

IMPACT OF MATERNAL EDUCATIONAL LEVEL ON SCHOOL CHILDREN'S COGNITION IN BAGHDAD, IRAQ

Lubna J. Ghulam^{1*}, Eman A. Al-Kaseer² and Jawad K. Al-Diwan³

¹Ministry of Health, PHC Center, Zoya, Rusafa. MB ChB, FIBMS.

²Dept. of Family and Community Medicine, College of Medicine, Baghdad University. MB ChB, FIBMS.

³Dept. of Family and Community Medicine, College of Medicine, Baghdad University. MB ChB, MSc, FIBMS, FFPH.

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*Corresponding Author: Lubna J. Ghulam

Ministry of Health, PHC center, Zoya, Rusafa. MB ChB, FIBMS.

ABSTRACT

Background: Maternal education is a factor contributes to cognitive development. Impact of a mother's educational attainment affecting her child's cognitive abilities, shaping their learning environment, access to resources, and developmental outcomes was highlighted. The aim was to clarify the impact of maternal education of cognition of school children in Baghdad, Iraq. **Methodology:** A total of 100 school children was included in the study. They were selected conveniently in Baghdad for the period 1st of March to 1st of July 2024. Stanford-Binet Intelligent Scale 5th edition was used (SB-5). SB-5 evaluates Fluid Reasoning (Solving novel problems without relying on prior knowledge), Knowledge (Accumulated information, academic skills, and facts), Quantitative Reasoning (Problem-solving and understanding numerical concepts), Visual-Spatial Processing (Understanding and manipulating visual information), and Working Memory (Holding and processing information temporarily for task completion). **Results:** Quantitative reasoning and knowledge among school children of graduated mothers were significantly higher than that among school children of undergraduate mothers ($p = 0.003$, and $p = 0.001$, respectively). No significant differences in visual spatial, working memory and fluid reasoning among school children of graduate mothers and those of school children of undergraduate mothers. ($p = 0.19$, $p = 0.8$, $p = 0.8$, respectively). **Conclusion:** Quantitative reasoning and knowledge of children cognition were enhanced and promoted by educated mother.

KEYWORDS: visual spatial, quantitative reasoning, fluid reasoning.

INTRODUCTION

The cognitive development of school children is a critical aspect of their overall growth, influencing academic performance, problem-solving abilities, and future opportunities. Maternal education level emerged as a predictor contributes to cognitive development. Research consistently highlights the profound impact that a mother's educational attainment can have on her child's cognitive abilities, shaping their learning environment, access to resources, and developmental outcomes.

Educated mothers are more likely to engage in stimulating interactions with their children, such as reading, storytelling, and educational play, which foster language acquisition, critical thinking, and problem-solving skills. They also exhibit better parenting practices e.g., setting consistent routines, providing

emotional support, and encouraging curiosity and exploration, which are essential for cognitive growth. Higher maternal education is often associated with better access to healthcare, nutrition, and educational resources, all of which contribute to optimal brain development during early childhood.

In Iraq, publishing on cognition of school children and maternal education is scarce. This work was carried out to clarify the impact of maternal education of cognition of school children in Baghdad, Iraq.

MATERIALS AND METHODS

A total of 100 students was conducted in Baghdad/ Iraq during the period from 1/3/2024 to 1/7/2024. They were selected conveniently.

The Stanford-Binet Intelligence Scales 5th edition (SB-5)³ were used in this study. The SB Scales are a widely used tool for measuring cognitive abilities and intelligence. The test evaluates Fluid Reasoning (Solving novel problems without relying on prior knowledge), Knowledge (Accumulated information, academic skills, and facts), Quantitative Reasoning (Problem-solving and understanding numerical concepts), Visual-Spatial Processing (Understanding and manipulating visual information), and Working Memory (Holding and processing information temporarily for task completion).

Testing the cognition in school children between graduate and undergraduate mothers using student's *t* test. $P < 0.05$ was regarded significant.

RESULTS

Quantitative reasoning and knowledge among school children of graduated mothers (11.1 ± 2.5 , and 13.6 ± 2 , respectively) were significantly higher than that among school children of undergraduate mothers (9.6 ± 1.4 and 10.7 ± 1.9 , respectively) ($t = 3.1$, $d.f. = 98$, $p = 0.003$, and $t = 6.7$, $d.f. = 98$, $p = 0.001$, respectively).

No significant differences in visual spatial, working memory and fluid reasoning among school children of graduate mothers (13.1 ± 2.3 , 9.3 ± 4.5 , and 13.6 ± 2 , respectively) and those of school children of undergraduate mothers (12.3 ± 1.5 , 7.9 ± 1.6 and 13.7 ± 2.3 , respectively). ($t = 1.3$, $d.f. = 98$, $p = 0.19$, $t = 1.6$, $d.f. = 98$, $p = 0.8$ and $t = 0.2$, $d.f. = 98$, $p = 0.8$, respectively). These findings are shown in Table 1.

Table 1: Cognitive variable distribution among school children of graduate and under graduated mothers.

Cognitive variables	Maternal education			
	undergraduate		Graduate	
	Mean	SD	Mean	SD
Visual spatial	12.3	1.5	13.1	3.2
	$t = 1.3$, $d.f. = 98$, $p = 0.19$			
Working memory	7.9	1.6	9.3	4.5
	$t = 1.6$, $d.f. = 98$, $p = 0.8$			
Quantitative reasoning	9.6	1.4	11.1	2.5
	$t = 3.1$, $d.f. = 98$, $p = 0.003$			
Knowledge	10.7	1.9	13.6	2
	$t = 6.7$, $d.f. = 98$, $p = 0.0001$			
Fluid reasoning	13.7	2.3	13.8	2.8
	$t = 0.2$, $d.f. = 98$, $p = 0.8$			

DISCUSSION

School children of graduated mothers showed a significant higher qualitative reasoning (problem solving, numerical comprehension ...etc.) than that among school children of ungraduated mothers ($p = 0.003$). This finding can be explained by the fact that high maternal education associates with better access to educational resources, a more stimulating home environment and greater emphasis on academic achievement.^[1]

There was a statistically significant difference in the level of knowledge (accumulated information, academic skills, and facts) between school children of graduate mothers and those of undergraduate mothers. ($p = 0.0001$). It is similar to that reported in literature.^[2,3] This finding might be attributed to the ability of graduate mothers to provide intellectual stimulating environment in home emphasizing academic skills. Graduate mothers may serve as a role model encourage their children to value academic achievements.

No significant differences in visual spatial (ability to perceive, process, and recall visual and spatial information) and working memory (the capacity to hold and manipulate information over short periods, which is critical for tasks like problem-solving and learning) between children of graduate mothers and those of undergraduate mothers ($p = 0.18$ and 0.8 , respectively). This finding is inconsistent with that in literature.^[1-3] The difference might be explained that visual spatial and working memory are influenced by extracurricular activities e.g., visual support, articulatory rehearsal ...etc. In the last two decades, with the growing competition many parents stop their children from indulging in them. In fact, extracurricular activities (sports, arts, music, and various clubs that encourage students to explore their interests and develop social skills) are seen in these days as 'time wasters' as parents and students think that they are useless and one cannot achieve anything from them.

Fluid reasoning (the ability to solve new and unusual problems without relying on past experiences) was not differ among school children between those graduate and undergraduate mothers ($p = 0.8$). It seems that fluid reasoning which involves applying logic and reasoning to new situations, recognizing patterns, and coming up with fresh solutions, is neglected in teaching system in Iraq.^[4]

CONCLUSION

Quantitative reasoning and knowledge of children cognition were enhanced and promoted by educated mother.

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