

Kazuo ITO (Master Works Co, Ltd.)

Noriko NAKAMURA (Mommy Childcare Service for SIDS Prevention)

Key words: SIDS risk factor, initial stress, tummy position, poor physical condition, acclimatization to daycare

Abstract

We looked at the daycare environment with a focus on the relation between the initial period spent in daycare and sudden infant death syndrome (SIDS) risk factors, and carried out a survey and analysis of 31 cases of SIDS that have occurred in daycare facilities during the past 15 years. The results showed that a remarkably large number of cases of SIDS occurred during the initial period spent in daycare, and that a greater number of infants were put to sleep on their stomachs or were in poor physical condition on the day of occurrence. From these facts, we discuss measures to prevent SIDS in daycare facilities, and offer some recommendations.

1. Introduction

The etiology of sudden infant death syndrome (SIDS) has yet to be completely elucidated, but it is known that the basic condition is one of delayed arousal reaction following sleep apnea. A number of risk factors have also been discovered, including sleeping on the stomach, smoking by parents, feeding environment (formula), and overheating of the infant, and it is common knowledge that informing caregivers of these risk factors has contributed greatly to the reduction in SIDS. A Swedish report has noted that with more opportunities for young parents to take their infants with them on trips or for outdoor activities, the incidence of SIDS outside the home is also increasing, and warned that babies who are unable to speak may become tired without their parents' being aware of it, with a concomitant increased risk of SIDS.¹⁾

The American Academy of Pediatrics (AAP) has indicated that the occurrence of SIDS in daycare facilities is more than twice that which would be expected from the number of hours spent there. In particular, it has been reported that a third of SIDS cases occurred during the initial week, and half of these were on the first day infants spent in daycare. The AAP has also warned that if infants who do not usually sleep on their tummy are placed in this position to sleep in daycare, the risk of SIDS is 19.3 times greater.²⁾

There have been no major reports of research concerning SIDS in daycare facilities in Japan. Sudden deaths in the initial period spent in daycare have been identified, however, in resources concerning research and analysis of sudden deaths in the daycare environment such as *130 No chiisa na sakeibi* ("130 tiny cries")³⁾ and *Hoikuen de no jiko/totsuzenshi* ("Accidents and sudden deaths in daycare").⁴⁾ The National Agency for the Advancement of Sports and Health has also published research on the monthly occurrence of sudden death⁵⁾ that also reports that sudden deaths occur most frequently during April, the time when many children start to be looked after in daycare facilities.

In light of this information, it is conceivable that the fatigue suffered by infants during their initial period in daycare and the stress resulting from the change in their environment may contribute to the occurrence of SIDS.

II. Objective of Survey Research

With a focus on the daycare environment, we carried out a survey of the relation between the time since children started at daycare and the occurrence of SIDS, as well as the correlation with SIDS risk factors, and discussed the results.

III. Survey Method

We made direct contact with persons concerned, and carried out interview surveys concerning cases of SIDS occurring in daycare facilities.

The time period surveyed was the past 15 years, and 31 completed surveys were obtained.

IV. Results and Analysis

1. Age

There were 26 cases of infants aged 0-11 months, of which 17 (54.8%) were aged under six months and nine (29.0%) were aged 6-12 months. There were five cases (16.1%) of children aged one year. The current definition of SIDS only includes infants under one year old, but as this analysis covers the past 15 years, one-year-old children were also included.

2. Relation between period since starting at daycare and occurrence of SIDS

(i) Breakdown of cases

Of 31 cases, 17 (54.8%) died of SIDS within one month of starting at daycare.

Day 1	4 (12.9%)
From day 2 to end of week 1	5 (16.1%)
From week 2 to end of month 1	8 (25.8%)
1-2 months	4 (12.9%)
2 months to 1 year	10 (32.3%)

(ii) Daily risk level (Figure 1)

We divided the number of cases by the corresponding number of days on the basis of the SIDS frequencies given in Section (i) above. The result is shown in Figure 1.

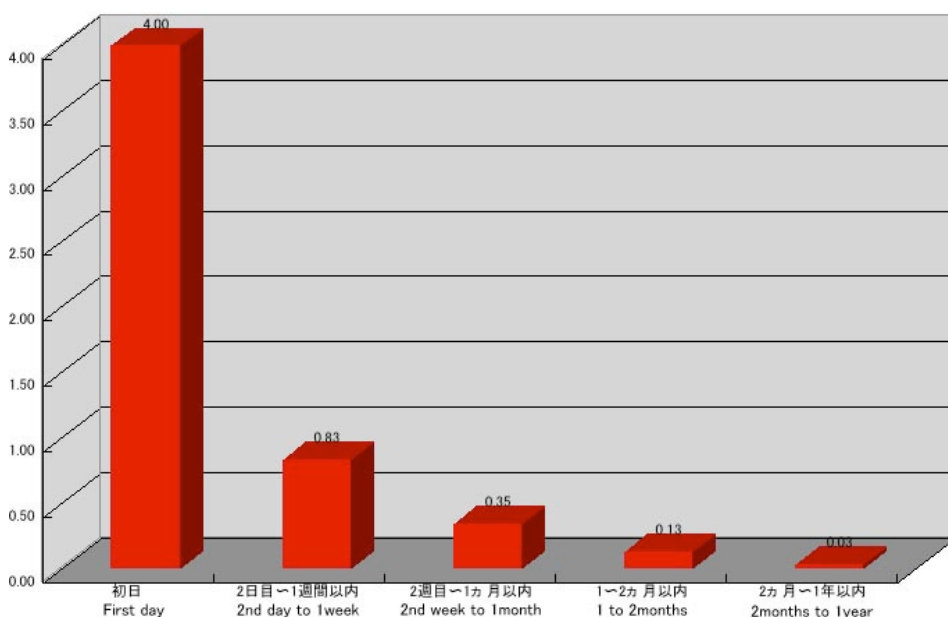


Figure 1 : Risk per Day

The daily risk level for each period was calculated by the following formula:
 number of SIDS cases ÷ corresponding number of days = daily risk level.

The calculations in each case are shown below. To eliminate variation between years and simplify the calculations, one week was regarded as consisting of seven days, and one month of 30 days.

Day 1	$4 \text{ cases} \div 1 \text{ day} = 4.0$
From day 2 to end of week 1	$5 \text{ cases} \div 6 \text{ days} = 0.83$
From week 2 to end of month 1	$8 \text{ cases} \div 23 \text{ days} = 0.35$
1–2 months	$4 \text{ cases} \div 30 \text{ days} = 0.13$
2 months to 1 year	$10 \text{ cases} \div 300 \text{ days} = 0.03$

The risk level for SIDS on day 1 (4 cases/day) was 133 times that for the 2 months to 1 year period (0.03 cases/day). We also compared the daily frequencies for the 1–2 months and 2 months to 1 year groups (Figure 2).

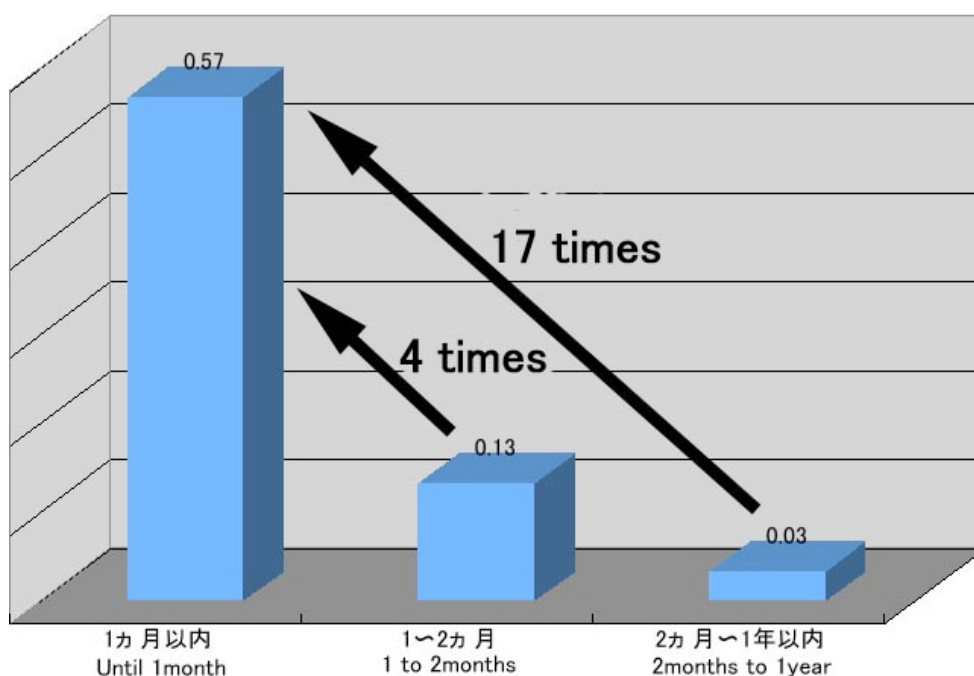


Figure2: The Risk Level Comparison

The result showed that the risk level within one month of starting at daycare was four times that of the 1-2 months period and 17 times that of the 2 months to 1 year period.

3. Position at time of discovery

Lying on tummy	19 cases (61.3%)
Lying on back	11 cases (35.5%)
Unknown	1 case (3.2%)

Although many daycare facilities have already been putting infants to sleep on their backs as a measure to prevent SIDS, in over 60% of cases children were discovered lying on their tummies. It can be seen from this survey just how high is the risk level posed by sleeping in the tummy position.

Cases also occurred, however, in children sleeping on their backs. Daycare staff cannot be complacent simply because they can see children's faces when they are asleep. It is also possible for breathing to have stopped by the time daycare staff notice the situation. In this survey too, there were many cases in which daycare staff had been right beside the children and been unaware of any abnormality in expression (facial expression during sleep), vocalization, or body movement, and by the time they noticed something wrong breathing had already stopped.

4. Physical condition on day of occurrence

Poor	21 cases (67.7%)
Normal	6 cases (19.4%)
Unknown	4 cases (12.9%)

In the majority of cases, children had been in poor physical condition on the day of occurrence.

"Poor condition" includes symptoms that would not normally preclude a child being looked after in a daycare facility, such as a mild fever, not drinking milk well, lack of appetite, symptoms resembling those of a mild cold, bad mood, frequent crying, lack of energy, or being somehow not their usual selves. As was noted in the Swedish report, it is conceivable that one factor contributing to poor physical condition might be the stress accompanying the change of environment during the initial period spent in daycare.

V. Summary and Discussion

1. The risk of SIDS occurring is high during the initial period spent in daycare. Expressed in terms of the daily risk level, the risk on day 1 was almost 100 times greater than that in the subsequent period, and the risk during the first month was four times that of the second month onward, and 17 times that of two months or more. This gives rise to the strong suspicion that the stress on infants that accompanies a change in their environment is a risk factor for SIDS.

2. According to our survey, 29.0% of cases occurred within the first week spent in daycare, and 44.4% of these were on the first day. As these results are close to the figures reported by the American Academy of Pediatrics²⁾ that one third of cases of SIDS occur during the first week and that half of these are on the first day, we may consider that similar tendencies may be observed internationally.

3. Despite the conjecture that putting children to sleep on their tummies is uncommon in the daycare environment, over 60% of children were in the tummy position when they were discovered. This leads to the inference that there is also a strong correlation between the tummy position and SIDS in the daycare environment.

A grasp of when (in about what year) and how daycare facilities started to manage sleeping positions during naps would enable progress to be made in analysis of the SIDS risk level from the tummy position. A major survey is required of position management during naps in daycare facilities in Japan.

4. The majority of children, 67.7%, were in poor physical condition on the day of occurrence. The symptoms of poor physical condition were not such that would normally preclude a child being looked after in daycare, and made it difficult to envisage such a serious outcome as SIDS. In addition, the daycare staff also paid extra attention to looking after children who were in poor physical condition, and these cases occurred in situations when staff could not have envisaged that this level of poor health would have such life-threatening consequences. This may be the true terror of SIDS.

5. Difficulties with the survey and the importance of elucidating SIDS

This survey was not easy to carry out. The reasons for this included the difficulty of talking with families in many cases; cases in which facilities had issued orders to keep silent; and cases in which daycare staff had suffered from severe mental or physical disorders as a result of their deep sadness and shock. The reality is that those concerned are far from being able to take the initiative in talking about what happened.

This survey is the result of the people involved in 31 cases having the courage to talk even given this reality, on the condition that the scope of disclosure would identify neither individuals nor facilities. Their willingness stemmed from their desire for the children's deaths not to have been in vain and for the eradication of SIDS. In addition to our gratitude to those concerned for their cooperation in the survey, we were also keenly aware of the importance of efforts to eradicate this sort of occurrence by means of elucidating and understanding SIDS.

In light of the current environment in which SIDS does actually occur, the establishment of a support organization and advice desk for parents and daycare workers who have suffered the death of an infant in a daycare facility would also be highly desirable.

There were also several cases of apparent life-threatening events (ALTE). Although these were excluded from this analysis, they followed the same pattern as SIDS and occurred at a high rate during the first month in daycare.

We will continue to survey, analyze, and elucidate the situation of all sudden deaths that have occurred in the daycare environment and promote the understanding of those concerned, with the unceasing desire that the tragic sudden deaths of infants and the unhappiness suffered by all those concerned should never happen again.

VI. Recommendations

On the basis of the results of this survey and analysis, we recommend the following as measures to prevent SIDS in the daycare environment.

1. Be aware that the occurrence of SIDS is greatest in the initial period spent in daycare, and that particular care should be taken.
2. Children should always be put to sleep on their backs, and particular care should be taken with respect to position changes by rolling over or similar actions that result in turning from face up to face down.
3. Regular checks on children's breathing should be carried out during naps. This should involve not only looking, but gentle stimulus arousal (such as lightly stroking the child).

4. Attention should be paid to understanding infants' physical condition, particularly if they are "not their usual selves."
5. Both daycare staff and parents should have a shared awareness of the risk of SIDS during the initial period at daycare, and a period of gradual acclimatization should be introduced. During this, the time initially spent in daycare should be shortened in accordance with individual children's physical condition and situation, and extension of the acclimatization period and other measures should also be considered.
6. The establishment of a support organization and advice desk for daycare facilities and workers who have experienced SIDS is also highly desirable.

Afterword

The content of this report was presented at the 9th SIDS International Conference (held on June 4, 2006 in Yokohama), with some additions and amendments to details.

This survey, analysis, and report were prepared thanks to the kind guidance and advice of Professor Hiroshi Nishida of Tokyo Women's Medical University. We would like to express our profound gratitude for this opportunity to present our work.

References

- 1) Nishida, Hiroshi. 1995. *Nyuuuyouji Totsuzenshi Shoukougun to Sono Kazoku no Tame ni [Sudden Infant Death Syndrome and Words for SIDS Families]*. Tokyo: Tokyo Shoseki.
- 2) American Academy of Pediatrics. 2004. *Reducing the Risk of SIDS in Child Care*.
- 3) Keiichi-chan no shi wo muda ni shinai tame ni hoiku wo kangaeru kai [Association for Studying Childcare Issues to Prevent Little Keiichi's Death Having Been In Vain]. 1982. *130 no Chiisana Sakebi: Hoiku Shisetsu deno Jiko-rei Chousa Houkokusho [130 Little Cries: Report on the Study of Accidental Deaths at Day Nurseries]*. Tokyo.
- 4) Osaka Institute of Childcare and Education. 1990. *Hoikuen deno Jiko/Totsuzenshi [Accidents and Sudden Deaths in Childcare Facilities]*. Tokyo: Ayumi Shuppan.
- 5) National Agency for the Advancement of Sports and Health. 2004. *Gakko no kannka no saigai - 19 - kihon tokei [Disasters under school management - 19 - Basic statistics"]*.