Effects of Hospital Stay on Nutritional Anthropometric Data in Turkish Children

by Yesim Öztürk,[a] Benal Büyükgebiz,[a] Nur Arslan,[a] *and* Hülya Ellidokuz[b]
[a]*Department of Pediatric Gastroenterology, Metabolism and Nutrition, and* [b]*Department of Public Health, Faculty of Medicine, Dokuz Eylül University, Inciraltı, Turkey*

Summary

We evaluated the effects of hospital stay on nutritional anthropometric data in children of various age groups and investigated the effects of admission undernutrition on nutritional anthropometric data in children who were hospitalized in our university hospital in Turkey. The adverse effect of hospitalization on nutritional status was shown to be most obvious on the 2–6-year age group with undernourished children. We also found reduced anthropometric parameters in all patients with mild malnutrition at admission ($p < 0.05$). A significant number of pediatric patients in Turkey are at nutritional risk at the time of hospital admission (31.8 per cent). The well-nourished children do not carry nutritional risk due to hospitalization for other medical reasons. Since undernutrition has an adverse effect on morbidity and mortality, careful nutritional evaluation of children on admission is essential. Special attention should be given to patients who had mild malnutrition on admission since this population of patients seem to be at higher risk of adverse effect of hospitalization.

Introduction

The objectives of the present study were: (1) to evaluate the effects of hospital stay on nutritional anthropometric data in children of various age groups; and (2) to investigate the effects of undernutrition at admission, on nutritional anthropometric data in children in our university hospital.

Materials and Methods

Two hundred and thirteen children who were admitted to a medical ward at Dokuz Eylül University Faculty of Medicine Hospital were enrolled in the study between 1 May and 1 July 2001. The inclusion criteria were a hospital stay of > 24 h and age > 1 months. Children with conditions that involved large variations in hydration (severe hepatopathy, nephropathy or cardiac insufficiency) were excluded.

On admission and discharge body weight, height, triceps skinfold thickness (TSF), and mid arm circumference (MAC) were measured, and weight-for-height (Wt/Ht), percentage of weight-for-height, body mass index (BMI), percentage of BMI, and percentage of TSF were calculated. Their diagnosis and duration of hospital stay were noted.

Correspondence: Yesim Öztürk, Fellow in Pediatric Gastroenterology, Dokuz Eylül University, Faculty of Medicine, Department of Pediatric Gastroenterology, Metabolism and Nutrition, Inciraltı, Izmir, 35340, Turkey. Tel. 00 90 232 278 84 13; Fax 00 90 232 278 84 13. E-mail <yesimozturk@hotmail.com>.

Results

A total of 43 patients were excluded from the analysis due to exitus or incomplete data collection. A total of 170 patients included in the study had a mean age of 5.24 ± 5.05 years (range 1–17 years). Baseline characteristics are shown in Table 1.

One hundred and sixteen children had normal nutritional status. There was no difference between the anthropometric data of these children on admission and discharge ($p > 0.05$). According to age groups: during hospitalization in the 1–24-month age group ($n = 38$) the percentage of BMI increased ($p < 0.05$); in the 7–9-year age group ($n = 18$) the percentage of TSF decreased ($p < 0.05$); in the 2–6-year ($n = 34$) and 10–17-year age groups ($n = 26$), the anthropometric data did not change ($p > 0.05$).

Undernutrition on admission was found in 54 cases (31.8 per cent; Table 1). In these cases, significantly low scores for TSF and percentage of BMI on admission compared with population standards were detected, and the mean TSF, percentage of TSF, and percentage of BMI were lower on discharge ($p < 0.05$).

In the 2–6-year age group with undernourished children ($n = 13$), TSF and percentage of TSF were lower on discharge ($p < 0.05$). There were no differences between admission and discharge values of other age groups in undernourished children ($p > 0.05$).

In the undernourished group, 37 of the children had mild malnutrition. Only in the group with mild

Downloaded from https://academic.oup.com/tropej/article/49/3/189/1659532 by Dokuz Eylul University Library (DEU) user on 02 September 2021

TABLE 1
Baseline characteristics of the patients

Variable	Patient *n* (%)
Age	
1–24 months	62 (36.4)
2–6 years	47 (27.6)
7–9 years	24 (14.1)
10–18 years	37 (21.7)
Sex	
Male	96 (56.5)
Female	74 (43.5)
Percentage of ideal body weight-for-height[a]	
> 100	56 (32.9)
90–99	60 (35.2)
80–89	37 (21.7)
70–79	10 (5.8)
< 70	5 (2.9)
Diagnosis	
Bronchiolitis	43
Gastroenteritis	3
Other minor infection	15
Chronic cardiopathy	19
Chronic enteropathy	8
Severe infection	33
Severe sepsis	4
Cystic fibrosis	2
Deterioration of chronic disease	15
Hematologic disorders	7
Miscellaneous	21
Duration of hospital stay	1–44 days (7.4 ± 6.5)

[a]On admission.

malnutrition, body weight, Wt/Ht, BMI, and percentage of BMI were found to be decreased ($p < 0.05$).

In all groups there was no correlation between duration of hospital stay and the difference between admission and discharge data ($p > 0.05$).

Discussion

We identified the prevalence of undernutrition on admission in pediatric patients in a Turkish university hospital. In our study, the nutritional status of the patients on admission was significantly poorer (31.8 per cent) than that of the general pediatric population in Turkey.[1,2] This rate had been reported in western Europe as 13–20 per cent,[3] and in South America as 65 per cent.[4]

In well-nourished children there was no deterioration in their anthropometric values during hospitalization. However, there was no improvement in anthropometric values of initially malnourished children in the 1–24-month age group. Undernutrition on admission in children remains unrecognized by our healthcare workers. The adverse effect of hospitalization on nutritional status was shown to be most obvious in the 2–6-year age group. During hospital stay, we observed decreased TSF and percentage of TSF as early markers of deterioration of nutritional status in undernourished children. These data suggested that malnourished children are still not recognized sufficiently by pediatricians and that specific nutritional support is not used systematically in our country. Older age groups were not adversely influenced by hospitalization but we could not improve the nutritional status of undernourished children during hospitalization.

When the data were examined according to the severity of undernutrition in 54 children, the fact that hospitalization in our university hospital affected nutritional status adversely in children with mild malnutrition but not moderate malnutrition, is consistent with the data reported in the literature.[5]

It is known that mortality and morbidity rates are greater in the undernourished patients.[4,6,7] Our results suggest that although a significant number of patients are at nutritional risk at the time of hospital admission, our well-nourished children do not carry nutritional risk due to hospitalization for other medical reasons.

In conclusion, we would like to emphasize that since undernutrition has an adverse effect on morbidity and mortality, careful nutritional evaluation of children on admission is essential. Special attention should be given to patients who have mild malnutrition on admission, since this population of patients seem to be at highest risk of adverse effect of hospitalization.

References

1. Oğuz A, Gökalp AS, Gültekin A. Incidence of malnutrition in children aged 0–6 years in Sivas, and eastern province of Turkey. Indian Pediatr 1990; 27: 257–62.
2. Tunçbilek E, Unalan T, Coşkun T. Indicators of nutritional status in Turkish preschool children. Turkish Demographic and Health Survey 1993. J Trop Pediatr 1996; 42: 78–84.
3. Edington J, Boorman J, Durrant ER, *et al*. Prevalence of malnutrition on admission to four hospitals in England. The malnutrition prevalence group. Clin Nutr 2000; 19: 191–95.
4. Leite HP, Isatugo MK, Savaki L, Fisberg M. Anthropometric nutritional assessment of critically ill hospitalized children. Rev Paul Med 1993; 111: 309–13.
5. McWhirter JP, Pennington CR. Incidence and recognition of malnutrition in hospital. BMJ 1994; 308: 945–48.
6. Giner M, Laviano A, Meguid MM, Gleason JR. In 1995 a correlation between malnutrition and poor outcome in critically ill patients still exists. Nutrition 1996; 12: 56–7.
7. Uysal G, Sokmen A, Vidinlisan S. Clinical risk factors for fatal diarrhea in hospitalized children. Indian J Pediatr 2000; 67: 329–33.

Downloaded from https://academic.oup.com/tropej/article/49/3/189/1659532 by Dokuz Eylul University Library (DEU) user on 02 September 2021