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Academic Achievement and Psychosocial Profile of Egyptian Primary School Children in South Sinai

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Abstract

BACKGROUND: Population of South Sinai has suffered from negligence for many years. Solving educational problems of this population is the main concern nowadays.

AIM: To assess academic achievement in primary school children in South Sinai in relation to intelligence and psychosocial profile.

SUBJECTS AND METHODS: A descriptive cross-sectional survey was conducted on 407 Bedouin and urban students randomly selected from twelve public primary schools in six cities in South Sinai. Intelligence was assessed using Goodenough-Harris test. The midyear Arabic language and Arithmetic scores were used to assess academic achievement. The teachers completed a Pediatric-Symptom Checklist for evaluation of children behaviour.

RESULTS: A statistically significant difference in academic achievement ($P < 0.001$), total psychosocial scores, ($P < 0.05$), and externalization ($P < 0.05$) was found between urban and Bedouin students with significant gender differences ($P < 0.05$). Highly significant positive correlations were observed between IQ percentile and mid-year Arabic language scores and Arithmetic scores ($P < 0.001$), and significant negative correlations with the total score of PSCL and its subscale scores (externalising, inattention, and internalising behaviour) ($P < 0.001$) among the students.

CONCLUSION: Comorbid academic and psychosocial dysfunction in primary school children were observed in South Sinai. A national strategy to minimise the educational gap between Bedouin and urban areas should be implemented.

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Introduction

South Sinai is the least populated governorate of Egypt located in the east of the country, encompassing the southern half of the Sinai Peninsula [1]. Population in Sinai has unique circumstances, which is far different from that of other Egyptian urban or rural communities. They live at the periphery of Egypt, with the population of 21 per m² of the total area away from the centre and away from the basic services [2, 3]. They are growing up in contexts characterised by dry weather, deficient water supply, and higher rates of illiteracy, weak economies, limited educational opportunities, pervasive poverty, and other socio-cultural transformations [4]. This environment can have negative impacts on students'

development as reported in similar communities. Urban and Bedouin children attend public government-financed schools located in their communities. Most of the teachers (60%) have Bedouin origin [5, 6].

Many factors affect the academic performance of school children amongst are the cognitive function of the children and psychosocial behavioural factors. Environmental factors also affect academic achievement [7, 8].

There have been few such studies in South Sinai. Therefore, the aim of this study was to assess factors that affect academic achievement in primary school children in South Sinai in relation to intelligence and psychosocial profile. The ultimate goal was putting an intervention plan to reverse, or at least retards the progress of educational and

psychosocial problems and its sequels in this target population.

Subjects and Methods

Study design

This descriptive cross-sectional, school-based study was conducted as a part of the project "Improvement of health and nutritional status of children and adolescents living at South Sinai", which is funded by the European Union (EU) as a collaborative research with the National Research Center in Egypt. The study was performed in the period of 2009-2010. The sample size was calculated to detect the mean differences in the scores of the factors probably affecting scholastic achievement.

Setting of the study

This study is a school-based that was conducted in twelve public primary schools in six cities in South Sinai (Ra's-Sedr, Abo is, Abo Zenimah, El Tor, Saint Catherine, and Nweiba), Egypt. The study population represents the social variations in South Sinai, (210 Bedouin students, families are original inhabitants of Sinai, and 197 urban students, some of their families moved from the Nile valley to work in Sinai).

Subjects

The study included 407 Bedouin and urban students (203 males and 204 females). Students recorded to have any mental disorder, chronic disease, visual or auditory impairment were excluded, as well those who were absent or refused to participate.

Ethical considerations

The study was approved by the Ethical Committee of the National Research Centre. Permission to conduct the research in the selected schools was obtained from the Egyptian Ministry of Education. In addition, a verbal consent was obtained from each parents' participant through the school authority; they were informed about the questionnaires being used in the study and accepted their sharing in the study.

Procedures

The subjects of the study completed a self-report assessment questionnaire which included the following items:

I-Demographic and personal data such as age, sex, residence and origin whether Bedouin or Urban.

II-Assessments:

a) A medical examination was done to explore any health problem.

b) Cognitive function assessment: Using draw a man test. Draw a man test was developed by Goodenough [9]. The test is preferred as a screening tool for cognitive assessment as it's easily applied, not consuming time can be applied to large numbers of children at the same time. The scoring for the Draw a man test is straightforward and objective. A drawing receives 1 point for the presence and correct quantity of each of various body parts, such as head, eyes, mouth, ears, arms and feet. The performance of this drawing task relies on various cognitive, motoric, perceptual, attentional, and motivational capacities. Previous research proved that performance on the Goodenough Draw a Man Test correlated moderately with scores on time-consuming comprehensive IQ tests, and the test was both reliable and valid [10, 11].

c) Educational achievement assessment: The educational achievement was assessed using the mean scores of midyear tests of Arabic language and arithmetic which represent the essential educational components that the students must pass in order to enter higher levels of education.

d) Psychosocial function assessment: Children's psychosocial function was evaluated using a teacher completed Pediatric Symptom Checklist-17 (PSC-17) [12]. It is a psychosocial screen designed to facilitate the recognition of hyperactivity, attention, emotional, conduct, and social problems, relational difficulties with peers, anxiety/depression, and aggressive behaviour [13].

A total score of 15 or higher suggests the presence of significant behavioural or emotional problems. It consists of 3 subscales: internalising subscale, externalising subscale, and attention subscale [14]. The PSC-17 subscales have obtained reasonable agreement with validated and accepted parent-report instruments for internalising, externalising, and attention problems [15]. Teachers had filled checklists for 390 students out of the 407.

Results

Our present study comprised 407 students (210 Bedouin and 197 urban students), aged 6 to 14 years. Although the mid-year Arabic language and arithmetic scores were statistically highly significantly lower in Bedouin group compared to urban group ($P < 0.001$), no significant differences between the two groups were found in IQ percentile ($P > 0.05$). Total

PSCL and externalisation scores were significantly higher in Bedouin group compared to urban group ($P < 0.05$), while no significant differences were found in the internalisation and attention scores ($P > 0.05$). Comparison of IQ percentile, academic achievement and psychosocial variables of the students among Bedouin and urban students was shown in Table 1.

Table 1: Comparison of age, cognitive and academic achievement variables in Bedouin and urban students

Variables	Bedouin group (N = 210)	Urban group (N = 197)	Bedouin Vs. urban groups	
	Mean ± SD	Mean ± SD	P value	
Age (yrs.)	9.77 ± 1.4	8.78 ± 1.34	0.06	
Cognitive and academic achievement	IQ percentile	57.78 ± 32.21	63.46 ± 30.66	0.068
	Mid-year Arabic score	60.33 ± 20.11	76.67 ± 20.3	0.00**
	Mid-year arithmetic score	53.25 ± 17.85	73.07 ± 20.76	0.00**
Psychosocial variables	Internalization score	2.77 ± 2.42	2.56 ± 2.26	0.373
	Attention score	3.8 ± 2.7	3.46 ± 2.25	0.183
	Externalization score	4.3 ± 3.67	3.46 ± 3.03	0.015*
	Total psychological score	10.84 ± 7.85	9.35 ± 6.72	0.043*

*Significant difference at $p < 0.05$, **highly significant difference at $p < 0.001$.

Our present study comprised 203 males and 204 females. The mean IQ percentile was statistically significantly lower in males compared to females ($P < 0.05$). As regard total PSCL scores, externalisation and attention scores, they were statistically highly significantly higher in males compared to females ($P < 0.001$) while no significant differences were found in the internalisation score ($P > 0.05$). Comparison of cognition, academic achievement, and psychosocial variables of the students of the Bedouin and urban students according to sex was shown in Table 2.

Table 2: Comparison of cognitive, academic achievement, and psychosocial variables of the Bedouin and urban students according to sex

Variables	Males group (N = 203)	Females group (N = 204)	Males vs. Females groups	
	Mean ± SD	Mean ± SD	P value	
Cognition	IQ percentile	52.98 ± 31.45	67.94 ± 29.35	0.000*
Academic achievement	Mid-year Arabic score	65.32 ± 21.37	71.18 ± 21.81	0.007*
	Mid-year arithmetic score	60.26 ± 22.31	65.37 ± 20.78	0.018*
	Internalization score	2.67 ± 2.40	2.67 ± 2.29	0.989
Psychosocial	Attention score	4.15 ± 2.39	3.0 ± 2.09	0.000**
	Externalization score	4.42 ± 3.56	3.36 ± 3.1	0.002**
	Total psychological score	11.17 ± 7.63	9.05 ± 6.94	0.004**

*Significant difference at $p < 0.05$, **highly significant difference at $p < 0.001$

Categorization of children according to IQ percentile scores showed that 98 students (24.3%) were superior, 63 (16.6%) were above average, 174 (42.8%) were average, 35 (8.7 %) were below average, 30 (7.4%) were borderline and 7 (1.7%) students were intellectually deficit. Thus, about 83.7% of the whole sample have average and above average IQ compared to 9.1% having poor intelligence.

Analysis of results of PSCL revealed that, out of 390 students, 110 students (28.2%) exceeded the cutoff level of the total PSCL score that means that 28.2% of the sample suffers from psychosocial problems. About 88 students (22.7%) had symptoms

suggestive of externalising behaviour, 56 (14.4%) having symptoms suggestive of inattention and hyperactivity behaviour, and 87 (22.5%) having symptoms suggestive of internalising behaviour. The symptoms suggestive of psychosocial disorders and externalising behaviour were found to be significantly higher in Bedouin group compared to urban group ($P < 0.05$). Table 3 shows a distribution of psychosocial problems among students in relation to their residence.

Table 3: Distribution of psychosocial problems among students in relation to their residence

Variables	Total Students (N = 390)	Bedouin group (N = 205)	Urban group (N = 185)	P value
	N (%)	N (%)	N (%)	
Internalization behavior	87 (22.5%)	49 (24.0 %)	38 (20.8%)	0.44
Inattention	56 (14.4%)	36 (17.6%)	20 (10.8%)	0.058
Externalizing behavior	88 (22.7%)	57 (27.9%)	31 (16.8%)	0.00**
Total psychosocial dysfunction	110 (28.2%)	67 (32.7%)	43 (23.2%)	0.039*

*Significant difference at $p < 0.05$, **highly significant difference at $p < 0.001$.

Categorization of children according to academic achievement showed that the scores of the Bedouin students were statistically significantly lower compared to Urban group ($P < 0.001$). About 19.6% students failed in the Arabic language (27% in Bedouin versus 11.6% urban), and 28.2% students failed in arithmetic (41.1% Bedouin, versus 14.4% urban). Comparison of educational achievement among Bedouin and urban students was shown in Table 4.

Table 4: Comparison of educational achievement among the students in Bedouin and urban groups

Variables	Total Group (N = 407)	Bedouin Group (N = 210)	Urban Group (N = 197)	P value
	N (%)	N (%)	N (%)	
Arabic	Failed	19.6%	27%	0.00**
	Passed	80.4%	73%	
Mathematic	Failed	28.2%	41.1%	0.00**
	Passed	71.8%	58.9%	

*Significant at $p < 0.05$, **highly significant at $p < 0.001$.

Highly significant positive correlations were observed between IQ percentile and mid-year Arabic language scores ($P < 0.001$) and also Arithmetic scores ($P < 0.001$), and significant negative correlations with the total score of PSCL and its subscale scores (externalising, inattention, and internalising behaviour) ($P < 0.001$) among the students.

Table 5: Correlations of academic achievement test scores, psychosocial variables and IQ percentile score among the students

Variables		Academic achievement tests	
		Mid-year Arabic scores	Mid-year Arithmetic scores
IQ	IQ percentile	0.299	0.186
	Internalization scores	-0.49	-0.326
Psychosocial	Attention scores	-0.449	-0.257
	Externalization scores	-0.414	-0.242
	Total psychosocial scores	-0.501	-0.305

*Significant difference at $p < 0.05$, **highly significant difference at $p < 0.001$

Correlations of academic achievement test scores, psychosocial variables and IQ percentile score among the students were shown in Table 5.

Discussion

Studies addressing the issue of co-morbid school underachievement and psychosocial problems in schoolchildren are often lacking in Sinai. Institutions offering special education facilities for children with school underachievement are also limited and they often do not have school-based mental health program established. Therefore, the aim of this current study was to explore the prevalence and assess the association between educational achievement and psychosocial problems among children in public schools in South Sinai.

Our study showed that 83.7% of the studied groups had normal IQ and only 9.1% had the poor cognitive function; with no statistically significant difference between Bedouin and urban inhabitants ($P > 0.05$). There was a gender difference with lower cognitive function in boys ($P < 0.05$). Our findings are consistent with several studies that have been reported gender differences in intelligence. They support gender differences in specific cognitive abilities; some support females and some support males [16]. Adrian and Buchanan [17] have examined gender differences in intelligence in 20 countries, studies from China through to Germany and Scotland, and their results showed that males give significantly higher estimates than females for over intelligence. They stated also this difference is consistent across countries and population although there are wide differences in level.

In the present study, the means of academic achievement were statistically significantly lower in males compared to females ($P < 0.05$), that is consistent with Watkins et al. [18], who revealed sex differences on the academic achievement subtests. Males outperformed than females on subtests (arithmetic, information, and matrix reasoning), while females' performance was better than males only on the digit of symbol substitution. Habibollah, et al., [19], studied the academic achievement distribution in 80,000 students; there was no significant difference between males and females regarding academic achievement.

In this study, Bedouin students had statistically highly significant lower educational achievement scores compared to Urban group ($P < 0.001$). Almost 20 % of the whole sample were failed in Arabic language test (27% of Bedouin versus 11.6% of Urban), and 28.2% students were failed in arithmetic test (41.1% of Bedouin versus 14.4% of Urban group). Similar results were reported in studies

from Nigeria comparing rural and urban areas [20, 21]. Boniface et al., [21] reported that more than two-thirds of schoolchildren in rural areas of Malaysia had lower educational achievement compared to those in urban areas.

Intelligence plays an important role in school achievement. Highly significant positive correlations were observed between IQ percentile and mid-year Arabic language scores ($P < 0.001$) and Arithmetic scores ($P < 0.001$). Our findings are consistent with Ritu & Sheikh [22] that have been reported that IQ scores often predict school achievement, children with higher IQ scores will have better achievement tests, school grades, and complete more years of education. They have been shown that performance on intelligence tests is correlated with school achievement.

However, having an average IQ is not a guarantee to be academically successful. In this study, although 83.7% of the studied subjects had average and above average IQ, almost 20% of students were failed in language test and 28.2% of students were failed in the Arithmetic test. These results are in agreement with Ormrod et al., [23], who stated that high scores on an intelligence test do not always mean someone is going to do well academically, and vice-versa. This is because intelligence tests gauge someone's ability to critically think and reason abstractly, while educational achievement is a combination of these abilities and the ability to be motivated, plan time well and many other factors as family resources, parental support are also involved.

Psychosocial dysfunction contributes to disability among children [24]. Anselmi et al. [25], reported that 21.1% of Brazilian children exceeded the cutoff level for clinical significance on the total PSCL score, 14.7% exceeded criteria on the internalising subscale, 16.2% on the externalising subscale, and 21% on the inattention subscale. In our study, analysis of PSCL-17 results revealed that 28.2% of the studied children had psychosocial dysfunction according to the cutoff level of the PSCL-17. Almost 23% students exceeded on the externalising subscale, 22.5% students exceeded criteria on the internalising subscale and 14.4% students exceeded on the inattention and hyperactivity subscale.

In the present study, symptoms suggestive of psychosocial disorders and externalising behaviour were found significantly higher in Bedouin group compared to urban group ($P < 0.05$). These data are proportionate with Polaha et al., [26] who showed such problems are predominant in rural Children. Meanwhile, our findings were not in the agreement with the results of Elbedour et al., [27] who reported that Bedouin children had higher levels of fear, inattention, and hyperactivity behaviour than urban children. Over than 50% reporting fears were related to the family situation (e.g. being punished by their

father) and too unrealistic threats (e.g. ghosts). In our opinion, this pattern would seem better explained by differences in the socialisation goals of these societies.

In this study, there was a gender difference with higher scores suggesting higher psychosocial problems in boys ($P < 0.05$). Our findings are consistent with several studies as Akpan et al., in Nigeria, Eapen et al., in Emirate, and Gupta et al., in India that have been reported gender differences and more males than females having behavioural disorders [28-30]. The prevalence of behavioural problems was also evaluated among 620 in the United Arab Emirates aged 6 - 18 years; 11.8% scored above the cut-off point, indicating behavioural problems. Conduct problems were more prevalent among boys and emotional problems among girls [29]. In our study, total PSCL, externalisation and attention scores were statistically highly significantly higher in males compared to females ($P < 0.001$) while no significant differences were found in the internalisation score ($P > 0.05$).

The prevalence of psychosocial dysfunction in children with academic underachievement documented by past studies [31-33] carried out in developed parts of the world ranges from thirty-one to forty-one percent. Academic performance is often associated with co-morbid behavioural problems which often develop during childhood period, and had been known to persist into the adulthood in most cases. Children who do poorly at school may be under a lot of stress and cope with it either by externalising their feeling as behaviour problem while others might internalise it [28]. Our results showed that psychosocial problems had the negative association with academic performance both in Arabic language and arithmetic ($P < 0.001$) in all students.

Other risk factors may help in contributing these findings such as lower socioeconomic status, lack of well-equipped schools, expert teachers, psycho-educational services, and insufficient infrastructure (including electricity). Moreover, most students in primary schools in Sinai are daily confronted with obstacles of coping with academic achievement and serious emotional strains as long walk to school. The results were in accordance with previous studies in Egypt, and other countries as in India, Nigeria and Malaysia [34-37], that were discussing potential determinants of educational achievement, and psychosocial problems in rural and urban school children.

In conclusion, comorbid academic and psychosocial dysfunction in primary school children was observed in South Sinai. Effective interventions programs must involve activation of the role of psychosocial counsellors and teachers in schools, promoting complementary relation between parents and children to build resilience against conditions that produce psychosocial and learning disabilities. It is

recommended that government should increase the allocation of funds, and the school should be equipped with different facilities including a computer laboratory with internet access, a library, and visual and science laboratories to facilitate learning and improve academic performance in the schools in South Sinai. Encouraging sports practice and establishing playgrounds is mandatory.

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