

Effects of education of the head of the household on the prevalence of malnutrition in children

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ABSTRACT

الأهداف: دراسة تأثير المستوى التعليمي لرب الأسرة في معدل انتشار سوء التغذية لدى الأطفال السعوديين.

الطريقة: أجريت دراسة لمدة عامين خلال الفترة من 2004 و 2005م في جميع مناطق المملكة. اشتمل البحث على عينة عشوائية متعددة المراحل من سكان المملكة العربية السعودية. أخذت قياسات الوزن و الطول للأطفال مع المستوى التعليمي لرب الأسرة خلال الزيارات المنزلية. كما تم أخذ الاعتبار لمؤشرات التغذية في نموذج الوزن، و الطول للعمر للأطفال الأقل من 5 عام. تم قياس معدل انتشار كل معيار أقل من 2- الانحراف المعياري (SD) لكل مستوى تعليمي.

النتائج: يقدر حجم العينة 7390 في الوزن للعمر، و 7275 في الطول للعمر، و 7335 في الوزن للطول. ارتفع معدل نقص الوزن (وزن العمر أقل من 2 SD) من 7.4% لمستوى التعليم الجامعي إلى 15.2% في أطفال الآباء الأميين. ظهرت نتائج مماثلة لمعدل انتشار نقص الطول (طول العمر أقل من 2 SD)، و الضعف (الوزن للطول أقل من 2 SD).

خاتمة: تشير الدراسة أنه كلما ارتفع المستوى التعليمي لرب الأسرة، كلما قل معدل انتشار سوء التغذية لدى الأطفال، مشيرة إلى الحاجة إلى إكمال 9-12 عام دراسي على الأقل من مراحل الدراسة (التعليم المتوسط و الثانوي) لتحسين الحالة الغذائية للأطفال.

Objectives: To explore the effect of the educational level of the head of household on the prevalence of malnutrition in Saudi children.

Methods: The study was conducted over 2 years in 2004 and 2005 in all regions of the Kingdom of Saudi Arabia (KSA). The design consisted of a stratified multistage probability random sampling of the population of the KSA. The educational level of the heads of the household, and measurements of weight and height of the children were obtained during house

visits. Nutritional indicators in the form of weight for age, height for age, and weight for height for children below 5 years of age were determined, and the prevalence of each indicator below -2 standard deviations (SD) was calculated for each level of education.

Results: The sample size was 7390 in the weight for age, 7275 height for age, and 7335 for weight for height. The prevalence of underweight (weight for age below -2 SD) increased from 7.4% for the university level to 15.2% in the children of illiterate heads of household. Similar patterns were found for the prevalence of stunting (height for age below -2 SD) and wasting (weight for height below -2 SD).

Conclusion: This study demonstrates that the higher the education level of the heads of the household, the lower the prevalence of malnutrition in their children, suggesting that completing at least 9-12 years of education (intermediate and secondary school) is needed for better improvement in the nutritional status of the children.

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Child health and nutritional status in particular are well-known indicators of economic development. This has been stressed as part of the eighth Millennium Development Goals adopted by the United Nations in 2000.¹ The role of educational level of the parents in improving child health and nutritional status of children has been reported in the literature. Most studies focused on the effects of the mothers' education on child health, indicating that more educated mothers had healthier children because they have better knowledge on health care and nutrition, have healthier behaviors, and provide more sanitary and safer environments for their children.²⁻⁹ However, other authors indicated that in some societies, paternal education may be equally important.¹⁰ In China for example, fathers' education can be important, because generally they have more education than mothers. Furthermore, it was found that the average of the 2 parents' education has the largest effect among all measures of parental education, followed by the maximum of the 2 parents' education.¹¹ Nutritional status is one of the most important indicators of child health. Hence, the prevalence of nutritional disorders in children has been used to estimate the effects of education of the parents. The aim of the study is to evaluate the effect of the educational level of the head of household on the prevalence of malnutrition in Saudi children.

Methods. The study sample is part of a national project designed to survey the health profile of Saudi children and adolescents, ethically approved and funded by the King Abdul-Aziz City for Science and Technology in Riyadh, Kingdom of Saudi Arabia (KSA).¹² The study was conducted over 2 years in 2004 and 2005, in all regions of KSA. The sample was based on the stratified multistage probability sampling of Saudi households from each region of the country assuring weighted urban and rural representation. The 13 administrative regions are as follows: Riyadh, Makkah Al-Mokarramah, Al-Madinah Al-Monawwarah, Eastern Province, Aseer, Gizan, Najran, Al-Baha, Qassim, Hail, Tabuk, Northern Borders, and Al-Jouf. The questions on the completed level of education of the heads of household were part of the questionnaire administered by the interviewing team during house to house visits, allowing classification of the answers in the university or higher level, intermediate (9 years) and secondary school (12 years), primary school (6 years), and illiterate status. Other forms of education such as diplomas of varying length of schooling were not analyzed due to the difficulty in classifying them within the general public schooling terminology. Body measurements of the children were performed according to the standard

recommendations.¹³ Using the National Center for Health Statistics/World Health Organization (WHO) reference,¹⁴ the prevalence of the main nutritional disorders in children below 5 years of age in our sample was calculated for each educational level and expressed in standard deviation scores (z-scores). The WHO definitions and classification of malnutrition were used.^{15,16} By definition, the prevalence of underweight is the proportion of children under 5 years of age whose weight for age falls below -2 standard deviation (SD) of the reference population (weight for age z-score below -2 SD), the prevalence of wasting is the proportion of children under 5 years of age whose weight for height falls below -2 SD of the reference population (weight for height z-score below -2 SD), and the prevalence of stunting is the proportion of children under 5 years of age whose height for age falls below -2 SD of the reference population (height for age z-score below -2 SD).

Results. The total number of children was 7390 in the weight for age, 7275 in the height for age and 7335 weight for height. The tables indicate that the most common educational levels attained by the heads of the household in this study were intermediate/secondary level, followed by elementary, and university or higher. The head of the household in the Saudi Arab society is usually the father. The prevalence of underweight is depicted in Table 1, indicating that prevalence is highest when fathers are illiterate, and lowest in children whose fathers had university or higher level of education. In addition, it is worth noting that the difference in the prevalence of underweight between intermediate/secondary, and university/higher education levels is small, and the same remark applies to the prevalence of other nutritional indicators. Table 2 shows the prevalence of stunting in children in each level of paternal education with the highest prevalence in children of illiterate fathers, and lowest in children whose fathers had university education or higher. Finally, the prevalence of wasting is presented in Table 3, with highest prevalence in the children of illiterate fathers,

Table 1 - Prevalence of underweight (weight for age below -2 standard deviation).

Educational level of the head of household	Total number of children	<-2 Standard deviation n (%)
University or higher	1458	108 (7.4)
Secondary/Intermediate	2933	221 (7.5)
Elementary	1935	221(11.4)
Illiterate	1064	162(15.2)
Total	7390	712 (9.6)

Table 2 - Prevalence of stunting (height for age below -2 standard deviation [SD]).

Education of the head of household	Total number of children	Below -2 SD n (%)
University or higher	1407	105 (7.5)
Secondary/Intermediate	2903	232 (8.0)
Elementary	1901	226 (11.9)
Illiterate	1064	162 (15.2)
Total	7275	725 (10.0)

Table 3 - Prevalence of wasting (weight for height below -2 standard deviation [SD]).

Education of the head of household	Total number of children	Below -2 SD n (%)
University or higher	1450	109 (7.5)
Secondary/Intermediate	2903	232 (8.0)
Elementary	1919	198 (10.3)
Illiterate	1063	133 (12.5)
Total	7335	672 (9.1)

and lowest in children of fathers who have university education or higher.

Discussion. Most of the literature has dealt with the effects of the education of the mother rather than the father, because the mother has more contact with the children, directly dealing with their daily needs. However in others, such as the Saudi society, it is the responsibility of the father to provide the family needs. In addition, because an educated person is more likely to marry another with similar educational level, it is difficult to separate the effects of paternal from maternal education on the health of children. Accordingly, there is a trend to use the terms parental rather than maternal, or paternal education in relation to the effects on the nutritional status of children.

The higher the level of education of the father, the lower the prevalence of indicators of malnutrition. The finding of the highest prevalence of malnutrition in the children of illiterate fathers in this study is in line with reports from other populations. In 2 studies from Brazil, Terra de Souza et al¹⁷ reported a similar role of maternal illiteracy in the prevalence of under weight, and in another study, Marins and Almeida¹⁸ found that maternal schooling among others, was a risk factor for undernutrition. Similarly, reports from Brazzaville, Congo (Africa) indicated a significant influence of maternal schooling on stunting, but less on wasting.¹⁹ In another study from Africa (Ghana),

Owusu et al²⁰ reported that mother's education alone had no significant association with any of the child's anthropometric indicators, however, weight for age, and weight for length z-scores were significantly higher in households where fathers had attained tertiary level education (polytechnic or university), and lower prevalence of stunting (3%). The findings in the latter study are more consistent with our study with respect to the role of the father's educational level. However, it is in contrast with the higher prevalence of stunting in children with university level of education in our study (7.5%). This difference may be due to sampling, as the Ghana sample is from families living in a well-off neighborhood in Accra, whereas our sample is representative of both urban and rural populations. Therefore, other factors other than education may have contributed to the discrepancy between the 2 studies. In a similar study from an affluent population in New Delhi, India, higher maternal education was associated with better growth especially linear growth.²¹ Similarly, a study from a neighboring country (Muscat, Oman) suggested that higher maternal education was associated with better height for age.²² Finally, similar findings were reported from the Czech Republic indicating that among other factors, mothers' educational level was most significantly associated with better height of children.²³ In addition, the data in this study shows that the effect of paternal education varies according to the nutritional indicator with the prevalence of underweight and stunting in children of illiterate fathers being more affected than wasting. Furthermore, the finding of a small difference in the prevalence of nutritional disorders between intermediate/secondary and university/higher education levels suggests that a minimum of 9-12 years of paternal public education is required for better nutrition in children.

It is worth stressing that because of the exclusion of children from parents with other forms of education such as diplomas, vocational educations, and partial primary years, the prevalence data in this study do not represent national figures. Also, this study includes the nonavailability of analysis regarding the role of the educational level of the mothers and regional variations, as well as identifications of other factors affecting the prevalence of malnutrition in these children.

In conclusion, our findings are consistent with most reports from different countries indicating that higher parental education is consistently associated with better linear, as well as ponderal growth during infancy and childhood in various socioeconomic settings from several continents. The data suggest that a minimum of 9-12 years of public education of the heads of household

(intermediate/secondary school) is needed for better nutritional status in children. Further studies are needed to identify other factors affecting the nutritional status of the children.

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