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Original Article

Domestic Lifestyle and Nutritional Status of Children During Covid-19 Pandemics

Selda Bülbül[1], Aliye Gülbahçe[1], Nil Koç Gökşen[2], Ali Emrecan Ata[2], Sevim Gonca Kocagözoğlu[3]

[1] Kırıkkale University School of Medicine, Department of Pediatric Metabolic Diseases and Nutrition, Kırıkkale, Turkey
[2] Kırıkkale University Institute of Health Sciences, Kırıkkale, Turkey
[3] Kahramankazan Hamdi Eris Hospital, Ankara, Turkey

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Sevim Gonca Kocagözoğlu
Kazan Hamdi Eris Hospital Ankara, Turkey
ORCID: 0000-0002-3983-0090
goncadeprem@yahoo.com

S. Bülbül 0000-0002-6457-149X
A. Gülbahçe 0000-0003-0894-4447
N. Koç Gökşen 0000-0001-8300-7221
A. E. Ata 0000-0002-1983-1395

ABSTRACT

Objective: *After Covid-19 pandemic was declared, a number of restrictions have been imposed all over the world. We aimed to detect changes in eating habits of children and adults during Covid-19 pandemic when lifestyle changes were inevitable due to these restrictions.*
Methods: *This is a descriptive cross-sectional study. The data collection process was completed by online questionnaire forms sent via mail system. There were questions about demographic characteristics of the participants and their children, lifestyle changes during the pandemic period and awareness of the pandemic. Participants with more than one child were asked to use the information of their youngest children. In statistical analyzes we used "Statistical Package for Social Science" (SPSS) 20.0 for Windows. Pearson Chi-square test was used for comparisons of categorical variables. The significance level was accepted as p≤ 0.05 in all statistical processes.*
Results: *A total of 327 people between 19-65 years of age participated in this study, and 174 of them had children with a mean age of 6.8 years, including 96 (55.7%) boys and 78 (44.3%) girls. Among all children, physical activity decreased in 101 (58%), screen time increased in 87 (50%) and 40 (23%) of them consumed their meals in front of the screen. The snacking habits of 130 (74.8%) children increased, 34 (19.5%) started consuming too much junk food and 12 of them (6.9%) gained weight. We observed that boys consumed more food than girls during their stay at home when compared to usual prerestriction days as they felt anxious and troubled (p=0.02).*
Conclusion: *Pandemics do not affect our lives not only with disease burden but also, have effects on daily lives of families and children. During this period, besides precautions against infection, special interest should be given to feeding, sleeping habits and physical activities that would boost immune system and measures should be taken to prevent harmful habits.*

INTRODUCTION

In December 2019, the SARS-Cov 2 virus from the coronavirus family, thought to have spread from a seafood market in Wuhan Province of China, caused a worldwide pandemic.[1,2] This virus was later called as Covid-19. After Covid-19 pandemic was declared by the World Health Organization (WHO), a number of restrictions have been imposed all over the world in order to prevent the spread of the virus.[3] Changes in normal life patterns such as social life restrictions, flexible working hours, school closing and strict hygienic quarantine practices increased anxiety, stress and depression levels among adults and children.[1] Therefore, tendency of peoples to consume high-sugar foods and alcoholic beverages increased in order to feel good. Besides, the consumption of packaged products was also increased due to the concerns that there would be food shortages that might cause deficiencies in the intake of essential nutrients such as vitamins and minerals.[4]

There is a two-way relationship between infections and nutritional status. People with nutritional

disorders have greater risk of having infections, more severe course of the disease and higher mortality rates. On the other hand, the application of diets enriched with vitamins, minerals and antioxidants significantly reduces the rate of immune system problems and related disorders.[5,6] All age groups are susceptible, but people with comorbidities or the elderly are more likely to develop a severe form of the covid-19 infection. Although children seem to have less severe clinical symptoms when infected.[5,7] The potential harm of this novel disease in children with nutritional disorders remains largely unknown. Therefore, keeping the nutritional status of children balanced during pandemics is crucial.

Besides the relation between the infection and nutritional status, staying at home for longer periods of time increased the incidence of eating disorders such as binge eating behavior, decreased physical activity and sleep disturbances among the children.[8-10] This brought the danger of increased risks of stress, nutritional disorders and various chronic diseases.[4,5] In this period, children staying at home may face nutritional problems such as malnutrition, nutritional deficiencies, overnutrition and obesity. However, on the other hand, children who are with their family for 24 hours at home may be eating healthier food as they do not have the opportunity to choose their own choice of food, as they were outside. This study was planned to determine the nutritional disorders such as anorexia, excessive eating, and excessive consumption of junk food in children and adults who stayed at home during the Covid-19 quarantine period.

MATERIALS and METHODS

This is a descriptive cross-sectional study which was conducted between June and July 2020 after the approval of Ministry of Health General Directorate of Health Services, Covid-19 Scientific Research Evaluation Commission and Kırıkkale University Non-Interventional Ethics Committee. Data were collected by using a questionnaire that was prepared by the researchers after a literature search. The questionnaire forms consisted of 47 questions on demographic characteristics of the participants, lifestyle changes during the pandemic, awareness on Covid 19 pandemic and nutritional status of breastfeeding babies.

No sampling method was used and the data collection was completed online by using snowball method sending questionnaires via e-mails to the people that the researchers were familiar with. Study participants filled out the questionnaire forms, and accepted to participate in the study. The inclusion criteria were being older than 18 years, and the forms had to be completed entirely and sent back to us. We did not consider the incomplete forms. The presence of Covid-19 infection in the participants or their families was not inquired. Participants with more than one child were asked to use the information of their youngest child. A total of 1204 questionnaire forms were sent and only 327 (27.16%) of them were returned.

For statistical analyzes “Statistical Package for Social Science” (SPSS) 20.0 for Windows was used. Pearson Chi-square test was used for comparisons of categorical variables. Calculations of frequency and percentage were used for the statistical analysis of the data. The significance level was accepted as $p \leq 0.05$ in all statistical analyses.

RESULTS

Demographic characteristics and Covid-19 awareness of the participants

A total of 327 participants between the ages of 19-65 years (with a mean age of 33 years) answered the questionnaire forms. Fifty-one (15.6%) participants were male and 276 (84.4%) of them were female, while 116 (35.5%) were single, 211 (64.5%) were married and 174 (53.2%) had at least one child. Most (80.1%) of the participants had associate/bachelor/master/doctorate degrees. Most (n: 275; 84.1%) of the participants stated that they lived with their families, 16 (4.9%) with their friends, 1 (0.3%) with their relatives, and 35 (10,7%) of them lived alone. Based on their medical histories, 38 (11.6%) had a chronic disease. Among all, 212 (64.8%) defined themselves as normal weight, 28 (8.6%) as thin, 62 (19%) as overweight and 25 (7.6%) as obese.

During the pandemic, 249 (76.2%) participants stated that they used social media and 78 (23.8%) television to get information about Covid-19. When the

Table 1. Distribution of communication tools used to get information about Covid-19 by age groups and gender

	18-24 age		25-49 age		50-64 age			
Tool to get information about Covid-19	**n**	**%**	**n**	**%**	**n**	**%**	**χ2**	**p**
Television	7	15.2	63	23.8	8	50	7.912	0.019
Social Media	39	84.8	202	76.2	8	50		

	Female		Male			
Tool to get information about Covid-19	**n**	**%**	**n**	**%**	**χ2**	**p**
Television	69	25	9	17.6	1.281	0.258
Social Media	207	75	42	82.4		

χ^2=Chi-Square, p<0.05

Table 2. Distribution of change in nutritional behaviour according to gender

	Female		Male			
Nutritonal Status	**n**	**%**	**n**	**%**	**χ2**	**p**
Eating Behaviour didn't change	82	29.7	20	39.2	6.466	0.091
Eating Too Much Food (junk food, homemade cakes, pastry)	108	39.1	12	23.5		
Very Poor Appetite, didn't want to eat anything	7	2.5	0	0		
Consuming mostly homemade healthy food	79	28.6	19	37.3		

χ^2=Chi-Square, p<0.05

distribution of the communication tools used by the participants to follow the agenda about Covid 19 was evaluated, we found a statistically significant difference by age groups (p=0.019). There was no statistically significant difference in the use of communication tools between male and female participants (p=0.258) (Table 1).

Two hundred and forty-eight participants (75.8%) stated that they had sufficient knowledge about Covid-19, 76 (23.2%) of them had inadequate information and 3 (0.9%) participants did not have any information about Covid 19 disease at all. Majority [269 (82.3%)] of the participants stated that they had been talking about the Covid-19 pandemic at home and 113 (65%) participants who had children had been talking this issue with their children.

Behavior/lifestyle changes of the participants during pandemic period

During the pandemic, 120 (36.7%) participants stated that their consumption rate of junk food increased, while 102 (31.2%) of them did not change their dietary habits, and 98 (30%) of them were having healthier diet However, 10 (3.1%) participants had a very poor appetite and didn't want to eat anything. We have not observed any statistically significant difference between the genders according to the change in dietary habits (p=0.091) (Table 2).

During the pandemic, 143 (43.7%) participants stated that their sleeping patterns did not change, 94 (28.75%) of them had no certain bedtime, and 53 (16.2%) participants went to bed at a later time than usual and woke up later. When the distribution of the change in sleeping patterns was evaluated, we found a statistically significant difference between genders (p=0.009). Although almost half of the participants in both genders stated that there was no change in their sleeping patterns, women generally stated that they had difficulties in regulating their sleep times, and men went to bed later and woke up later. We observed no statistically significant difference according to the marital status of the participants (p=0.133) (Table 3).

Table 3. Distribution of sleeping patterns according to gender and marital status

	Female		Male			
Sleeping patterns	**n**	**%**	**n**	**%**	**χ2**	**p**
Had no change in sleeping patterns	121	43.8	22	43.1	11.557	0.009
Went to bed too late, gets up early	30	10.9	7	13.7		
Went to bed too late, gets up late	38	13.8	15	29.4		
Time going to sleep was uncertain	87	31.5	7	13.7		
	Married		**Single**			
Sleeping patterns	**n**	**%**	**n**	**%**	**χ2**	**p**
Had no change in sleeping patterns	99	46.9	44	37.9	4.031	0.33
Went to bed too late, gets up early	26	12.3	11	9.5		
Went to bed too late, gets up late	28	13.3	25	21.6		
Time going to sleep was uncertain	58	27.5	36	31		

χ^2=Chi-Square, p<0.05

Table 4. Distribution of physical activity status by gender, marital status and age groups

	Female		Male			
Physical activity status	**n**	**%**	**n**	**%**	**χ2**	**p**
Not changed	149	54	24	47.1	4.960	0.084
Decreased	90	32.6	24	47.1		
Increased	37	13.4	3	5.9		
	Married		**Single**			
Physical activity status	**n**	**%**	**n**	**%**	**χ2**	**p**
Not changed	120	56.9	53	45.7	4.031	0.133
Decreased	66	31.3	48	41.4		
Increased	25	11.8	15	12.9		

	18-24 age		25-49 age		50-64 age			
Physical activity status	**n**	**%**	**n**	**%**	**n**	**%**	**χ2**	**p**
Not changed	13	28.3	149	56.2	11	68.8	14.435	0.006
Decreased	24	52.2	87	32.8	3	18.8		
Increased	9	19.6	29	10.9	2	12.5		

χ^2=Chi-Square, p<0.05

Hundred and fourteen (34.9%) participants mentioned that their daily physical activity decreased during the pandemic, while 173 (52.9%) of them indicated lack of any change in their daily physical activities. On the other hand, 40 (12.2%) participants stated that they started to do regular physical exercise at an increasing rate during this period. Any statistically significant difference was not observed between genders as for rates of physical activities performed (p=0.084) and marital status (p=0.133). However, there was a significant difference in the change in physical activity according to age groups such as; individuals between the ages of 25-49 continued their physical activity during pandemic at the same frequency as before more than the other age groups (p=0.006) (Table 4).

Demographic characteristics and lifestyle changes of the participants' children during pandemic

Hundred and seventy-four (52.3%) participants had at

Table 5. Distribution of eating behaviour of children according to mood by gender

Eating behaviour according to mood	Boy		Girl			
Anxious and Troubled	**n**	**%**	**n**	**%**	**χ2**	**p**
Eating more	33	21.5	10	47.6	7.170	0.02
Eating less	35	22.9	2	9.5		
	Boy		**Girl**			
Bored and have nothing to do	**n**	**%**	**n**	**%**	**χ2**	**p**
Eating more	33	34.4	35	44.9	2.002	0.6
Eating less	17	17.7	12	15.4		
	Boy		**Girl**			
Furious and Angry	**n**	**%**	**n**	**%**	**χ2**	**p**
Eating more	21	21.9	17	21.8	1.135	0.93
Eating less	20	20.8	18	23.1		
	Boy		**Girl**			
Happy	**n**	**%**	**n**	**%**	**χ2**	**p**
Eating more	23	24	22	28.2	1.616	0.44
Eating less	16	16.7	8	10.3		
	Boy		**Girl**			
Unhappy	**n**	**%**	**n**	**%**	**χ2**	**p**
Eating more	16	16.7	15	19.2	0.196	0.90
Eating less	20	20.8	16	20.5		

χ^2=Chi-Square, p<0.05

least one child (max 4-min 1). The mean age of their children including 96 (55.7%) boys, and 78 (44.3%) girls was 6.8 years (min 0-max 32 years). Seven (4.1%) children had a chronic disease. Children over 18 years of age (n=15) were excluded for the rest of the statistical analyses. Mean age of the children under 18 years of age was 4.9 (min 0-max 18) years.

Physical activity of 101 (58%) children decreased, and 80 (48.2%) had a sleep problem. Sleep problems were reported as; going to bed late, difficulty in falling asleep, sleeping alone and waking up frequently at night. Forty-six (55.5%) children with sleep problems were eating much before going to bed.

Parents of 48 (27.5%) children mentioned an increase in their children's body weights. Twelve (6.9%) children were mentioned to gain weight because of eating a lot. The snacking habits of 130 (74.8%) children were increased during this period; 65 (67.3%) had binge eating, and 34 (19.5%) children started consuming too much junk food. Eighty-seven (50%) children had increased screen time, where 40 (23%) children consumed their meals in front of TV/tablet. When the planning of meal times was taken into account, 130 (74.8%) parents preferred family meal hours around the family table and 44 (25.2%) parents let their children decide their meal times.

Among the reasons for overeating in this period, the most marked option was "the boredom of the child who has nothing to do" (39.8%) and among the reasons for eating less "the child being furious and angry" (21.9%) was the most marked option. When we evaluated the effects of changes in children's mood as being angry, happy, unhappy, bored on eating behaviors during pandemic, we could not find any significant difference between genders (Table 5)

(p>0.05). However, we observed a significant difference between genders as for the change in eating behaviors when children felt anxious and troubled (p=0.02). Almost half of the boys consumed more food than normal when they felt anxious and troubled, where there was no change in most of the girls. There was also no statistically significant difference between genders when the relation between the age and its effect on the change in children's mood regarding their eating behaviors (Table 5) (p>0.05).

Nutritional Status of Babies of Nursing Mothers

Fifty-three children of the participants were under age of 2. The babies were fed exclusively with breast milk (n:5: 8,62%), breast milk and complementary food (n:28: 48,28%) and formula and complementary food (n:20; 34,48%). It was stated that 30 (17.2%) babies had not changed their breastfeeding pattern, but 11 (20.7%) had an increase and 7 (13.2%) had a decrease in their breastfeeding frequency during pandemic period.

DISCUSSION

After Covid-19 pandemic was declared, restrictions have been placed on social activities which forced individuals to stay at home and caused a decrease in their physical activities. Along with the increased stress caused by the restrictions, imposed impairments were observed in the eating behavior of individuals.[11] During the pandemic, people received 27% higher calories compared to the same period of the previous year.[12] In our study, 33.6% of the participants stated they ate much more junk food, homemade cakes, pastries and 30% of them consumed more often homemade meals considering them as healthy foods. We found an increase in the consumption of junk food and healthy foods in women, but no significant statistical difference was found between genders. As consistent with our results, a study from Italy revealed that the consumption of junk food and healthy foods increased in women during pandemic, but the authors could not find any relationship between weight and female gender.[13]

Regulations in public life such as home-office work style, distance education system, quarantine practices, closing playgrounds caused a decrease in the physical activities.[4,14] In consistent with the given literature, 34.9% of our study participants mentioned that they have quitted their physical activities during pandemic.

An increase in stress levels, along with changes in eating habits, also leads to sleep problems. It is known that disruptions in nutrition and sleeping patterns negatively affect the immune system.[15,16] A study conducted in Italy showed that sleeping patterns in society were disrupted by quarantine practices compared to previous periods.[17] In a study conducted in China, it was reported that people spend much more time in bed during the pandemic, but duration of sleep decreased. Staying for long hours in front of the screen before sleep disrupts sleep hygiene, causes anxiety and increases sleep problems.[18] As compatible with these results, in our study more than half of the participants had a change in their sleeping patterns during the pandemic period. And we found a statistically significant difference by gender. While women generally had difficulties in regulating sleep hours, men went to bed late and woke up late.

Due to stricter restrictions for children under age of 18 years, they stayed longer than adults at home and we found that 58% of the participants' children had a decrease in their physical activities, and 74.8% of them more often consumed snacks. It is known that reduced physical activity and increased consumption of junk food increase the risk of obesity in adulthood and related diseases.[19] A meta-analysis showed that obesity increases the fatality rate of Covid-19 infection.[20] It is worrying that 27.5% of the parents in our study group reported that their children's weight increased during pandemic period. A study conducted in Canada during the pandemic period showed that closing children's playgrounds and quarantine at home reduced children's physical activity especially in the adolescent group and spending long hours at home caused an increase in screen time of both adolescents and children.[14,21] It has been revealed that if screen time increases, the risk of obesity due to involuntary consumption of junk food increases.[22] Our study also showed that 50% of the children spent long hours staring at a screen and approximately half of these children (45.9%) adopted the habit of

eating in front of the screen.

The quality and quantity of the foods can vary according to our mood states. While we eat less in some mood states, we eat more or prefer foods rich in carbohydrates and fats in other mood states.[23] We evaluated the effects of changes in children's mood state on their feeding behavior during pandemic. In our study, parents mostly said that their children were eating too much because they were bored and have nothing to do. Eventually, they ate less when they were furious and angry. While more than half of the boys ate more when they were feeling anxious and troubled, there was no change in girls' eating behavior in the same situation (Table 5).

As compatible with our results a study from China revealed that during the pandemic period, physical activity decreased in children, negative effects on their mood increased, where boys were more affected.[24] A study from United Kingdom also showed that negative mood state was associated with reduced physical activity and binge eating.[25] Therefore, we can conclude that, pandemic had a negative impact on children's eating behaviors because of social isolation and lack of physical activity.

Limitations of the study

We used self- assessments of the participants about their and their children's life style changes, and we didn't use psychometric scales or anthropometric measurements.

CONCLUSION and SUGGESTIONS

Quarantine precautions implemented to prevent Covid-19 spread affected children more than adults. Due to interruption of education in schools and prolonged curfews for under-18s, forced children spend most of their time at home. Their physical activities and sleeping hours decreased, in contrast, time spent for watching TV, and/or surfing on internet, and eating in front of the screen increased. With these changes increase in the risk of obesity is inevitable. Therefore, during the pandemic period, not only precautions should be taken against infection, but also nutrition, sleep and physical activities which boost immune system should be kept at optimal levels and measures should be taken to prevent resorting to harmful habits.

Ethics Committee Approval: We have the approval of Ministry of Health General Directorate of Health Services, Covid-19 Scientific Research Evaluation Commission and Kırıkkale University Non-Interventional Ethics Committee (Ethics Approval: 26.08.2020; numbered 2020.07.13).

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