Original Article

Evaluation of the Nutritional Status of the Children of Seasonal Farm Labourer Families

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Abstract

Objective: This study was conducted to evaluate the nutritional status of the children of seasonal farm labourer (SFL) families.
Methods: This was a descriptive study with a sample consisting of 250 families who work as farm labourers with children aged 0–5 years old living in the provinces of Sanliurfa and Adiyaman in Turkey. The data were collected by interview using the Form for Evaluation of Children's Nutrition.
Results: The rate of thinness, being underweight, and stunted growth in the children of seasonal farm labourer families was 4.8%, 14%, and 22%, respectively.
Conclusions: In this study, it was determined that physical developmental delays were high in the children of seasonal agricultural workers. It was suggested that continuing the study to determine the factors that affect the nutritional status of this group, bring these factors under control, and improve the living conditions of seasonal farm labourer families.

Key Words: Seasonal farm labourer, Child, Nutrition, Physical development, Nursing

Introduction

Adequate and balanced nutrition is important not only for fulfilling physiological needs but also for fulfilling psychological and sociological needs, and it also affects cognitive functions and body health (Merdol, 2008). Because inadequate nutrition causes a decrease in activity, curiosity, interest, social interaction, and cognitive functioning, and it also contributes to the tendency to easily develop infection, leading to mortality and morbidity.

Children who are fed an inadequate and unbalanced diet are both physically and mentally slow, childhood nutrition is particularly important to enable the optimal growth of a child into a healthy individual in adulthood (Demircioglu and Yabanci, 2003; Havlioglu, 2011; Simsek, 2012).

Restricted linear growth is primarily a result of inadequate nutrition and infectious disease (Sudfeld *et al.*, 2015). Chronic early undernutrition is known to cause stunting (height-for-age ≥2 SD below a Z-score normed for a well-nourished population of children of the same age and sex) and decades of research has documented associations between stunting and developmental delay (Miller *et al.*, 2015). Despite marked improvements in the prevalence of malnutrition, rates of undernutrition and stunting have continued to rise in some risk groups (Simsek and Koruk, 2011). One of these risk groups is the children of seasonal migrant farm labourer families. Poor living conditions of the families prevent children aged 0–5 years from having adequate health care and cause various risks concerning their optimal growth and development (Koruk *et al.*, 2010;

Seasonal Worker Migration Network, 2012). The term "seasonal migrant farm labourer" is used for workers who migrate from one place to another and return to their homes when the agricultural production season ends (Simsek, 2012). Each family travels to three different provinces in one year, and they live in fields approximately 7-8 months (average, 4 months) (International Labour Office, 2004; Simsek, 2012; Kaya and Ozgulnar, 2015).

According to the International Labour Organization (ILO), farm labourers' work is the second most important area of employment in the world. Seasonal farm labourers (SFLs), who are defined as the heart of sustainable agricultural production, make about 450 million of the 1.1 billion agricultural workforce in the world (International Labour Office, 2004).

SFLs are one of the groups with very high level of poverty, and it is known that more than 60% of them live below the poverty line. Although many interference programs are practiced worldwide, seasonal farm work is considered one of the worst kinds of profession with high mortality and morbidity.

Seasonal farm workers are unable to have adequate and healthy nutritional conditions; they live without eating enough fruits and vegetables or enough protein, they skip meals, and they consume food kept under unhealthy conditions (Demirel, Uner and Kirimi, 2001; Oktem *et al.*, 2005; Artar, 2014; Kaya and Ozgulnar, 2015).

Most of the children have acute and chronic health problems. Further, the childhood mortality rates were higher than non-migrants. The co-morbidity rates were high for those children younger than 5 years of age (Koruk *et al.*, 2010).

Aim: This study was conducted to evaluate the nutritional status of the children aged 0–5 years of seasonal farm labourer (SFL) families.

Methods

Study design

This study was aimed to evaluate the nutritional status of the children of seasonal farm labourer (SFL) families. The study was a descriptive study; the data for this study were collected between February 2016 and April 2016, a period when farm labourers did not work and families were at home.

Setting and sample

Families living in the provinces of Sanliurfa and Adiyaman in Turkey with children aged 0–5 years, and earn their living working as farm labourers were the subjects of this study. One child from each family was included in the study. G*Power (3.1.9.2 for Windows) program was used for estimation of sample size.

The number of samples was calculated as 250 according to reference study (Koruk *et al.*, 2010) with a precision of 0.08, and based on the 95% confidence interval. Cluster sampling method was used. Firstly, neighbourhoods with intense population of SFLs listed.

Then 15 neighbourhoods in Sanliurfa and 8 neighbourhoods in Adiyaman were chosen. Each cluster consisted of 11 participants. The study completed with 250 children and their parents.

Data collection

The children enrolled in this study were visited in their homes. Data of study was collected with Form for Evaluation of Children's Nutrition by face-to-face interview using. This form was created according to the literature (Koruk *et al.*, 2010; Havlioglu, 2011; Simsek and Koruk, 2011;

Seasonal Worker Migration Network, 2012; Simsek, 2012; Artar, 2014) and finished using the views of five experts, who included four lecturers from the Department of Children's Health and Diseases Nursing, and one expert from the Directorate of Labour Health and Security in Agriculture Research and Application Center.

The Form for Evaluation of Children's Nutrition consists of 35 questions and three main parts—descriptive features of the mother, descriptive features of the father, and features of the child and their nutritional status.

The anthropometric measurements (length–weight) of the children were obtained by the same person by using the same device. Length was measured with a measuring tape in the supine position in 2- to 24-month-old children and in the standing, upright position, with feet next to each other at the heels and without shoes, in children older than 24 months. Weight measurement was made using scale, with the children's clothes off, and the weighing machine was calibrated by the researcher every day.

Data analysis

Data analysis was carried out using the Statistical Package for Social Sciences (SPSS) for Windows 17.0 version. In the evaluation of the data, chi-square test was used to compare categorical variables as well as descriptive statistical methods (percentage, average, median, and standard deviation). The findings obtained were interpreted at 95% confidence interval at a significance level of 0.05.

Percentile values and z-scores of the weight for length (WFL), weight for age (WFA), length for age (LFA), and body mass index (BMI) for age obtained as the result of anthropometric measurements were calculated.

The international reference values of the WHO defined by the NCHS (National Center of Health Statistics) and approved by the Center of Disease Control (CDC) were used in the calculation. Calculations were made in the WHO Anthro (version 3.2.2, January 2011) and Macros' programmes. Children that have z-scores below -2 standard deviations were considered short (stunted), underweight, and thin (wasted) respectively.

Ethical considerations

This study was approved by the Institutional Review Board of the University (IRB approval no.: 74059997.050.01.04/213) and the verbal and written consent of the mothers were obtained to conduct the study.

The institutionally approved, informed voluntary consent form for scientific, nonclinical research used in this study indicated that there were no known study risks or costs. Participants were informed that study benefits were not direct but their participation will help those who care for children as well as will help advancing the knowledge of nurses and researchers.

No master list of participants was kept in order to ensure confidentiality. Thus, no one knows or will know who did or did not participate and no one knows what was reported. And, all data are stored in the locked cabinet in the office

Results

The data revealed that 39.2% of the mothers who participated in the study were illiterate. Moreover, 63.6% of the mothers had consanguineous marriages, 65.6% had a nuclear family, and 43.6% had an illness diagnosed by a doctor. A total of 85.2% of the mothers worked in the fields, and 52.1% started to work in the fields before the age of 14 years.

The yearly income of 74.8% of the families were low. Most of the mothers go to the field with their children (68.5%), and the child's siblings look after the child in the field (37.2%). Investigation of the places where the families housing in the field revealed that 76.0% of them housing in tents and 24.0% housing in houses. 34% of mothers said that they gave birth to their children outside health institutions (house and field) without the aid of health personnel.

Data on the farm labourer families, such as the average age of the mothers and fathers, size of the households, and yearly income, are given in Table 1. The distribution of definitive features of the child are given in Table 2.

The percentile distribution of the children according to the WFL, WFA, LFA, and BMI for age is given in Table 3.

The distribution rates of thinness, being underweight, and shortness among the children are given in Table 4.

Analysis of the rates of thinness, being underweight, and shortness according to sex revealed that girls were more affected by these factors than boys. However, statistical analysis did not reveal a significant relationship between thinness, being underweight, and shortness and sex ($p > 0.05$).

The rates of shortness and being underweight in the children of families housing in tents when they are in the fields were determined as high, and the relationship between the groups that housing in tents or house in the fields was found to be statistically significant ($p < 0.05$). Moreover, a statistically significant difference was found between the shortness rates of the children of nuclear families and the children who do not have regular examination.

The relationships among groups in terms of the city lived, the mother's smoking status, the father's smoking status, the mother working in the field, family structure, yearly income, place housing the field, regular examination, and the child's place of birth was determined to be statistically insignificant ($p > 0.05$).

Table 1. Distribution of the Definitive Features of the Family

Definitive Features of the Family	Mean±SD	Median (Min-Max)
Age of the mother	31.8±6.7	32 (18-50)
How many years the mother went to school	2.7±2.9	2 (2-12)
Age of the father	35.3±7.3	34 (20-60)
Size of the household	7.1±3.2	6 (3-23)
Yearly income	8940±3536.4	9000 (2000-20000)
The time spent in the field (month)	4.8±1.86	5 (1-9)
Age of the children working in the field (years)	15.4±3.73	15 (8-27)
The time the child worked in the field (years)	4.3±3.25	3 (1-16)

Table 2. Distribution of the Definitive Features of the Children.

Definitive features of the child	n	%
Gender		
Girl	114	45.6
Boy	136	54.4
Age group		
0-5 month	6	2.4
6-11 month	18	7.2
12-23 month	48	19.2
24-35 month	46	18.4
36-47 month	47	18.8
48-60 month	85	34.0
Illness		
Yes	50	20.0
No	200	80.0
Regular examination		
Yes	57	22.8
No	193	77.2
Immunization card		
Yes	172	68.8
No	78	31.2

If the child is vaccinated regularly		
Yes	219	87.6
No	31	12.4
Why the child was not vaccinated		
Being in the field	18	58.1
Lack of knowledge in the family	10	32.3
Side effects of the vaccines	3	9.7
Which child		
3 or less	127	50.8
4 or more	123	49.2
Total	**250**	**100.0**

Table 3. The Percentile Distribution of the Children According to the Weight for Length (WFL), Weight for Age (WFA), Length for Age (LFA), and Body Mass Index (BMI) for Age

	Weight for Length		**Weight for Age**		**Length for Age**		**Body Mass Index for Age**	
Percentile	**n**	**%**	**n**	**%**	**n**	**%**	**n***	**%****
3 percentile <	13	5.2	39	15.6	59	23.6	13	7.8
3 percentile	0	0	1	0.4	0	0	0	0
3-10 percentile	19	7.6	32	12.8	38	15.2	7	4.2
10 percentile	0	0	0	0	1	0.4	0	0
10-25 percentile	49	19.6	65	26.0	65	26.0	42	25.2
25 percentile	3	1.2	0	0	0	0	0	0
25-50 percentile	66	26.4	65	26.0	54	21.6	52	31.2
50-75 percentile	56	22.4	31	12.4	21	8.4	37	22.2
75 percentile	0	0	0	0	1	0.4	0	0
75-90 percentile	26	10.4	12	4.8	5	2.0	10	6.0
90-97 percentile	11	4.4	3	1.2	3	1.2	7	4.2
97 percentile	3	1.2	0	0	0	0	1	0.6
>97 percentile	4	1.6	2	0.8	3	1.2	9	5.4
Total	**250**	**100**	**250**	**100**	**250**	**100**	**178**	**100**

Table 4. Distribution of Thinness, Being Underweight, and Shortness Rates According to the Age Groups and Sex of Children

Age (month)	Weight for Length			Weight for Age			Length for Age		
	-3SD n(%)	-2SD n(%)	Total n(%)	-3SD n(%)	-2SD n(%)	Total n(%)	-3SD n(%)	-2SD n(%)	Total n(%)
0-5	0	0	0	1(0.4)	2(0.8)	3(1.2)	1(0.4)	4(1.6)	5(2.0)
6-11	0	0	0	0	1(0.4)	1(0.4)	1(0.4)	2(0.8)	3(1.2)
12-23	0	0	0	0	3(1.2)	3(1.2)	1(0.4)	5(2.0)	6(2.4)
24-35	2(0.8)	1(0.4)	3(1.2)	0	3(1.2)	3(1.2)	5(2.0)	4(1.6)	9(3.6)
36-47	0	2(0.8)	2(0.8)	2(0.8)	4(1.6)	6(2.4)	4(1.6)	6(2.4)	10(4.0)
48-60	1(0.4)	6(2.4)	7(2.8)	3(1.2)	17(6.8)	20(8.0)	3(1.2)	19(7.6)	22(8.8)
Total	3(1.2)	9(3.6)	**12(4.8)**	5(2.0)	30(12.0)	**35(14.0)**	15(6.0)	40(16.0)	**55(22.0)**

Discussion

The present research indicates that the mothers in lower classes and with low socioeconomic status frequently make mistakes with regard to providing adequate nutrition to children; the children of these families are exposed to 2–5 times more nutritional inadequacy, and they are shorter than the other children (Demirel, Uner and Kirimi, 2001; Oktem *et al.*, 2005).

In this study, two out of every three mothers said that they gave birth to their children outside health institutions [house and field] without the aid of health personnel. The recent studies determined that about one-fourth of SFL women gave birth to their last children outside health institutions and without the aid of health personnel (Gozukara, Ersin and Simsek, 2015). This rate is 3% across Turkey (Republic of Turkey Ministry of Development, 2014). The reasons why the SFL women's rates of birth outside health institutions and without the aid of health personnel are higher than the average rates are thought to be their staying in the field away from the city centre and for a long time, inadequate transport, low health perception, and low levels of access to health services.

Consanguineous marriages are an important risk factor because they can cause the transfer of genetic diseases. The rate of consanguineous marriages throughout Turkey is about 20%. In the study conducted with SFL families, although the rate has regional differences, it is quite above the Turkish average (Gecgin, 2009). This rate in the present study was 63.6%, which was similar to those reported in other studies (Simsek, 2012; Semerci, Erdogan and Kavak, 2014).

Level of welfare and socioeconomic status are among the important factors used in the evaluation of the health and especially the nutritional status of the families. As reported earlier, the socioeconomic status of the SFL families is usually low, and these families continue their lives below the poverty line (Akbiyik, 2011; Artar, 2014). In this study, yearly income in SFL families is pretty low.

Most of the SFL families (76%) lodge in inadequate places like tents or booths and work

under these conditions for many years; moreover, a majority of these families (68.5%) go to the fields with their children. Similarly, in the study conducted by Karatas et al (2016), 51.2% of the mothers go to the fields with their children (Karatas, Müller-Staub and Erdemir, 2018). In the studies conducted, children make up half, or more, of the total population of the families studied (50–52%). Thus, the group affected the most by the negative conditions is children (Artar, 2014; Semerci, Erdogan and Kavak, 2014).

Analysing the vaccination status of a society has critical importance in the determination of medically disadvantaged groups; removing the obstacles for vaccination and developing programs that encourage vaccination are relevant goals (Koruk, Simsek and Koruk, 2013). The rate of vaccination in the southeast Anatolia region (96%) is lower than the countrywide average (Turkish Statistical Institute, 2014). This rate decreases for SFL families even more experiencing problems in terms of accessing health services. In the present study, 31.2% of the children did not have immunization cards, and 12.4% of them were not vaccinated regularly. The vaccination rate of the children of SFL families was found to be quite low in the study conducted by Koruk et al (2013). 49.4% of children (n = 83) were fully vaccinated, while 39.3% (n = 66) had incomplete vaccine coverage and 11.3% (n = 19) had never been vaccinated (Koruk, Simsek and Koruk, 2013).

When children work in agricultural fields, it causes retardation of growth and development, lower quality of life, and loss of their right to education. Because of these reasons, field work is defined as one of the worst kinds of child labour by ILO (International Labour Office, 2004). In the present study, 33.2% of the children work in the field; the average age of children working in the field was 15.4 years, and the amount of time working in the field was 4.3 years.

The factors recommended by WHO to be used in the determination of the nutritional status of children under the age of five are weight for length, weight for age, length for age (Barker, Gout and Crowe, 2011). In the results of the study conducted by Demirel et al (2001) in the rural areas in the provinces of Van, 9% of the children were under the 3rd percentile (Demirel, Uner and Kirimi, 2001). This rate was found to be higher in the present study. The percentage of those under the percentile value 3 was determined as 5.2 for WFL, 15.6 for WFA, 23.6 for LFA, and 7.8 for BMI for age. Although the job of rural area labourers and farm labourers intersect at similar points, the hard life conditions of the SFLs attract attention. The negative effects of this situation on the children's growth are thus seen.

The yearly rate of childhood obesity is reported to be increasing (WHO, 2016). Obesity prevalence was determined as 22.5% for Turkey (20). The SFL families and their children eat an unbalanced diet, and they are especially exposed to inadequate nutrition. From this point of view, obesity prevalence is quite below the Turkish standards. In our study, rate of obesity that children over the 95th percentile was 0.8%. However a systematic review in United States determined that prevalence of overweight, obesity, and overweight/obesity ranged from 10%–33%, 15%–37%, and 31%–73%, respectively (Lim, Song and Song, 2017). These rates are quite high according to our study.

The average z-score is calculated as a summary of statistics showing the nutritional status of the children in a population. The rates of thinness, being underweight, and shortness are determined using the Z-score. According to the UNICEF report, the rates determined in the 0–5 age group are 1% thin, 2% underweight, and 12% short (UNICEF, 2014). In the present study on the children of SFL families, 4.8% are thin, 14% are underweight, and 22% are shortness. Because the study was conducted in the provinces of the Southestern Anatolia region with the SFL families who are most frequently poor, the rates of thinness, being underweight, and shortness were found to be higher than the Turkish average. Different rates of malnutrition at different times were reported in Turkey because of the geographical and socioeconomic features of the regions and the characteristics of the populations included in the study. The rates of thinness, being underweight and shortness were found higher than the present study in some other studies conducted with SFL families (38–45%) (Koruk *et al.*, 2010; Simsek, 2012). In the study conducted by Nichols et al (2014) in Georgia, the shortness prevalence between the years 2003–2011 was studied, and the rate of shortness was found to be changing between 1.1–6.4%. The rate of shortness in 2011 was determined as 3.3% in

boys and 6.5% in girls and 5% on average (Nichols, Stein and Wold, 2014).

When the distribution of the thinness, underweight, and shortness rates in accordance with age groups in children was analysed, the rates of thinness, underweight, and shortness were higher in children between 48–60 months old (2.8%, 8.0%, and 8.8%, respectively). This situation can be interpreted as no serious nutrition problems seen in the children of SFL until the age of 2 because of lactation (Artar, 2014).

In this study, girls were more affected by thinness, being underweight, and shortness than boys, but no statistically significant relationship was found between sex and thinness, being underweight, and shortness. Similarly, some previous studies showed no relationship between shortness and sex (Nichols, Stein and Wold, 2014).

In the statistical analyses, the relationship between the groups in terms of shortness and family structure, living environment in the field, and the regular health controls was found to be significant. The relationship among the groups in terms of being underweight and the living environment was found to be significant. Similarly Simsek and Koruk determined that being the child of a SFL family and the mother's level of education as related factors for shortness when the financial status, number of children, size of the household, and the mother's age are controlled (Simsek and Koruk, 2011).

Conclusions

In this study, it was determined that physical developmental delays were high in the children of seasonal agricultural workers. Thinness, being underweight and shortness growth at the rate of 4.8%, 14% and 22%, respectively, were determined in the children of the SFL families. A relationship was found between shortness and the family structure, living environment in the field and the regular health controls. A relationship was also found between being underweight and the living environment in the field.

It is recommended that monitoring the children for issues such as immunization, healthy nutrition, and growth situations within the scope of mobile health services provided in the agricultural fields, and providing the necessary counselling services. There should be providing sustainable nursing services for this group by paediatric nurses and, expanding awareness about the problems of the farm labourer families and, their children in society.

Limitations

This study has several limitations. Children aged 0-5 years were included in the study, one of the fastest growing period, and children in the other age group were excluded from the study.

SFLs live in 48 different cities in Turkey. The study was conducted in Adiyaman and Sanliurfa, two of the most densely populated agricultural workers. SFL families living in other provinces were not included in the study.

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