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Title: Parental knowledge of safe infant sleep and sudden infant death syndrome is inadequate in Croatia

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Short title: Parental awareness of safe infant sleep

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Sudden infant death syndrome (SIDS) is the leading category of death for post-neonatal babies in wealthy countries and rates range from 0.06 to 0.9/1000 liveborn infants (1). Most research into infant sleep safety and SIDS is conducted in large countries and published in English; smaller nations may not have the resources to conduct SIDS case-control studies, nor the population size to make them viable. Consequently, in some countries SIDS risk-reduction guidance can be patchy, and parental safe sleep knowledge may be ad-hoc and based on guidance issued in other countries.

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No national safe sleep guidelines have been established in Croatia, and the knowledge of Croatian parents regarding safe infant sleep is unknown. Hence, we conducted an online survey of parental knowledge of safe infant sleep and SIDS in 2018. In 2017 there were 36 556 live births, 149 stillbirths and 148 infant deaths in Croatia, of which six were attributed to SIDS (2).

We designed a 46-item questionnaire examining sociodemographic and infant characteristics, infant feeding and sleeping practices, advice parents received from their paediatrician on safe infant sleep and parental knowledge of SIDS risk factors (Appendix S1). The questionnaire was distributed online for two months via social media intended for mothers, and local and national news portals. Participation was anonymous. Ethics approval was obtained from Ethics Committee of the University of Split School of Medicine (No.:2181-198-03-04-18-0046). Results are reported using percentages based on the total cohort. Raw numbers are provided when there are missing values.

In total 2379 responses were received with 673 valid questionnaires. Non-residents of Croatia, those with infants >12 months, and those with incomplete mandatory data were excluded. Almost all respondents were mothers, two-thirds had a higher degree, three-quarters were employed and almost half had a smoker in their household. The respondents' infant was the first-born in 58% of cases and 21% were born by Caesarean section.

In the 24 hours prior to completing the survey, 76% of respondents had breastfed their baby, and among those who had ceased breastfeeding 35% had stopped after age one. Half of the respondents reported placing their infant to sleep on its back, 37% on the side and 14% prone. Most infants (86%) slept on a pillow, or with stuffed toys. Half of the infants usually slept in a crib in the parents' room at night, 41% usually bedshared and the rest slept in a separate room, in a siblings' room or other. Almost 90% (594/669) bedshared at least once with their infant, of which 63% bedshared every night (241/666 all night, 182/666 part of the night). The main reasons for bedsharing were "makes breastfeeding easier" and "to be close to my baby". Half of the participants had no concern over bedsharing, whereas the remainder were fearful of accidental suffocation. A quarter of the respondents were unaware that sleeping on a couch/lounge chair with their baby or on a soft, sagging mattress was dangerous, and yet almost a quarter thought that 'bedsharing in the absence of hazardous circumstances' increased SIDS risk. Fewer than a third identified 'parental smoking' or 'low infant birth weight' as SIDS risks.

Of 668 respondents, most were familiar with the term SIDS, 60% and 2% hearing about it for the first time from the internet and their primary care paediatrician, respectively. Parental knowledge of SIDS risk factors is shown in Table 1.

Croatian parents are familiar with the concept of SIDS, but their knowledge of risk factors and safe infant sleep is far from adequate, best reflected by the fact that only half of the respondents placed their infants supine for sleep. A high proportion of respondents lived in a household with a smoker but smoking as a SIDS risk factor was not well known. Given that almost all respondents had bedshared at least once with their infant, and there is an increased risk for SIDS when bedsharing with a parent who smokes, these findings are concerning.

A large proportion of parents reported they had bedshared at least once with their infant. This figure is high compared to 40-50% prevalence reported elsewhere in Europe (3), and may reflect methodological limitations but confirms that all Croatian parents are in need of information about bed-sharing safety, especially given the risky practices and behaviours described by many, such as placing infants to sleep in the prone or side position, formula feeding, smoking, and sleeping with infants on a couch. On the other hand, placing infants to sleep in another room is a rare practice in Croatia, with babies traditionally kept in their parents' room for the first year of life. National, evidence-based safe sleep guidelines would help parents and paediatricians (4) better understand SIDS risks.

There are limitations associated with online studies, such as obtaining a representative sample (5). Our survey was advertised, among others, on the website of a parenting organisation whose members practice attachment parenting, including bedsharing, and tend to be more highly educated. The bedsharing prevalence found in this study may therefore reflect this, suggesting that the true awareness of SIDS risk factors among Croatian parents may in fact be much worse.

There is a need for systematic, evidence-based parental education on safe infant sleep and SIDS in Croatia, based on successful Back to Sleep campaigns conducted worldwide.

ABBREVIATIONS

SIDS – Sudden Infant Death Syndrome

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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Appendix S1: Questionnaire on infant sleeping practices.

Table 1. Factors selected by participants as "risk factors for SIDS"(n=673)

SIDS' risk factors	n (%)
A parent who is under the influence of drugs while sleeping with their infant	433 (64.3)
A parent who is under the influence of alcohol while sleeping with their infant	420 (62.4)
A parent who is under the influence of sedatives while sleeping with their infant	415 (61.6)
Infant prone sleeping	401 (59.5)
Prematurity	238 (35.3)
Parental smoking	197 (29.2)
Sleeping on a couch/lounge chair with your baby	174 (25.8)
Sleeping on a soft, sagging mattress	170 (25.2)
Low infant birth weight	159 (23.6)
A parent who is under the influence of anti-allergy drugs while sleeping with their infant	118 (17.5)
SIDS' non-risk factors	n (%)
Bedsharing in the absence of hazardous circumstances	150 (22.29)
Sleeping swaddled	74 (11.00)
Having a pet in the house	65 (9.66)
Infant back sleeping	59 (8.77)
Sleeping unwrapped	6 (0.89)
Sleeping on a firm mattress	3 (0.45)