

## Assessment of Attitudes and Practices Regarding Oral Healthcare Among the Parents During the War

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### Abstract

This study aimed to assess parents' attitudes and practices concerning their children's oral healthcare, dietary habits, and dental care during the war.

The study was conducted with a sample of 375 parents of children aged 4-7 years selected randomly from public schools, kindergartens, and the pediatric public dental clinic after obtaining informed consent. A questionnaire was used to assess the attitudes and practices of parents toward their child's dietary habits, oral hygiene measures, and dental information during the war.

Most of the parents had satisfactory knowledge and positive attitudes regarding their children's oral health. The internally displaced children experienced more dental problems ( $P = .02$ ) and consumed more food ( $P = .008$ ) than the local population. The parents with university education and professional occupations were more involved in supervising their children tooth brushing ( $P = .0001$ ). 57.07% of children brush their teeth once a day. 47.47% of parents supervised their child's oral hygiene, and 47.73% needed more time to implement additional oral hygiene measures.

The surveyed Ukrainian parents displayed satisfactory attitudes and practices towards oral health, but they lack awareness of their children's oral hygiene measures, which could be related to the inconveniences faced both by parents and children during wartime.

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### Introduction

The Russian-Ukrainian war had global impact on populations, with the COVID-19 pandemic serving as precursor.<sup>1</sup> As of January 2023, 5.4 million people were displaced to other regions of Ukraine.<sup>2</sup> More than 6 million refugees from Ukraine were recorded globally as of August 2023.<sup>3</sup> Currently, about 51 thousand internally displaced persons live in Poltava;<sup>4</sup> at the same time, thousands of locals had left Ukraine.

Being far from the frontline of the war, Poltava avoided destruction, but the citizens of Ukraine who remained here, internally displaced persons and refugees, are almost daily have become accustomed to the sound of air raids.

During the first two months of this war, pediatric dental treatment in Ukraine was primarily provided for complicated caries.<sup>5</sup> Now people are used to living during wartime, and dental appointments might be interrupted by air raids necessitating both dentists and patients be in the shelter. In Poltava, at the beginning of the war, children aged 4-7 years refrained from attending kindergartens and schools. Still, the situation improved, and they started to study offline or online depending on the availability of school air raid shelters.

Parents play a crucial role in implementing oral hygiene habits.<sup>6,7</sup> The frequency of tooth brushing, knowledge of caries prevention, types of beverages frequently consumed by children, and the prevalence of caries lesions are interlinked.<sup>8</sup> War brings forth abrupt and radical changes in habits and lifestyles. Arheiam et al.<sup>9</sup> reported the rate of regular tooth brushing and sugary drinks consumption among children aged 8-12 years during and after the Libyan war, but, unfortunately, there are no studies about other

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aspects of parental attitudes and practices regarding children's oral healthcare during wartime.

This study aimed to assess parents' attitudes and practices concerning their children's oral healthcare, dietary habits, and dental care during the war.

### Materials and methods

Ethical approval to conduct this study with human subjects was granted by the Poltava State Medical University for Ethical Issues and Biomedical Ethics Commission (approval number 217). The present cross-sectional study adheres to the guidelines of "Strengthening the Reporting of Observational Studies in Epidemiology" (STROBE statement) from May 2 to June 25, 2023. Calculations for the minimum required participant sample, parents of children aged 4-7, were based on representative sample size considerations, using a 95% confidence level and a margin of error of 5%, and the number of children at this age in Poltava. The sample size was estimated at a minimum of 373 respondents. Data were collected using a random sampling strategy from public schools, kindergartens, and the pediatric public dental clinic.

Parents and class teachers were invited to participate in the survey prior to the study commencement. The nature of the study was explained, ensuring the confidentiality of respondent information. The questionnaire was made available on the Google Forms platform. The link to the questionnaire was sent through the Viber application (Rakuten Comp) to the parents of children aged 4-7 years studying offline and online. The study enrolled a total of 375 parents who provided written informed consent and all survey questions.

This study adopted the questionnaire of Varkey et al.<sup>7</sup>, and an extra question was added about child's relocation since the war began. The questionnaire consisted of sociodemographic data, the child's dietary habits, sleep routine, oral hygiene measures, and dental information. Each question offered multiple response options, necessitating participants to select the most appropriate choice.

Statistical analysis of the data was executed using Excel 2016 (Microsoft Corp) Pivot Tables. Descriptive analysis was performed for the demographic data. The  $\chi^2$  test was used to

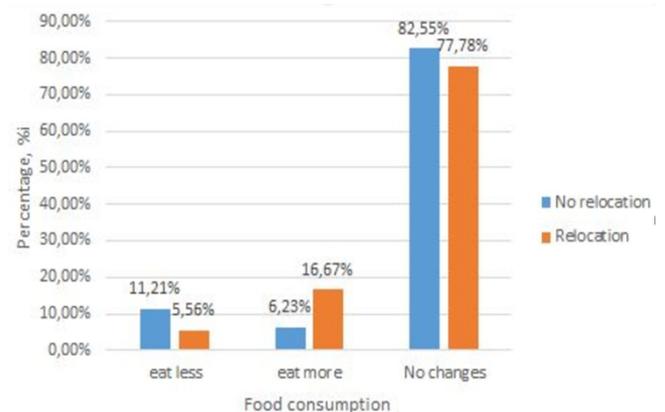
test for statistically significant differences between the survey variables. Statistical significance was established at  $P < .05$ .

### Results

The sociodemographic details of the participating parents are presented in Table 1. Based on the total number of responses, 22.67% of the parents were unemployed, and 14.44% were relocated.

Variable		Number	Percentage
Gender of the child	Boys	208	55.47
	Girls	167	44.53
Parents' education	Middle school	17	4.53
	Secondary school	69	18.4
	College	66	17.6
	University	221	58.93
	Scientific degree	2	0.53
Parents' occupation	Unemployed	85	22.67
	Craft workers, machine operators and assemblers, guards	12	3.2
	Service workers and shop and market sales workers	88	23.47
	Associate professionals	71	18.93
	Legislators, senior officials and managers	12	3.25
	Professionals	107	28.53
	Relocation		
	Yes	54	14.44
	No	46	85.56

**Table 1.** Characteristics of the study population.



**Figure 1.** Relationship between relocation and changes in food consumption of the children.

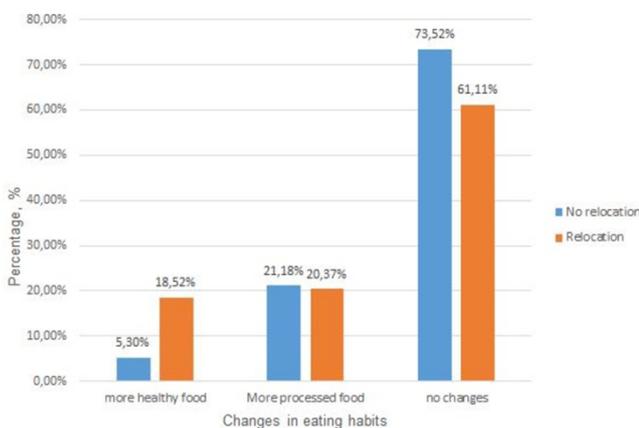
Among the parents, 70.4% reported that their children used electronic devices at mealtimes, but only 10.67% reported the food pouching habit in their children. 71.73% of the parents reported no change in the eating habits since the war started. Furthermore, 81.87% of the parents reported no change in the amount of food consumed by their children during the war. According to the parents, 80.27% of their children consumed cariogenic food regularly (once or

more daily). In addition, 80% of the parents said that the sleep cycle of their children had not changed since the war began [Table 2].

However, the score of the internally displaced children who began to consume more food was significantly higher than the score of the local population ( $P = 0.008$ ) [Fig.1]. Also, the score of the relocated children who started to consume healthier food such as fruit and vegetables during the war was significantly higher than the score of local children ( $P = 0.0005$ ) [Fig.2].

Question	Option	Number	Percentage
Does your child use electronic devices at mealtimes?	Yes	264	70.4
	No	111	29.6
Does your child tend to pouch food in the mouth during meals?	Yes	40	10.67
	No	235	89.33
Was there any change in the amount of food consumed by your child during the war?	No changes	307	81.87
	Eat more	29	7.73
	Eat less	39	10.4
	Eat more processed food	79	21.07
Was there any change in the eating habits of your child during the war?	No changes	269	71.73
	Eat healthier food	27	7.2
	Eat more processed food	79	21.07
What was the frequency of consumption of cariogenic food (sweets/chocolate/cookies) during the war?	Rarely	22	5.87
	Several times a week	52	13.87
	One time a day	136	36.27
	Several times a day	165	44.0
Has there been a change in the sleep cycle of your child since the war began?	Yes	75	20.0
	No	300	80.0

**Table 2.** Parents' attitudes toward their child's dietary habits, and sleep routine.



**Figure 2.** Relationship between relocation and changes in eating habits of the children.

The parents reported that the frequency of brushing did not change for the majority of the children (84.87%) [Table 3]. Nearly an equal number of the parents added flossing and mouth rinsing (26.4%) to their children's oral hygiene routine or increased the frequency of tooth brushing (25.87%). However, 47.73% of the parents did not find time to implement additional oral hygiene measures. Only 42.93% of the parents stated that their children brushed their

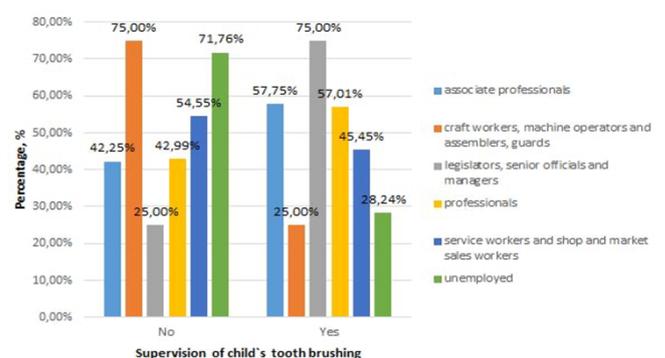
teeth twice and more daily. Also, 47.47% of the parents agreed to supervise their child's brushing. During wartime, 55.20% of the parents with university education supervised their child's tooth brushing, while only 23.19% of the parents with secondary school education did this ( $P = .0001$ ). Among the parents with professional occupations, 57.01% supervised their children's tooth brushing compared to 28.24% of unemployed ( $P = 0.0001$ ) [Fig.3].

Question	Option	Number	Percentage
How often does your child brush his/her teeth?	1 time	114	57.07
	2 times or more	161	42.93
Do you supervise your child's tooth brushing?	Yes	178	47.47
	No	197	52.53
Has there been a change in the frequency of brushing of your child since the war began?	No changes	322	85.87
	Decreased	38	10.13
	Increased	15	4.0
What measures did you take to maintain your child's oral hygiene during the war?	Added flossing/ mouth rinsing	99	26.4
	Increase frequency of tooth brushing	97	25.87
	No time for extra efforts	179	47.73

**Table 3.** Parents' attitudes and practices toward their child's oral hygiene measures.

Question	Option	Number	Percentage
Does your child attend a dentist before the onset of the war?	Yes	267	71.31
	No/only in emergency situations	118	28.69
Did your child experience any dental problems during the war?	Yes	162	43.2
	No	213	56.8
Would you take your child to a dental clinic during the war?	Yes/for caries and orthodontic treatment	326	86.93
	Yes/ only in emergency situations	49	13.07
Which clinic do you consider for dental treatment of your child?	The nearest clinic	40	10.67
	The best clinic	310	82.67
	Clinic with free-cost treatment	25	6.66

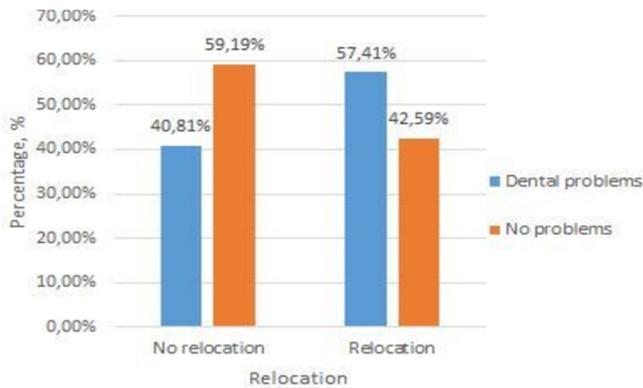
**Table 4.** Parents' attitudes and practices toward their child's dental treatment.



**Figure 3.** Relationship between parents' occupation and supervision of child's tooth brushing.

Table 4 presents the information regarding the dental treatment of children.

71.31% of the participants had taken their child for a dental visit before the onset of the war. 43.2% of all the studied children experienced dental problems (toothache/cavity/swelling and dental trauma) during the war. Moreover, 57.41% of the relocated parents reported that their children experienced dental problems, much higher than the local population [Fig.4] ( $P= .02$ ).



**Figure 4.** Relationship between dental problems and relocation of the children.

Among children with the food pouching habit, 16 children (9.88%) had dental problems and 24 children (11.27%) had no problems (NS).

Fortunately, in this survey, only 30 children (8%) children experienced dental trauma during the war, and there was no statistical difference between the internally relocated and the local children (NS). If their child needs dental treatment, 310 parents (83.33%) considered consulting a dentist at the best clinic according to their opinion. 86.93% of the parents would visit the dentist to treat their child's decayed teeth or for orthodontic treatment.

## Discussion

Considering the scarcity of information regarding the effect of wartime on children's oral healthcare, this study aimed to assess attitudes and practices of the parents regarding oral health of their children. Parents' attitudes and practices concerning dietary habits, oral hygiene measures, and the use of dental services significantly impact the child's oral health<sup>10,11</sup>. The ongoing war has created unemployment and economic crises among many parents, which indirectly caused fear and anxiety<sup>1</sup>. Moreover, at the beginning of this war, only urgent dental aid was available, leading to the postponement of dental

treatments, which may hindered parents' ability to monitor their child's oral hygiene practices and dental care.

We chose children aged 4-7 years for this study because the number of carious lesions significantly increases at this age<sup>12</sup>, which links to plaque accumulation with different microbial species<sup>13</sup> and their limited ability to care of teeth.

The authors compared obtained results with the articles that estimated these aspects during the COVID-19 pandemic, which preceded this war<sup>6,7,14</sup>, and dental caries during the previous wars<sup>9,15</sup>. The reason to address these sources was a lack of studies on children's oral healthcare among parents during wartime. Both these pandemics and war may prevent parents from monitoring their child's oral hygiene practices and provoke children to spend the entire day in a home setting, particularly for online learning. Additionally, the war has led to the relocation of people to other regions of Ukraine and countries<sup>16</sup>.

In this study, the dietary habits of 71.73% of the children did not change since the war began, which is probably related to availability of home cooking during wartime. 80.27% of the studied parents reported that their children consumed cariogenic food regularly. In contrast, in the study of Arheiam et al.<sup>9</sup> about the Libyan war, only 22.4% of the children aged 8-12 years consumed sugary drinks regularly. Moreover, decreased sugar availability and consumption, linked to decreased caries levels, were found during the Iraq war<sup>15</sup>. Therefore, the interviewed parents had more resources to afford sugary products for their children.

70.4% of the interviewed parents reported that their children used electronic devices at mealtimes and while snacking. In addition, only 11.27% of parents said the food pouching habit in their children with dental problems, while the study by Varkey et al.<sup>7</sup> reported about 94%. These habits may have stayed the same since the beginning of the war for the studied children. Even though the parents' attitudes and practices concerning their children's dietary habits were satisfactory, their oral health education in this aspect needs reinforcement.

In this study, the parents reported that all children had regular tooth brushing, and its frequency did not change among 84.87% of the children; these results were significantly higher than those obtained by Arheiam et al.<sup>9</sup> This could

be attributed to the better living conditions in Poltava during the war. However, only 42.93% of parents stated that their children brushed their teeth twice and more daily, and 47.73% needed more time to implement additional oral hygiene measures. This finding could be related to a lack of awareness and the inconveniences parents and children face during the war.<sup>1</sup>

In the present study, less than half of the parents supervised their child's brushing. Better results were reported by Varkey et al.,<sup>7</sup> in which 70% of parents watched their child's tooth brushing during the pandemic Covid 19. Our findings confirm that positive attitudes towards oral hygiene were not necessarily translated into favorable practices.

The findings suggest that only 23.19% of parents with secondary school education supervised their children tooth brushing. This finding is consistent with previous research, which found that participants with higher education levels had significantly better oral health knowledge than less educated parents.<sup>17</sup> In addition, 57.1% of parents with professional occupations better supervised their children's tooth brushing than unemployed, indicating that parents' work impacted their attitude toward their child's oral hygiene.

Parents need to be educated and supported to realize that they are the example for their children and they should be encouraged to improve their child's oral hygiene practices. The school dental health education programme was effective in increasing the knowledge, attitudes, practice and oral hygiene status of elementary school children<sup>18</sup>. In addition, dental students with the university's instructor had to be more involved in organizing oral health lessons in schools and kindergartens.

In the study of Jabbarian et al.,<sup>14</sup> one-third of the parents reported not attending previous dental appointments due to fear of contracting COVID-19. On the contrary, over 86% of the studied parents expressed willingness to treat their child's decayed teeth or orthodontic problems. Moreover, if their child needs dental treatment, more than 83% of parents consider consulting a dentist at the best clinic in their opinion. Therefore, the attitude of all studied parents concerning their children's dental care was positive.

In this study, only 8% of the children experienced dental trauma during wartime,

similar to the incidences reported by Arheiam et al.<sup>19</sup> This could be explained by the reduction in outdoor activities during this period.

Pediatric specialists should remain vigilant for indicators of physical and emotional stress when dealing with young patients<sup>20</sup>, and internally displaced children need special attention. 14.44% among all the studied parents with children were displaced from the regions of Ukraine attacked by Russia one year ago. 16.67% of these parents reported that their children began eating more during wartime [Fig.1], which could be estimated as stress eating. Moreover, 18.52% of the internally displaced parents reported that their children had a healthier diet [Fig.2], which is probably related to parents' attitude regarding this aspect. However, such children had more dental problems than local population [Fig.4], which could be related to the fact that they were not able to visit a dentist during wartime preceded relocation.

The present findings may be attributed to the time of conduction of the study since this study was carried out approximately one year after the onset of the war when the parents organized the daily life of children and their hygienic behavior to a great extent.

One limitation of this study was that it was conducted at only one city (Poltava). The conditions in Poltava city are different to other parts of Ukraine which close to the frontlines of the war, therefore, multi-center studies in different cities are required to increase the generalizability of the results.

## Conclusions

Within the limitations of this study, it can be concluded that the surveyed Ukrainian parents displayed satisfactory attitudes and practices towards oral health. However, it became evident that they lack awareness of their children's oral hygiene measures, which could be related to the inconveniences faced both by parents and children during wartime.

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## Declaration of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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