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Short Communication

Nutritional status and cognitive ability among preschool children in Baghdad, Iraq

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Cognition encompasses attention, memory, knowledge, decision making, planning, reasoning, judgment, perception, comprehension, language, and visuospatial functions (action and process of acquiring knowledge and understanding). Literature in developing countries reported that early stunting and poverty in the first five years of life were associated with lower subsequent cognitive abilities, school achievement, and productivity in adult life.[1] In the last 4 decades Iraqi children were exposed to wars, sanctions, conflicts, (man- made disasters) and poverty that negatively impacted the growth of children in first 5 years of life.[2] Recently, it was observed an increasing rates of children with cognitive disorders (slow learners, ADHD, autism. etc.).[3] Publishing on the impact of malnutrition on cognitive abilities are scare. Therefore, this report was carried out.

A convenient sample of 160 preschool children aged 4 – 6 years giving male to female ration of 1.05, were included in this study. They were recruited from 4 private and 2 public kindergartens from Adhamia district (northeast Baghdad). Preschoolers and their parents were interviewed. Cognition was tested by Verbal comprehension test (measure of spoken language, ability to follow verbal instruction, ...etc.). Vocabulary test (measure expressive language skills, vocabulary knowledge of nouns, ...etc.). Pictures similarities test (measure to resolve problems "inductive reasoning", ...etc.).[4] The scale of cognition test was poor ability, fair, and high was ≤ 89, 90-109 and >109, respectively. The anthropometric measures were taken using electronic scale and a wooden board. Z distribution was used to identify the prevalence rates of malnutrition indicators (stunting, wasting, and underweight). Fisher's Exact test was used to examine the effect of nutritional status (normal, undernutrition, wasting and overweight) (independents variables) on cognitive abilities. P < 0.05) considered as significant.

Of preschoolers with normal growth indicator, 49 (41.5%) were with high cognitive ability. Among those with stunted and wasting indicators, the high cognitive ability was in 6 (24%) and 2 (33.3%), respectively. There were significant differences in high cognitive ability between normal and stunted.

Table 1: Distribution of nutritional status and cognitive abilities

Nutritional status	Cognitive ability		
	Poor No. (%)	Fair No. (%)	High No. (%)
Normal	7 (5.9%)	62 (52.5%)	49 (41.5%)
Underweight	3 (75%)	0 (0.0%)	1 (25%)
Stunting	15 (60%)	4 (16%)	6 (24%)
Wasting	4 (66.7%)	0 (0.0)	2 (33.3%)
Overweight	1 (14.3%)	3 (42.9%)	3 (42.9%)
Total	30 (18.8%)	69 (43.1%)	61 (38.1%)

Preschoolers (p = 0.000001), and between normal and wasted preschool children (p = 0.007) (Table 1).

Fisher's Exact Probability Test:

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Normal vs underweight p = 0.01
Normal vs stunting p = 0.000001
Normal vs wasting p = 0.007
Normal vs overweight p = 0.4

In the last decade, a focused attention on preventable child death. In this decade, a problem of failing children under 5 years to reach their potential cognitive development appeared.

Mitigating cognitive deficits among children with early growth faltering is a goal for those with policy and academic interest. Early growth faltering is negatively associated with later cognitive development and school achievement is well known. Pre-school education might have a beneficial effect for all children. However, publication on impact of growth faltering on cognitive function is scarce. Iraq reported high rates of children with growth faltering in decades before change of regime 2003.

Preschool children with normal growth indices showed a significantly higher rate of high cognitive ability than those with growth faltering (stunting and wasting). It is consistent with that reported in literature.[5,6]

An increasing body of literature stressed the connection between improved nutrition and optimal brain function.[7] The finding of this study showed that high cognition was marked among normal growth preschoolers.

Monitoring growth and development is essential task among primary health care centers.

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2. Conflict of Interest

None.

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