

Brief Communication

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EFFECT OF IODINE DEFICIENCY ON I.Q. LEVELS OF APPARENTLY NORMAL INHABITANTS OF AN ENDEMIC GOITER AREA

Complications of iodine deficiency (I.D.), especially its effect on human growth and development, are well known and many societies are concerned about them.^{1,2,4,5,8} For determination of the effect of I.D. on the I.Q. level of a population with endemic goiter, 480 students of different levels, 7-17 years of age, from two areas [Boyerahmad (B) and Kohgiloiieh (K)] which were equally chosen from socioeconomic and educational view points (except for endemic goiter in B^{6,7} due to I.D.) were selected randomly and had their thyroids examined by a surgeon and their I.Q. determined by a psychologist, using Raven and Proteneus tests adapted in our society.^{9,10}

The T₃ and T₄ tests were normal in all students but TSH levels were slightly above normal and urinary iodine was lower than the normal range in endemic goiter residents (B).^{6,7} The mean urinary iodine was 33.9±36 µg/g creatinine in the city and 23.95±16.6 µg/g creatinine in a village in B.⁶ The normal urinary iodine level is >50 µg/g creatinine.

The data from 418 out of 480 students was analyzed, comparing 194 B natives and 224 K students. Ninety-six students of B had goiter of different size according to W.H.O. criteria while none of K students had goiter. Average I.Q. of B students was 101.55±17.6 and that of K was 111.32±15, with a difference of 9.77 (*p*<0.0000). Those students of B who had larger goiters and thus greater I.D., had lower I.Q. levels (Table I). The average I.Q. of those who had normal thyroids was 105.42 and those with goiter was 100.4 (*p*<0.05).

Table I. I.Q. average in B students according to thyroid size.

Level Thyroid Size	Elementary School		Junior-high School		High School		Average of Total
Normal	87.3	91	98.5	103.42	108.34	111.25	105.42
Grade 1	89.90	87.3	101.25	102.71	103.80	109.77	101.91
Grade 2	83.5	83.5	99	112.7	101.8	101.33	98.18
Grade 3				103	86		97.33

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This study revealed that I.D. decreases I.Q. levels of apparently normal individuals of a population, aside from the cretinism, abortion, hyperthyroidism and goiter which it causes. This problem leads to a socioeconomic lag in the society.

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REFERENCES

1. Steven C, Boyages JK, et al: Iodine deficiency impairs intellectual and neuromotor development in apparently normal persons. *Med J Aust* 12: 150, 676, 1989.
2. Basil S, et al: Iodine deficiency disorders and their eradication. *Lancet* 2B: 1126-1129, 1983.
3. Fierro-Benitex R, et al: Endemic cretinism in the Andean region of Ecuador. *J of Clinical Endocrinology and Metabolism* 30: 228-36, 1970.
4. Bautista A, Patrick A, et al: The effect of oral iodized oil on intelligence, thyroid status, and somatic growth in school-age children from an area of endemic goiter. *Am J Nutr* 35: 127-34, 1982.
5. Azizi F, Sarshar A et al; Impairment of neuromotor and cognitive development on iodine deficient school children with normal physical growth. *Acta Endoc* 129: 501-4, 1993.
6. Kimiagar M, Yasaee M, et al: Endemic goiter in Boir Ahmad. *Med J Isl Rep Iran.* 3(1-2): 27-29, 1989.
7. Izadpanah A, Nikeghbal K: Goiter in Kohgiloiieh and Boir Ahmad. Presented in the 2nd International Congress of Geographic Medicine. Shiraz, 1989.
8. Azizi F, Kalani H, Kimiagar M, et al: Physical neuromotor and intellectual impairment in non-cretinous school children with iodine deficiency. *Int J Vit Nut Res* 65: 144, 1995.
9. Brahanee M: Adapting the Raven test for the Iranian population. Tehran, Tehran University, 1980 (in Persian).
10. Ganjee H: Theoretical and Practical Bases. Tehran, 4th ed, pp. 199-222, 1992 (in Persian).