



## Maternal Obsessive-Compulsive Disorder (OCD) and Its Relation with Eating Problems and Sleep Disorders in 6 to 36-Month-Old Children

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### Abstract

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**Background:** Maternal obsessive-compulsive disorder (OCD) might lead to behavioral problems in children. Given the higher prevalence of eating and sleeping problems in children, the present study investigated the relation between maternal obsessive-compulsive disorder (OCD) with children's eating problems and sleep disorders.

**Methods:** This descriptive cross-sectional study was performed on 77 mothers with children aged 6 to 36 months in selected clinics in Kerman in fall 2018. The participants were selected using convenience sampling. The data were collected by the completion of three questionnaires: Morell's Infant Sleep Questionnaire, the Maudsley Obsessive-Compulsive Inventory (MOCI), and the Child Eating Behavior Inventory (ORI-CEBI). The collected data were analyzed using SPSS software (version 20) through independent samples t-test and Pearson correlation.

**Results:** The mean of obsessive-compulsive disorder (OCD) for mothers who reported sleep problems in their children was significantly higher than the OCD mean score for the mothers whose children did not have sleep disorders ( $P=0.01$ ). Besides, the OCD mean score for the mothers of children with sleep problems diagnosed according to Richman's criteria was higher than the OCD mean score for the mothers who did not report any sleep disorders in their children, but there was no significant difference between the two groups ( $P=0.09$ ). The mean score of the child's eating problems was correlated with the mother's mean OCD score ( $r=0.2$ ), but this correlation was not statistically significant ( $P=0.20$ ). The child's eating problems had a positive significant relation with the child's sleep problems ( $P=0.04$ ).

**Conclusion:** The mother's perceptions, repetitive negative thoughts, and obsession about her child's sleeping can probably increase the mother's active palliative methods and consequently worsen the child's sleep and eating problems. Therefore, preventive and therapeutic interventions need to be taken for mothers with obsessive-compulsive disorder (OCD).

**Keywords:** Sleep disorder, Children, Mother, Eating problems, Obsessive-Compulsive Disorder (OCD)



## Introduction

Childhood is one of the most critical and effective periods of a person's life because a person's personality is formed in this period (1). The quality of parent-child relationships, especially the mother-child relationship, plays a decisive role in the formation of social personality, cognitive functioning, and mental health of the child in the future, and has long-term effects on the child's development (2). Problems such as maternal obsessive-compulsive disorder (OCD) will lead to behavioral problems in children. Obsessive-compulsive disorder is a debilitating mental disorder that causes a person to engage in involuntary and futile actions through repetitive and unwanted annoying thoughts. This disorder is found in 10% of psychiatric patients and is the fourth most common psychiatric illness. A mother with obsessive-compulsive disorder is more perfectionist, cold, critical, negative, restraining, skeptical, punitive, rejecting, and annoying than a healthy mother in dealing with her young child (3).

The two sleeping and eating problems tend to co-occur in early childhood, and increasing physicians' awareness of this co-occurrence allows for early intervention and improved outcomes (4). Eating is one of the basic needs of a child. The mother must meet this need in the best way with effective interaction with the child and play a decisive role in the child's personality and mental health. Nutritional behaviors at this age are directly affected by the family and the child's interaction with the living environment and the family (5). There is a dynamic and two-way relation between children's sleep behaviors and parental behavior, and toddlers are highly dependent on their parents in this regard. Focusing on mechanisms underlying the role of parents in inducing healthy sleep behaviors and modifying these behaviors can be an effective step in improving children's sleep (6). Children who sleep less at night are exposed to a higher risk of obesity and sedentary lifestyles, and thus interventions to enhance healthy sleep behaviors improve nighttime sleep duration and consequently reduce eating problems (7). Nutritional problems are estimated to occur in up to 25% of children who grow normally (8). Eating a few types of food, avoiding eating, stubbornness when eating, eating slowly, getting angry, and shouting at meal time are some of the most agonizing nutritional problems of children (9).

Although the biological function of sleep is still largely unknown, sleep is seen as an important part of the recovery process and is considered essential for a person's physical, neurological, and emotional health. Sleep deprivation has short-term and long-term effects in life. Short-term effects include poor attention and concentration, reduced quality of life, and low productivity, while long-term effects include high mortality from coronary artery disease, heart failure, hypertension, obesity, diabetes, stroke, depression, memory loss, and decreased immune function (10). Signs and symptoms of inadequate sleep in children are different from those in adults and may manifest as mood swings, hyperactivity, attention deficit, neurological disorders, and learning disabilities. Sleep disorders affect not only children's health, but can also be an important factor in creating stress, pressure, and conflict in the family and even cognitive disorders during adolescence (1, 11, 13). Sleep is an organized behavior that is repeated every day as a vital necessity based on biological rhythm. The need for sleep in humans varies and depends on various factors such as age, genetic background, and physical and mental states of the person (14).

Zeinali et al. showed that the duration of breastfeeding predicts eating problems. They also found that defective maternal-child attachment and maternal stress increase eating problems in the child (15). The mother's morbid and obsessive attitude towards the child's body shape, weight, and eating style can have a direct impact on the child and his upbringing, change the mother's sensitivity to the child's needs and reactions, and affect the quality of the mother-child relationship (16). Maternal anxiety on the one hand and the child's growth process and mood on the other hand are among the factors that affect the eating behaviors of mothers and children. As a result, maternal anxiety and depression can increase nutritional problems in children and, in turn, increase anxiety and distress in both parties over time (17). Therefore, the mental aspects of mother-child interaction and maternal sensitivity to the child's needs and reactions during feeding, which are often neglected by researchers, are very important.

Zeinali et al. studied the effectiveness of parental training on feeding problems and parent-child stress and showed that training

about eating problems reduces feeding problems and mother-child stress. They also found that the mother-child interaction has a significant effect on a child's eating problems and needs to receive more attention (18).

In another study, Mousavi and Ahmadi performed a comparative survey on behavior problems of mothers with obsessive-compulsive and healthy mothers in Bandar Abbas and showed that behavioral disorders in children with obsessive-compulsive mothers were more common; and in addition, children should receive adequate medical attention while their mothers are undergoing treatment (19). A study was conducted in the health centers of Shahid Beheshti University of Medical Sciences in Tehran in 2013 and explored factors affecting sleep disorders in children aged 4-6 years in Tehran and the results showed that sleep disorders can threaten children's growth and development. Psychological, family, and cultural problems can also affect the quality of sleep. Thus, sleep monitoring in children should be considered for evaluating their health (20).

The future of any society depends on the children of that society. For the child to grow up in a healthy and normal way, their personality, psychological and social needs must be reasonably satisfied. Accordingly, the quality of the parent-child relationship not only plays a decisive role in the formation of the child's social personality, cognitive functioning, and mental health in the future but also has a significant impact on the quality of sleep and nutrition that play a key role in children's development. Hence, identifying the factors that disrupt sleep and nutrition and how these factors relate to obsessive-compulsive disorder is valuable for professionals, parents, and the health system and can help effectively prevent and treat these problems.

The present study aimed to compare eating problems and sleep disorders in children of mothers with and without obsessive-compulsive disorder. To the best of our knowledge, this is the first study that simultaneously examines the sleep and eating problems of children aged 6 to 36 months and their relation with obsessive-compulsive disorder. This study can fill the research gap in the literature and its findings can contribute to effective health planning to improve children's physical and mental performance and promote their health.

## Methods

This cross-sectional study was conducted using a descriptive-analytical design. The research population included all mothers of children aged 6 to 36 months who were referred to different clinics in Kerman in fall 2018 (Sep 23 to Dec 21). The participants were 77 mothers who were selected using convenience sampling. Given that no study has addressed maternal obsessive-compulsive disorder (OCD) and its relation with child sleep and eating disorders, the sample size was calculated following a study that examined the relation between maternal attachment and psychological characteristics with children's eating problems (15). Accordingly, the sample size was estimated as at least 62 persons based on a 95% confidence interval, 80% power, and a 0.35 correlation coefficient.

The inclusion criteria were the mother's willingness to cooperate, having basic literacy and ability to write in Persian, having complaints of the child's eating problems or sleep disorders, and the child's age being between 6 and 36 months. The mothers who did not answer all questions in the questionnaire were excluded from the study.

The data in this study were collected using Morell's Infant Sleep Questionnaire, the Maudsley Obsessive-Compulsive Inventory (MOCI), and the Child Eating Behavior Inventory (ORICEBI) (26). The mothers' and children's demographic characteristics were also recorded.

The Maudsley Obsessive-Compulsive Inventory (MOCI) was developed by Hodgson and Rachman (21) to examine the type and scope of obsessive-compulsive disorder. It contains 30 items that are answered using a true/false format to measure obsessive-compulsive disorder symptoms (e.g. I frequently have to check things like gas or water taps, doors, etc. several times). The items are structured into four subscales: checking (9 items), washing/cleaning (11 items), slowness (7 items), and doubting (7 items) (21). The overall score on the inventory ranges from 0 to 30, with higher scores suggesting more severe obsessive-compulsive disorder symptoms. The reliability and validity of the inventory were confirmed in studies performed on clinical samples. The reliability coefficient of the inventory calculated using the test-retest method was high (ICC= 0.89) (22). The inventory was translated and

used in previous studies in Iran and it has shown acceptable psychometric properties (23).

The Infant Sleep Questionnaire was developed by Morrell (24) to measure infants' sleep behavior through maternal reports and has two parts. The first part is based on the Richman scale and contains 9 items that measure a child's sleep behavior by asking questions about the child's bedtime, waking up at night, and sleeping in the parents' bed. The score range for the first item is 0-6, the second item is 0-7, the fourth item is 0-7, the fifth item is 0-5, the sixth item is 0-6, and the eighth item is 0-7. Items 3, 7, and 9 measure the duration of sleep problems. Morrell considered a cut-off point of 12 or higher to diagnose severe sleep problems. The second part of the questionnaire contains a four-choice item (no problems, mild problems, moderate problems, and severe problems) and surveys the mother's opinion about whether the child has sleeping problems or not. In this study, the severity of children's sleep problems is measured using a score of 0 to 38 with a cut-off point of 6. Morrell showed that this questionnaire is a fast, valid, and reliable tool for assessing children's sleep problems. In Morrell's study, Cronbach's alpha coefficient for the questionnaire was 0.82 and had high levels of sensitivity and specificity compared to the Richman's Sleep Diary and Composite Score (24). Mohsenian et al. translated the questionnaire into Persian and revised it by having it reviewed by 40 mothers. The Cronbach's alpha coefficient for the questionnaire was reported to be 0.68 (25).

The Lewinsohn's Child Eating Behavior Inventory (ORI-CEBI) examines infant eating problems at meal times and is completed by the mother. This inventory was developed by Lewinsohn et al. (26) to measure the eating behavior of children aged 6 to 36. It was translated into Persian by Zeinali et al. (15) and its psychometric properties were assessed and confirmed. This inventory contains 68 items and four subscales based on the results of exploratory and confirmatory factors analysis, which include (1) eating a small amount of food, (2) avoiding eating, (3) conflict to control, and (4) positive parenting behaviors. Each item is scored using two values (yes/no). In a study of 93 mothers whose children had eating problems, Lewinsohn et al. (26) assessed the validity of the factors of this inventory through internal

consistency, and the corresponding values were reported to be 0.85, 0.83, 0.79, 0.65, respectively (26). Zeinali et al. (15) translated this inventory into Persian and examined it by exploratory factor analysis. The Persian version has 56 two-choice (yes/no) statements, structured into five subscales, including mother's satisfaction with eating, eating behavior, stress while eating, eating a variety of foods, and eating-related physical symptoms. Each yes answer is scored 1 and each no answer is scored zero. Some statements are scored in reverse. The total score on the inventory ranges from 0 to 56. Higher scores indicate more severe eating problems. The internal consistency measured using Cronbach's alpha for the whole scale was 0.74 and the corresponding values for the factors were 0.83, 0.77, 0.65, 0.67, and 0.65, respectively, showing the acceptable internal consistency of the instrument (15). In the present study, Cronbach's alpha coefficients for the Obsessive-Compulsive Inventory (MOCI), the Infant Sleep Questionnaire, and the Child Eating Behavior Inventory were 0.83, 0.70, and 0.81, respectively.

After obtaining informed consent from the mothers and providing the required information, the questionnaires were completed by the mothers, when visiting the clinic. The collected data were analyzed using SPSS software (version 20) with Pearson correlation and independent samples t-tests, at the significance level of  $p < 0.05$ . This research proposal was approved with the ethics code of IR.KMU.AH.REC.1397.2723 by the Ethics Committee of Kerman University of Medical Sciences and all individuals entered the study with informed consent. Since the data were collected using questionnaires, some information was provided to the participants about the objectives of the study, and they were ensured that their information would remain confidential.

## Results

A total of 77 mothers with children aged 6 to 36 months enrolled in this study. 7 children (9.1%) were aged 6 months to 1 year, 15 children (19.5%) were 1 to 2 years, and the rest were 2 to 3 years. The majority of the mothers (81.8%) were 21 to 30 years.

Table 1 shows the descriptive statistics (Mean $\pm$ SD) for the mothers' obsessive-compulsive disorder scores, and children's eating problems, and sleep disorders.

**Table 1. The descriptive statistics of the research variables**

Variables	Mean±SD	Median	Min	Max
Maternal OCD (out of 30)	14.58±5.8	14	2	25
Child eating problems (out of 56)	27.54±8.00	27	14	47
Child sleep disorders (out of 38)	17.88±8.6	20	2	38

Besides, according to the mothers' statements and Richman criteria, 54 (70.1%) and 49 (63.6%) children had sleep problems, respectively.

Table 2 shows the results of the independent samples t-test to compare the mean scores of maternal obsessive-compulsive disorder in terms of the presence of children's sleep problems measured based on the Richman scale and the mother's statements. As can be seen in this table, the mean score of obsessive-

compulsive disorder for the mothers who reported sleep problems in children was significantly higher than that of the mothers who did not report any sleep disorders in their children ( $P=0.01$ ). Moreover, the mean score of obsessive-compulsive disorder for the mothers whose children had sleep problems according to the Richman scale was higher than mothers whose children did not have sleep disorders, but this difference was not statistically significant ( $P=0.09$ ).

**Table 2. A comparison of the mean scores of maternal obsessive-compulsive disorder in terms of the presence of children's sleep problems**

Presence of child sleep disorders		Mean±SD	P-value
According to the Richman scale	Yes	15.52±5.8	0.09
	No	12.95±5.8	
According to the mothers' statements	Yes	15.57±5.4	0.01
	No	11.77±5.6	

Besides, there was a weak correlation ( $r=0.2$ ) between the mean scores of the child's eating disorders and the maternal obsessive-compulsive disorder score, but this relation was not statistically significant ( $P=0.20$ ). Furthermore, there was a statistically significant correlation between the child's eating problems and sleep disorders ( $r=0.03$ ;  $P=0.045$ ), indicating that the higher the scores of eating problems, the higher the score of sleep disorders.

### Discussion

The present study showed that the mean score of obsessive-compulsive disorder for the mothers who reported sleep problems in their children was significantly higher than mothers who did not report any sleep disorders in their children. Besides, eating problems were also significantly associated with sleep disorders in children and there was a weak and insignificant relation between the mean score of child-eating problems and the mean score of maternal obsessive-compulsive disorder.

Mohsenian et al. showed that toddlers' sleep problems were significantly associated

with their sleeping patterns and the mother's perception of the child's sleeping. This somehow confirmed the results of the present study that indicated that sleep disorders were more common in children with obsessive-compulsive mothers. Mohsenian et al. found that one type of putting children to sleep, i.e. active physical relief, as well as two types of maternal perception of their child's sleeping, namely perceptions of anger and nutrition, were the strongest predictors of sleep problems in infants (25). In other words, the mother's more frequent use of active physical relief strategies such as hugging and breastfeeding was associated with more sleep problems in the infant. Furthermore, Tikotzky and Sadeh showed that methods for putting the child to sleep such as breastfeeding while sleeping were associated with increased sleep problems (6). In a similar vein, the present study indicated that as the maternal obsessive-compulsive disorder score increased, the child's sleep problems also increased. In fact, the mother's perceptions, repetitive thoughts, and obsession about the infant's sleeping behavior can increase the mother's active palliative practices

and consequently increase the infant's sleep problems. Besides, since the child's eating problems are directly related to their sleeping problems, it is expected that as the child's sleep worsens, the child's eating problems will increase as well.

In a study on the relation between maternal psychological characteristics and child eating problems, Zeinali et al. (15) showed that the quality of the infant's nutrition can be a predictor of maternal stress. Furthermore, the present study indicated that maternal stress can negatively affect the mother-child relationship and increase the child's eating problems. Therefore, it would be useful to provide initiatives to increase mothers' awareness about mental health and its importance in feeding their children. However, their study examined maternal stress and did not consider maternal obsessive-compulsive disorder. Probably, these inconsistent findings reported by two different studies could be due to the type of questionnaires and the type of disorders assessed. The present study showed a weak association between maternal obsessive-compulsive disorder and the child's eating problems, suggesting that as the maternal obsessive-compulsive disorder score increased, the child's eating disorders worsened. The mother's obsessive attitude towards the child's eating and weight can have a direct impact on the mother-child interaction, and consequently affect the child's eating behaviors, leading to nutritional problems in the child over time. The maternal obsessive-compulsive disorder as a stressor and psychological problem prevents the formation of effective and constructive mother-child interaction. Accordingly, the mother's extreme support due to anxiety about the child's health (by spending a lot of time obsessively checking the child's sleep, food, health, etc.) or the mother's inattention due to engaging with her obsessive thoughts and behaviors and neglecting the child (spending a lot of time on washing, cleaning, etc.) not only lead to the onset of the infant's behavioral problems (in sleeping, eating, playing, etc.) but also aggravates these problems in the child (27).

A study on the factors affecting sleep disorders in 4-6-year-old children in Tehran showed that sleep disorders threaten the growth and development of children. Psychological, family, and cultural problems can also affect the children's quality of sleep.

However, these researchers did not address the maternal obsessive-compulsive disorder, and only children's sleep disorders were studied, in which the results were consistent with the present study. Sleep disorders can potentially cause problems with a child's eating behavior, which in turn can be a risk factor for a child's growth and development. Similarly, the present study indicated that the maternal obsessive-compulsive disorder as one of the family factors affecting the parent-child interaction can also affect the growth and development of children by influencing their sleeping and eating behaviors (20).

Mousavi and Ahmadi (19) performed a comparative survey on behavior problems of children with obsessive-compulsive mothers and healthy mothers in Bandar Abbas and showed that behavioral disorders in children with obsessive-compulsive mothers were more common and children should also receive adequate medical attention while mothers are undergoing treatment. This study examined the child's behavioral disorders based on the Achenbach System of Empirically Based Assessment (ASEBA) completed by the mother, and these disorders were not confirmed by a psychiatrist or clinical examination (19). Our study showed that the children whose mothers had higher obsessive-compulsive disorder scores had more difficulty sleeping, as was stated by the mothers. The main contribution of the present study was its focus on the relation between maternal obsessive-compulsive disorder with children's sleep and eating problems and the relation between children's sleep and eating problems. As the review of the literature showed, no study has examined these factors simultaneously. It seems that treating mothers with obsessive-compulsive disorder can play an important role in preventing and treating their children's sleep and eating problems, by improving parent-child interaction. Treating these disorders not only improves the growth and development of the child and the quality of life of the whole family but also prevents unnecessary visits to clinics and waste of time and energy (19).

Lewinsohn et al. examined problematic eating and feeding behaviors of 36-month-old children and assessed the prevalence and factors associated with these behaviors. They showed that pediatricians need to ask the mother how she cares for the child during

eating and sleeping, and pay attention to the quality of the mother-child interaction. The presence of the practical obsessive-compulsive disorder in mothers is often associated with symptoms of eating disorders and leads to the mother's resort to controlling and restricting strategies to control the child's eating and sleeping behaviors (26). The mother's obsession with cleansing may help explain the relation between the obsessive-compulsive symptoms and the use of restrictive feeding techniques in children. In other words, the maternal obsessive-compulsive symptoms can increase the child's eating problems by restricting or over-controlling the child's meals, resulting in developmental problems and psychological and social needs. Eating and sleeping problems represent a vicious cycle, which exacerbate each other and disrupt the parent-child relationship (28).

The results of a study on the complex relation between diet and sleep and their clinical and public health implications showed that dietary quality and specific nutrient intake can affect regulatory hormonal pathways and cause changes in sleep quantity and quality. Sleep, in turn, affects energy production as well as absorption of specific foods and nutrients through biological and behavioral mechanisms (29). The present study showed a positive relation between sleep and eating problems in children. Therefore, deep understanding, diagnosis, and treatment of each of these problems in the child can reduce chronic diseases caused by these disorders and ultimately improve the quality of children's growth and development.

Currently, it has been demonstrated that adult behavior affects children and vice versa. In other words, the caregiver-child interaction is a two-way communication that ultimately promotes the child in achieving developmental goals and improves the parent-child relationship. Furthermore, the child's adequate nutrition and sleep cause the caregiver to be satisfied with the way his child is brought up and cared for. In addition, one of the causes of children's behavioral problems, including their sleep and nutritional disorders, is parental physical and

mental illnesses that need to be taken into account (30).

One of the limitations of the present study was the location of data collection. Since the questionnaires were completed by the participants in the clinics, some mothers were not happy with the length of the questionnaires. Moreover, due to the small sample size, the mothers' and children's personality was not examined. Another limitation was the lack of references and related studies in the literature to compare with. It is advised that future studies use a larger sample size and assign more time to data collection. Besides, they must also take into account the mothers' other mental disorders and children's personality and psychological characteristics, and their relation with eating problems and sleep disorders. The results of this study cannot be generalized to children of other age groups, as it was one of the first basic studies in this field.

### Conclusion

Early diagnosis of the mother's psychological problems and early intervention may prevent children's behavioral problems, including sleep and eating disorders. Furthermore, improving the mother-child interaction can improve their quality of life and facilitate the child's achievement of growth and developmental goals. Therefore, preventive and therapeutic interventions are recommended to reduce infants' feeding and sleep problems and to change the parents' perceptions. Besides, raising public awareness and identifying children and mothers at risk can help prevent the continuation of sleep and feeding problems in children. Educating and treating mothers with obsessive-compulsive disorder can also play an important role in preventing and treating their children's sleep problems and preventing unnecessary visits to clinics and wasting time and energy.

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### Conflict of interest

The authors have no conflict of interest.

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