

Death-Scene Investigation in the German Case-Control Study on SIDS

Schlaud M¹, Fieguth A², Geißler D³, Giebe B³, Heide S⁴, Larsch K-P², Poets CF⁵, Schmidt U⁶, Weihs C¹, Wulf J⁷, Kleemann WJ²

Hannover Medical School: ¹Dept. of Epidemiology, Social Medicine and Health System Research, ²Institute of Legal Medicine, ⁵Dept. of Paediatrics.
Universities of ³Jena, ⁴Halle, ⁶Magdeburg, ⁷Hamburg: Institutes of Legal Medicine. Germany.

Background, Study Design, and Methods

According to current definitions, a diagnosis of SIDS can be made only when data on the medical history, an autopsy and the scene of death are available [1]. Most conclusions regarding associations between certain factors of the scene and SIDS are based on retrospective parent interviews [2-4], which may be influenced by recall bias. Therefore a two-year substudy of “objective” death-scene investigation has been nested in the ongoing German case-control study on SIDS and has been running since April 1999.

Infants who died suddenly and unexpectedly between the 8th and 365th day of life are eligible for this study, which includes an autopsy (with full virology and toxicology) and a parent interview. In the 5 substudy areas, an additional death-scene investigation is carried out for each case by a doctor of legal medicine within a few hours after death.

These observations and measurements are taken following a standardised protocol:

- temperatures of the room, the heating device, the body, and outdoors;
- dimensions of the room and the cot;
- type, dimensions and weight of the bedclothes;
- type, dimensions and softness of the mattress;
- type of the infant's clothing;
- pacifiers or other items found in the cot.

For each index case, three living controls are enrolled, matched to cases by gender, age, region, and season. Each control infant's wake-up scene is observed and documented identically. Additional information, including socioeconomic status and other confounders, is available from parent interviews.

The main question of this substudy is whether indications of hypoxia, rebreathing or hyperthermia as the mechanisms of death can be revealed by comparing “objective” scene data from cases and controls. Additional explorative analyses will be performed in order to generate new hypotheses, which may be tested in future confirmatory studies. Total expected sample size of this ongoing study is 100 cases and 300 controls

First Results and Conclusions

Interim results from group comparisons between the first 33 cases and 99 controls are shown in Table 1. Cases are more likely to sleep in an insulated environment (doors and windows fully closed), to be found in the prone position, and to be found with mouth and nose covered. Cases are also more likely to sleep on softer mattresses, on heavier pillows and under heavier bedcovers.

Death scene investigations performed by doctors of legal medicine within a few hours after SIDS cases have died, are a difficult, but feasible method to obtain “objective” scene data. These interim results reveal plausible differences between cases and controls during and after sleep. Full data analyses, including adjusted odds ratios and their 95% confidence intervals, will be calculated with the full sample size.

References

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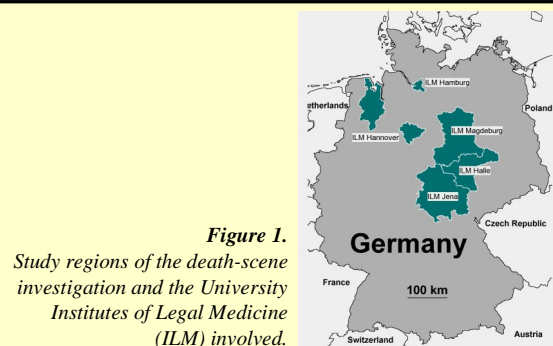


Figure 2. Measuring devices for death-scene investigation.

Table 1. Interim results from comparisons between the first 33 cases and 99 controls (odds ratios and p values intentionally not shown).

	Cases	Controls
n	33	99
During reference sleep...		
...door closed	60 %	33 %
...window closed	67 %	50 %
When found...		
...prone position	50 %	20 %
...mouth & nose covered	14 %	5 %
...signs of sweating	67 %	12 %
...bottom sheet wet	40 %	2 %
...vomit on bottom sheet	10 %	7 %
...mean room temperature	23 °C	21 °C
...mean softness* of mattress	14 mm	11 mm
...mean weight of bedcover	1297 g	724 g
...mean weight of pillow	494 g	248 g

*) distance that a 1 kg weight sinks into mattress with bottom sheet