

Plastic wrapping of cot mattresses: results from a pilot study

EA Mitchell, Associate Professor in Paediatrics, Department of Paediatrics; K Subramaniam, Medical Student; J Blackburn, Postgraduate Student, Department of Chemistry; D Shooter, Senior Lecturer in Chemistry, Department of Chemistry, University of Auckland, Auckland.

Abstract

Aim. To assess the prevalence of plastic wrapping of cot mattresses and their thickness.

Methods. Mothers of infants less than six months attending Plunket clinics in Central Auckland were interviewed. The thickness of the plastic was measured.

Results. 99 of 110 (90%) mothers invited to participate were visited at home. The sample was socioeconomically advantaged. Most infants were breastfed and few slept

prone. The prevalence of plastic wrapped cot mattresses was 23.2%, of which sixteen (out of 23) used BabeSafe® and seven used other types. The mean thickness of the BabeSafe® was 0.15 mm (range 0.12-0.19 mm) and the other types were 0.10 mm (range 0.04-0.13 mm). One sample of plastic was 0.04 mm.

Conclusion. Thin plastic wrapping is being used and is potentially dangerous.

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A nationwide sudden infant death syndrome (SIDS) case control study was conducted between 1987 and 1990 (the NZ Cot Death study).^{1,2} This led to the prevention programme, which has resulted in a substantial reduction in SIDS.³ Despite the success, all segments of the population have not benefited equally. SIDS now occurs predominantly among disadvantaged groups, especially Maori.⁴ Furthermore, now that few babies sleep prone, the epidemiology of SIDS has altered.⁵ The winter peak has largely disappeared, the North-South gradient has gone, thermal risk factors no longer appear to be important,⁶ and the magnitude of the risk factors for SIDS with smoking has increased substantially.⁷

Since the epidemiology of SIDS has changed, further epidemiological studies are required in order to establish the magnitude of established risk factors for SIDS and provide an opportunity to examine new theories as to the cause of SIDS. One such theory is the toxic gas theory,⁸ which is postulated to be the cause of sudden infant death syndrome, although others disagree.^{9,10} Proponents of this theory recommend wrapping the cot mattress in thick polythene, which does not contain arsenic, antimony and phosphorus.¹¹ Indeed, one proponent of the theory in New Zealand promotes a polythene bag (BabeSafe®) specifically for this purpose.

The study reported here is a pilot for some aspects of a proposed case control SIDS study. We report the prevalence of plastic wrapping of cot mattresses and the thickness of the samples of plastic used. From this information, power calculations could be made to determine the size of a case control study needed to establish any benefit of polythene wrapping of cot mattresses.

Methods

Mothers of infants less than six months attending a Plunket clinic in Central Auckland were invited to participate in the study (December 1997 - February 1998). Mothers were interviewed in their houses concerning sociodemographic factors and infant care practices. If the cot mattress was covered with plastic, then permission was sought to take in a small segment (approximately 2 cm²) for measurement. The thickness of the plastic was measured using a Digimatic height gauge (Mitutoyo). For each sample, several (four to eight, average six) measurements were made on different parts of the sample, and a mean thickness obtained.

The study was approved by North Health Ethics Committee.

Results

Participation rate was 90% (99 of 110 invited to participate). The mean maternal age was 31.7 years, mean paternal age was 34.4 years, and 79.8% of the mothers were married. The

infants were predominantly European (81.8%), mean birthweight was 3369 g and gestation 39.2 weeks. Only 11.1% of mothers smoked in pregnancy. Almost all (97%) infants were breastfed at discharge from hospital. Only 3% of infants were placed prone to sleep. Of all infants, 26.3% were reported as bed sharing and a further 28.3% bed shared for the purpose of breastfeeding. However, 91.9% of infants had slept in a cot or bassinet during the night in the previous two weeks. This suggests that the sleeping arrangements for the infant varied considerably and that bed sharing was generally of short duration.

The prevalence of plastic wrapped cot mattresses was 23.2%, of which sixteen (out of 23) used BabeSafe® and seven used other types. Three of the BabeSafe® and four of the other types were sampled. Other mattress coverings used were Drycot® (a woven woollen covering; 33.3%) and sheepskins (14.1%).

The mean thickness of the BabeSafe® was 0.15 mm (range 0.12-0.19 mm) and for the other types was 0.10 mm. (range 0.04-0.13 mm). The standard deviation of the thickness of the samples was 7%.

If plastic wrapping of cot mattresses reduced SIDS mortality by two thirds, then a case control study with 78 cases and 312 controls would have an 80% power to identify such a reduction in SIDS risk at a 5% significance level. This could be achieved by a one year national study.

Discussion

Before discussing the results in detail, the limitations of the pilot study must be recognised. The sample was not randomly selected. Infants were selected from those attending Plunket clinics. The clinics chosen were from more advantaged suburbs of central Auckland. Although the Plunket Society sees 92% of newborn infants, the proportion of infants attending their clinics is lower. Those attending the clinics were more advantaged than expected from a truly representative sample of all births (ie predominantly European, married, older mothers and non smokers).

Most infants slept supine and most were breast-fed. However, more than a quarter regularly slept with their baby and a further quarter took their baby to bed for breastfeeding.

Plastic wrapping of cot mattresses was used by 23 subjects, sixteen of which were BabeSafe®. The mean thickness of BabeSafe® was 0.15 mm, which is consistent with that

recommended by the proponents of the toxic gas theory. However, one of the four samples of other plastic covers was very thin (0.04 mm). The current legislation stipulates that plastic bags less than 0.025 mm must have the following warning: "DANGER—Keep away from small children. The film may cling to the face and prevent breathing" conspicuously printed on the bag.¹² Although this sample is thicker than that which requires labelling, we believe this poses a risk to infants.¹³

Chemical analysis of the plastic was not undertaken. BabeSafe® is made of polythene. It is not known what types of plastic cot mattresses wrapping were used by the other subjects.

The prevention of SIDS by plastic wrapping of cot mattresses has not been established. A one year national case control study could show whether or not plastic wrapping of cot mattresses reduces the risk of SIDS.

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Correspondence. Dr EA Mitchell, Department of Paediatrics, University of Auckland, PO Box 92019, Auckland. Fax: (09) 373 7486; Email: e.mitchell@auckland.ac.nz

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