SUMMARY

Determination of trace element levels in hair has been a subject of continual interest in biomedical and environmental sciences. The significance of such measurements as an indices for assessing nutritional status, diagnosis, intoxication and monitoring environmental exposure. Hair is a good non-invasive method which should be used in screening studies of children living in heavily polluted area. Analysis of hair is potentially more attractive means of assessing long term exposure.

In an attempt to evaluate some trace elements in 75 patients attending the psychiatric clinic of the new children (Abo Erish) hospital Cairo University aged from 7–14 years. These patients were divided into 3 groups as follows:-

- Group I 25 patients with mild mental sub-normality.
- Group II 25 patients with moderate mental sub-normality.
- Group III 25 patients with psychological disorder (Attention Deficit Hyperactivity Disorder (ADHD)

The study included 75 healthy children selected from school children in the same range of age were taken as control group IV.

Both the patients and control were subjected to the following: -

History taken, anthropometric measurements, clinical examination, psychological assessment (IQ, Total Aggression), hair sampling, estimation of the levels of trace elements (Pb, Cd, Zn and Cu) by Atomic Absorption Spectrophotometery.

The result of this study were as follows.

Hair lead level is a significantly increased in group of mild MR, moderate MR and ADHD groups than control group.

There is a significant negative correlation between hair lead level and I.Q score among studied groups, also there is a significant positive correlation between lead level and degree of Total Aggression score.

Many children are considered to have behavioral problems before the diagnosis of lead poisoning is entertained and appear in schools with learning disabilities, hyperkinetic syndrome and other behavioral problems.

For cadmium , there is significant increase cadmium hair level in group of mild MR, and ADHD groups than control group.

There is significant decrease cadmium hair level in group of moderate MR, than control group.

For zinc, there is significant increase of zinc hair level in mild MR, moderate MR and ADHD groups than control group, no correlation was found between hair Zn level to IQ and Total aggression .

Copper hair level was within normal range among studied groups, no correlation was found between hair Cu level to IQ and Total aggression.

There is no correlation between serum levels of metals and scalp hair levels of metals studied in some subjects of control group.

There is a significant positive correlation between BMI and IQ score among studied groups . There is a significant negative correlation between BMI to Total aggression score and level of hair Pb .

The relationship between the mean levels of metals in hair with residence of studied group revealed that there is highly significant statistical difference among studied groups for lead, either live in urban and rural area and no significance study for cadmium, zinc and copper.

Zinc and copper depend on nutritional factor than environmental exposure as lead and cadmium.

Hair is a good non-invasive method which should be used in screening studies of children living in heavily polluted areas, so monitoring of metals in hair of children may be regarded as more sensitive indicator of environmental pollution.