anemic	16.08	1.29	0.26	0.23
	Normal	17	0	0	
Memory	Anemic	20.32	4.18	0.84	0.26
	Normal	17.67	4.62	2.67	
Fluency	Anemic	9.4	2.38	0.48	0.16
	Normal	11	0	0	
Language	Anemic	23	1.96	0.39	0.16
	Normal	24.67	0.58	0.33	
Visuospatial	Anemic	15.16	1.25	0.25	0.82
	Normal	15	0	0	

Legend: SD: Standard deviation.

Key words: Anemia; Intelligence; Cognition; Adolescent (Source: MeSH-NLM).