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## Risky behaviors of mothers with infants on sudden infant death syndrome in Turkey

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## ABSTRACT

**Purpose:** Sudden infant death syndrome is the most common cause of death during the post-neonatal period. Factors such as sleeping position, bed sharing, pillow use, smoking during pregnancy and the breastfeeding period constitute risk factors for sudden infant death syndrome. This study aims to identify the risky behaviors of mothers with infants that may put their children at risk for sudden infant death syndrome.

**Design and methods:** This is a cross-sectional, descriptive study. Data were collected using a questionnaire that was developed by the researchers. The questionnaire was filled out by 456 mothers who applied to the family health center between October 2014 and January 2015.

**Results:** The greatest risk factor is the infant's sleeping position. A total of 77.9% of the mothers put their babies in bed in a non-supine position; 65.8% used a pillow when they put their babies in bed, 52.9% used a soft mattress, and 28.5% shared their beds with their babies. Prone sleeping was more likely to occur when smoke was present in the home or a pillow was used.

**Conclusion:** Nurses should notify families of the risky behaviors that can cause sudden infant death syndrome and plan appropriate nursing care.

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## Introduction

Sudden Infant Death Syndrome (SIDS), a type of Sudden Unexpected Infant Death (SUID) is referred to or described by various names for many years, and currently defined as the sudden death of infants under the age of one-year-old that cannot be explained after performing a comprehensive investigation and a clinical history and autopsy examination (AAP, 2011; CDC, 2017). Although the etiology of SIDS cannot be fully explained, it has been reported that certain factors play a role in this syndrome. These factors include using the prone or side-lying sleeping positions, bed sharing with the infant, sleeping on a soft surface, maternal smoking during pregnancy, exposure to extremely hot environments, delayed receipt of or failure to receive prenatal care, young maternal age, premature birth and/or low birth weight, and male gender (AAP, 2000; Auger, Fraser, Smargiassi, & Kosatsky T., 2015; Carpenter et al., 2013; Geib, Aerst, & Nunes, 2006; Mitchell, 2007; Nelson & Taylor, 2001). >95% of the cases of SIDS have one or more risk factors, and these risk factors can be eliminated in most of the cases (usually sleeping position, sleep environment, or parental smoking) (Ostfeld, Esposito, Perl, & Hegyi, 2010). A study reported

that only 5% of infants had no extrinsic risk factor (Trachtenberg, Haas, Kinney, Stanley, & Krous H.F., 2012).

Although no countrywide data are available in this regard, the rates of SIDS were identified in single provinces in some studies. Infant death syndrome ranked ninth, with a rate of 1.2% in a study investigating deaths of children younger than five in Istanbul (Dolar, Gökçay, Bulut, & Neyzi, 2005). SIDS ranked ninth, with rates of 2.5% and 1.67% in a study investigating infant deaths in Hatay in 2009 and 2010, respectively (Çetin, Altun, Kerkez, Tatlı, & Özer, 2012).

Common practices that risk SIDS in our country are: placing babies in the side sleep position or prone sleep position, covering the baby's face, not using a pacifier, smoking during pregnancy and breast-feeding, bed sharing, pillow use, and smoking in the home (Alparlan & Uçan, 2011; Çalıřır, Özvrmaz, & Tuğrul, 2007; Çelik, Meral, Öztürk, & Purisa, 2010; Çınar, Sözeri, Dede, & Cevahir, 2010; Efe & Ak, 2012; Yıkılkan et al., 2011).

It is known that sleeping in a prone position increases the risk of SIDS (Ponsonby, Dwyer, Gibbons, Cochrane, & Wang, 1993). The risk of SIDS is significantly higher in infants sleeping in the prone position than in infants sleeping in the supine position (Goberman, Johnson, Cannizzaro, & Robb, 2008). Case control study reported that the risk of SIDS further increases particularly when infants are not used to sleeping in the prone position and are put to sleep in the prone position (Mitchell, Thach, Thompson, & Williams, 1999). The side-lying position is a high risk factor for SIDS because it is not a stable position, and many

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infants who are put to sleep in a side-lying position can roll over into a prone position (Waters, Gonzalez, Jean, Morielle, & Brouillette, 1996).

There are ongoing debates about bed sharing, and one study argues that bed-sharing by nonsmoking parents with their babies does not increase the risk of SIDS (Fleming et al., 1996). However, studies have demonstrated that minimizing the bed-sharing habits of parents with their babies can be expected to decrease the rate of SIDS significantly (Blair et al., 2009; Carpenter et al., 2013). Although it is not fully known why bed sharing increases the risk of SIDS, studies have shown that bed sharing increases the body temperature of the infant and, furthermore, the body of the parent can obstruct the infant's airway (Vennemann et al., 2009). The rate of bad sharing found in studies conducted in Turkey ranges from 8.7 to 26% (Alparslan & Uçan, 2011; Çalışır et al., 2007; Çelik et al., 2010; Çınar et al., 2010; Efe, Sarvan, & Kukulcu, 2007).

Epidemiological studies define soft surfaces spread under sleeping infants, such as pillows, quilts, sheepskin, and porous mattresses, as a significant risk factor (AAP, 2000; Mitchell, Thompson, & Ford, 1998; Ponsonby, Dwyer, Couper, & Cochrane, 1998). Various studies have reported that a significant portion of the cases of SIDS were caused by loose/soft mattresses, even though in those cases the infants were put to bed in the supine position. These studies have indicated that soft mattress surfaces are a risk factor for SIDS (AAP, 2000; Ponsonby et al., 1998). A study performed by Mathews et al. (2015) reported that 72.9% of mothers preferred soft mattresses for their babies.

A meta-analysis study has reported that maternal smoking during pregnancy and the postpartum period significantly increases the risk of SIDS (Zhang & Wang, 2013). Another study defines maternal smoking during the postpartum period as a significant environmental risk factor for SIDS (Liebrechts-Akerman et al., 2011).

Identifying mothers' risky behaviors and taking the necessary measures to prevent these behaviors will help minimize cases of SIDS. Our aim was to identify mothers' risky behaviors with infants that might put their children at risk for SIDS.

## Research questions

1. What are the risky behaviors that can cause SIDS among mothers who have an infant?
2. What are the risk factors of SIDS, affecting use of prone sleep?

## Methods

### Research design and sampling

This cross-sectional, descriptive study was conducted to analyze the data collected from mothers who have infants in Denizli, Turkey. In 2014, the total number of mothers with infants registered at the Denizli Public Health Agency was 8284, which was our study universe. Sample size was calculated using a known sample of the universe method and a 95% ( $\alpha = 0.05$ ) confidence interval (Sümbüloğlu & Sümbüloğlu, 2009). A total of 456 mothers participated in this study.

After determining the number of samples to be included in the study, 15 of the family health centers were randomly chosen from the 45 family health centers located in Denizli city centre. A simple random sampling method was used for randomization. The number of mothers from each family medicine region included in the study was determined by following a stratified sampling method mainly based on the number of mothers with infants 0 to 12 months old registered to physicians in these family health centers.

### Procedure

Written consent was obtained from the Denizli Provincial Directorate of Public Health and the Non-invasive Medical Ethics Committee of Pamukkale University School of Medicine to collect the study data. In addition, individuals to be included in the study were informed about

the subject, the purpose of the study, and the time period to be spent for the interview, and their consent was obtained prior to the study.

A six-item sociodemographic data collection form; five-item infant information form; and sudden infant death syndrome risk factors form, consisting of two multiple-choice and 11 yes/no questions, which included potential maternal-related risk factors for SIDS, was prepared by the researchers in accordance with the literature (Ball et al., 2011; Çalışır et al., 2007; Efe & Ak, 2012; Yıkılkan et al., 2011). Then three expert (pediatric nursing instructors) opinions were received about the data collection form and used in the study.

Before being used in the study, a pilot study with 20 mothers, from four family health centers, was carried out. The pilot study enabled the researcher to evaluate the intelligibility of the data collection form and to assess the participants' availability and time that would be required to complete the questionnaire. The mothers completed the entire survey, on average, between 5 and 10 min and did not make any suggestions. The pilot study findings were not included in the final analysis.

The investigators collected the data by interviewing the mothers face to face who came to the family health centers for baby's routine visits and vaccination between October 2014 and April 2015. All participants received clarification about the survey from the researcher. The mothers were informed that their involvement in the survey was voluntary and that they had the right to leave at any phase of the survey.

### Data analysis

The data were analyzed using an SPSS program, version 18. The average  $\pm$  standard deviation, number, and percentage values for the questions in the form were computed. Logistic regression analysis was performed to determine the relationship between sleep position and potentially risky behaviors of mothers (sleeping mattresses, covering their babies' faces, not using pacifiers, smoking during pregnancy, smoking during lactation, bed-sharing, not monitoring the temperature, etc.). Results were expressed as odds ratios (OR), with 95% confidence intervals (95% CI); probability (p) values below 0.05 were considered statistically significant throughout.

## Results

Table 1 shows the distribution of the sociodemographic characteristics of the mothers in the study. The ages of the mothers participating in

**Table 1**  
Distribution of mothers with infants 0 to 12 months old by their sociodemographic characteristics.

Sociodemographic characteristics	Number	Percent
Mothers' age		
Age < 20	8	1.8
Age 20 and older	448	98.2
Mothers' education level		
Primary school	226	49.6
High school	122	26.8
University	108	23.7
Income level		
Income less than expenses	121	26.5
Income equal to expenses	281	61.6
Income higher than expenses	54	11.8
Profession		
Housewife	300	65.8
Having a job	156	34.2
Family type		
Nuclear	387	84.9
Extended	69	15.1
Number of children		
1-2	362	79.4
3-4	94	20.6
Total	456	100

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