Prevalence of Modifiable Risk Factors for Sudden Infant Death Syndrome in British Forces Germany

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SUMMARY: A questionnaire survey was conducted amongst parents in the military community in British Forces Germany to investigate the prevalence of known and suspected risk factors for Sudden Infant Death Syndrome. Over a thousand questionnaires were returned (response rate 58%) and these showed that the prevalence of babies being placed in the prone position to sleep is now extremely low and the use of room thermometers to help control ambient temperature is widespread. However 29% of the mothers had smoked in pregnancy and 44% of households with a new-born baby had at least one parent who smoked. Additional health promotion activity aimed at reducing the prevalence of smoking in pregnancy and amongst the parents of new-born babies is recommended.

Introduction

Since every cot death is a human tragedy, with devastating consequences for the entire family, its prevention has attracted a large amount of medical research. Those cot deaths which remain unexplained after detailed post mortem investigation are more accurately described as deaths due to Sudden Infant Death Syndrome or SIDS. Unfortunately this syndrome has proved extremely difficult to explain and although many theories have been put forward the precise pathophysiology remains unknown (1).

It has therefore been necessary to place considerable reliance on epidemiological research. This type of research has identified a number of risk factors for SIDS but it has not been easy to determine the relative importance of each one separately because they are often inter-related. Some of the risk factors such as twin pregnancy, low birth weight, prematurity, low maternal age, winter season, and age between 6 and 18 weeks, are largely unavoidable but some of these have been useful in identifying families at increased risk of SIDS so that extra advice and support can be offered (2). Other risk factors have been identified which are potentially preventable such as the prone sleeping position, excessive temperature, and parental smoking (3,4,5). Although these risk factors do not directly cause SIDS they appear to be associated to such an extent that when they are deliberately avoided the incidence falls.

Since the 1960s there have been several retrospective studies which have suggested that SIDS was more likely to occur when infants slept in the prone position. The evidence for this theory was considerably strengthened when both New Zealand and the Avon health district in England reported fewer deaths after their parental

education programmes were introduced (6). Although avoiding the prone position was not the only advice given to parents it seems to have been the only change which they made to their parenting habits and is therefore thought to have been mainly responsible for the recent improvement (7). We still do not know exactly how it helps.

Evidence has been accumulating that overheating is a part in some cases of SIDS (4). It is not a cause of SIDS as such but seems to be a contributory factor, particularly in the presence of fever, and is therefore acknowledged to increase the risk (8). As a result of this evidence SSAFA midwives now issue the parents of all new-born babies in British Forces Germany with a room thermometer to help them to maintain the ambient temperature at appropriate levels. There is also good evidence that cigarette smoking is associated with an increased risk but it is not yet clear whether maternal smoking in pregnancy or passive smoking in infancy is the more important. Both appear to be significant risk factors and the risk is directly related to the number of cigarettes smoked (9).

The growing evidence that these three factors were implicated in SIDS was considered sufficient for the Department of Health to launch its campaign in November 1991 advising parents that the risk would be reduced if a baby was placed on its side or back rather than on its front unless there are medical reasons for doing so, if it was not exposed to cigarette smoke during pregnancy and after birth, and if overheating was avoided (9). It is now considered safest if babies are laid on their backs rather than on their sides and if the side position is chosen the lower arm should be well in front of the body so that the infant does not roll onto the front.

There are other factors which some researchers believe to be important in the prevention of SIDS. The most important of these are breastfeeding and sleeping in the same room as parents but the evidence is inconclusive. The Chief Medical Officer's Expert Group decided that breast feeding is not definitely associated with any reduction in the risk although it is considered beneficial for other reasons (9). There is also no direct evidence that the risk is reduced if the baby sleeps in the same room as the parents although the low incidence of SIDS in certain ethnic communities where babies remain in close proximity to the parents suggests that this should be explored further (10).

Cot death prevention has always been an important issue for the military community because of the high birth rate, the number of young parents, the lack of extended family support, and the relative turbulence and isolation which some military families encounter. Although the infant mortality rates for British Forces Germany have, since the early 1980s, been satisfactory in comparison with the rates for all social classes in the civilian population of England and Wales (Fig 1) the SIDS rates have tended to be higher until recently (Fig 2 and Table 1). This is not an entirely satisfactory comparison because it does not allow for differences between the military and civilian populations. However until more work is done on the demographic characteristics of the military community such crude comparisons are the only ones that can be made.

Because of the importance of cot death prevention in the military community it was considered necessary to find out the prevalence of potentially avoidable risk factors and thereby enable health promotion to be directed as effectively as possible. A survey was therefore carried out amongst the families of all the babies born in British Forces Germany during one calendar year.

Method

Health visitors were asked to complete a questionnaire at first contact with the parents of all babies born in British Forces Germany between 1 April 1994 and 31 March 1995. This provided general epidemiological information and the prevalence of potentially preventable risk factors for SIDS. It was not possible to gather direct information about the risk of infants overheating so the use of room thermometers was investigated instead as an index of parental awareness of the danger. The prevalence of not breast feeding and of not sharing the same room with parents was also measured although the evidence that these are independently associated with cot death is not conclusive.

Confidentiality was preserved by not recording names on the questionnaires but health visitors were asked to include the British Forces Post Office number so that areas could be identified in the analysis. The questionnaire was based, with permission, on the one used in the New Zealand Cot Death Prevention Programme. It was hoped that its completion would, in addition

Fig 1. Infant mortality rates for British Forces Germany (1980-1994) and for England and Wales (all social classes)

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Source for E&W: OPCS

Fig 2. SIDS rates for British Forces Germany (1987-1994) and for England and Wales (all social classes)

Table 1			
Comparison of SIDS rates for British Forces Germany and for all social classes in England and Wales (1987-1994)			
Year	BFG	England & Wales	Rate ratio, 95% CI and p values
1987	3.6 per 1000	2.2 per 1000	1.59 (0.92 to 2.70) p=0.1
1988	4.4 per 1000	2.3 per 1000	1.93 (1.19 to 3.09) p=0.006
1989	3.8 per 1000	1.9 per 1000	1.98 (1.10 to 3.50) p=0.02
1990	4.0 per 1000	1.7 per 1000	2.36 (1.37 to 4.03) p=0.001
1991	1.2 per 1000	1.4 per 1000	0.83 (0.26 to 2.28) p=0.7
1992	1.1 per 1000	0.8 per 1000	1.42 (0.45 to 3.92) p=0.69
1993	0.8 per 1000	0.68 per 1000	1.21 (0.3 to 4.84) p=0.9
1994	2.1 per 1000	0.68 per 1000	3.12 (0.99 to 8.63) p=0.05

Source for England & Wales: OPCS.

gathering necessary information, provide health visitors with the opportunity to advise parents about the Department of Health recommendations for reducing the risk.

The ethical implications of this research were considered at length by the research group which carried out the original study in New Zealand (11). While it was recognised that there was a possibility of increasing anxiety in the parents of some infants it was felt that the information was too important to be kept from the community at large. Informing parents was also considered likely to reduce anxiety about cot death in many cases since parents could then reduce the risk to their infants by modifying simple infant care practices.

Results

The total number of questionnaires completed was 1,014 and, since 1,760 babies were born in British Forces Germany during the study period, the response rate was 58%. The average number of days after delivery on which the questionnaires were completed was 14.

Figure 3 gives the pattern of the age distribution of the mothers in the study group compared with that for all social classes in the civilian population of England and Wales (12). The maternal age distribution within British Forces Germany was found to be significantly younger ($p<0.001$).

Only 10 mothers (1% of mothers in the study group)

placed their babies in the prone position to sleep and none of these was a first time parent. Ninety five percent of parents had received a room thermometer from the SSAFA midwife and 93% claimed to be using them.

Twenty nine percent of mothers in British Forces Germany admitted to smoking in pregnancy. Postnatal maternal smoking was slightly less prevalent at 26% while fathers of new-born babies smoked in 34% of cases. This represented at least one parent in 44% of households with a new-born baby. Figure 4 shows a comparison of the smoking habits of the parents and Figure 5 shows maternal smoking by age. The prevalence of smoking was significantly higher amongst younger mothers ($p=0.002$).

Fifty one percent were breast feeding to some degree at the time of first contact with the health visitor. Older mothers were significantly more likely to breastfeed ($p<0.0001$). Eighty six percent of parents reported that their infants always slept in the same room as they did 4% sometimes, and the remaining 10% never.

Discussion

Because the maternal age distribution within British Forces Germany was found to be significantly younger than that of the civilian population of England and Wales it is necessary to be cautious when using the latter as a yardstick for the military community. Furthermore account has been taken of social class differences between the two populations as this was beyond the scope of

Source for E&W: OPCS Birth Stats 1992.

Fig 3. Comparison of maternal age distribution in British Forces Germany with England and Wales (all social classes)

N=1002 for mothers and 995 for fathers

Fig 4. Smoking habits of parents in British Forces Germany

N=1002

Fig 5. Maternal smoking by age in British Forces Germany

study. Nevertheless if used with discretion these comparisons are a valuable starting point when assessing parenting habits in the military community.

The prevalence of prone sleeping position was extremely low at 1%. Parents in British Forces Germany had clearly heeded the advice of the Department of Health which had been passed on by general practitioners and health visitors. This was an even better response than that demonstrated in a similar study in Cambridgeshire which found 4% of parents still placing their infants in the prone position to sleep (7).

Although ascertaining the prevalence of overheating was beyond the scope of this study it did show that the SSAFA initiative of issuing room thermometers to the parents of all new-born babies had resulted in their widespread use with 93% of families claiming to be using them. By comparison only 22% of parents in the Cambridgeshire study used a room thermometer (7). At the very least this suggests a high level of awareness of the problem of overheating in infancy throughout British Forces Germany.

Twenty nine percent of mothers in British Forces Germany had smoked during pregnancy which is no worse than the findings in most recent British civilian surveys (13, 14). When rates for smoking in pregnancy in British Forces Germany and in the North Western Region of England were compared using logistic regression analysis there was no significant difference after adjustment had been made for age ($p=0.57$). However parental smoking in the military community compared unfavourably with a recent study of mothers of new-born babies in Cambridgeshire (7). In the Cambridgeshire study 22% smoked antenatally (compared with 29%) and there was another smoker in 26% of households (compared with 34%).

Although failure to breastfeed is not accepted as a risk factor for cot death in this country (although it is in New Zealand) the prevalence of breastfeeding in British Forces Germany was investigated in this survey. Fifty one percent of mothers in the military community were breast feeding to some extent at the time of first health visitor contact which is exactly the same proportion of mothers that was found to be still breastfeeding after two weeks in a major survey of the civilian population of the United Kingdom (15). Since breastfeeding is definitely beneficial for other reasons it was reassuring to find that breastfeeding rates in British Forces Germany did at least compare satisfactorily with those for the civilian population of England and Wales.

The benefit of infants sharing the same room as their parents has not been established but the prevalence of this practice is nevertheless of interest. The proportion of families whose babies always slept in the same room as their parents in British Forces Germany was 86% and was therefore even higher than that found in the Cambridgeshire study (7).

The high prevalence of smoking in pregnancy and amongst the parents of new-born babies which was

demonstrated by this study is the aspect of cot death prevention which most merits attention and further health promotion efforts need to be targeted at women smokers who are pregnant or are planning pregnancy and also their partners. This is in line with the Department of Health's strategy for health in England which has as one of its targets the requirement to increase the proportion of women smokers who give up smoking at the start of the pregnancy from a quarter to at least a third by the year 2000 (16).

Health promotion efforts aimed at reducing smoking are more likely to be effective if directed in accordance with the findings of various research studies. It has been found that pregnant women are more likely to give up smoking if they smoke less than twenty cigarettes per day, have previously quit for more than one week, have a non-smoking spouse (the husbands of one third of the smoking mothers in this study were non-smokers) and recognise that smokers' children are more likely to suffer from infections (13, 17). Unfortunately the prospect of giving birth to a small baby because of smoking does not seem to deter pregnant women from doing so and therefore the increased risk of childhood infections and cot death need to be stressed as well. Research has also shown that health promotion efforts aimed at helping women to give up smoking in preparation for pregnancy or during pregnancy need to be conducted with high intensity in order to be effective (18, 19).

Health promotion intervention programmes invariably require extra resources. The study showed considerable variation in maternal age, with corresponding smoking rates, between the different garrisons in British Forces Germany and this has important resource implications. Health promotion is to be targeted where it is most needed. Health visitors in the garrisons where mothers are youngest and smoking rates highest will be least able to tackle the problem of smoking in pregnancy without increased support.

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