ORIGINAL ARTICLE

Prevention of sudden infant death syndrome (SIDS) due to an active health monitoring system 20 years prior to the public "Back to Sleep" campaigns

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Background: Before reunification, the post-neonatal mortality rate was lower in East Germany than in West Germany. Moreover, the incidence of SIDS (sudden infant death syndrome) was much lower in the East.

Methods: Mortality data on sudden infant death syndrome (SIDS) from West and East Germany since 1980 as well as post-neonatal mortality data for both states since 1970 were examined. 95% Confidence intervals were calculated for the rates. Witnesses from the former East Germany who were involved at the time were also interviewed and archives were searched.

Results: We found that as early as 1972 active monitoring of infant and child mortality rates in East Germany had shown that the prone sleeping position was dangerous for infants: the post-neonatal mortality rate was approximately 1 per 1000 live births lower in East than in West Germany during the 20 years before reunification. In contrast, in the West, prone sleeping was only discovered to be a risk factor for SIDS in the early 1990s.

Conclusions: Active monitoring is an effective tool in the early detection of risk factors and serves to prevent unnecessary deaths.

Before the "Back to Sleep" campaign in 1992 in West Germany, parents were advised to place their babies prone for sleeping.^{1–3} In 1990 when West and East Germany were reunited, post-neonatal infant mortality in the eastern region was surprisingly low while most other health statistics (life expectancy, perinatal mortality, cancer mortality, etc) were in line with the lower gross domestic product (GDP) and were less favourable than in the West.⁴ This paper examines the reasons for this and emphasises the impact of active monitoring on the early detection of health risks.

METHODS

The mortality data presented here were gathered by the central statistics office in Wiesbaden, who have provided data on sudden infant death syndrome (SIDS) from West and East Germany since 1980 as well as post-neonatal mortality data for both states since 1970. For the period between 1970 and 1985, only statistics covering 5 year intervals were available. 95% Confidence intervals were calculated for the rates. The historical investigations, including interviews with witnesses from the time as well as searches in archives in the former German Democratic Republic (GDR), were carried out by one of the authors (DF).

RESULTS

The post-neonatal mortality rate was approximately 1 per 1000 live births lower in East than in West Germany during the 20 years before reunification (fig 1), but increased sharply thereafter and aligned itself with western figures. The disparity in the pre-reunification period was due to the much lower SIDS mortality rate of 0.02 per 1000 in East Germany in the late 1980s compared with a high of 1.6 in West Germany in 1990 (fig 2).

Historical investigation has revealed the implementation of a well organised, active system of monitoring infant deaths in the GDR: every child dying under the age of 16 had to be autopsied by a forensic pathologist or a paediatric

pathologist. The results of the autopsy and the medical history were gathered together and analysed by a committee in each governmental district. The committee consisted of a forensic pathologist, a paediatrician, a social worker, and a representative of the local health authority. The committee determined the most probable cause of death, based on all the information available, and whether it could have been prevented and by whom: the parents, the medical system, or the social system. Since February 1963, the data from each district had to be sent to a national committee in Berlin, which drew conclusions and issued guidelines for the health and welfare of children. In the case of deaths in day-care centres, this had to be done within 48 h.

Figure 1 Post-neonatal mortality in East and West Germany, 1970–2000.

Figure 2 Official SIDS incidence in East and West Germany between 1980 and 2000.

Following the international recommendation of prone sleeping, which was also recommended by paediatricians in the GDR, seven infants died while sleeping in this position during day care in 1971.⁵ This prompted the Ministry of Health to hold a number of expert meetings. In June 1972, the Ministry of Health issued guidelines for day-care centres. The essence of the guidelines was that it was forbidden to place babies in a prone position without permanent supervision, during sleep, wearing restricting clothes, lying under a duvet, when placed in a pram, for 3 h after feeding, when tired (for example after bathing), or during illness due to respiratory infection. The prone position was only recommended for muscular training while awake, subject, however, to close supervision.

DISCUSSION

The official SIDS rate in East Germany was exceptionally low in comparison with other countries with a similar or higher GDP. It is likely that there was some misclassification, because cases with minor findings of respiratory disease were classified as caused by infection rather than labelled as SIDS.⁶ We estimate that about one third of the difference in the official SIDS incidence might be due to this misclassification. The post-neonatal mortality rate in East Germany was about 1 per 1000 live births lower compared with West Germany throughout the 1970s and 1980s. This reflects about two thirds of the difference in SIDS incidence and in addition contributes to the virtual sudden increase of the official SIDS rate in the eastern part of Germany in 1991 after reunification. Since SIDS is the single most important cause of post-neonatal infant mortality, it is plausible that the SIDS rate in East Germany was actually lower by about 1 per 1000 than in West Germany and other western European countries.

The results of a survey in 1991 (shortly after the reunification and before the risks of prone sleeping were reported to the public) still showed a prevalence of prone sleeping in infants less than 6 months of age of 10.5% in East Berlin compared with 50.3% in West Berlin.⁷⁻⁹ The actual prevalence of prone sleeping in the east is about 2.7% of all babies, compared with 4.4% in the west.¹⁰

It is tempting to consider that the main reason for the lower SIDS rate was the active monitoring of infant deaths by the regional committees on infant mortality, together with the fact that reports were sent to a national committee. These statements resembled the recommendations supported by

What is already known on this topic

- Before reunification, the incidence of sudden infant death syndrome was much lower in East than in West Germany
- Over the last 15 years well designed case control studies have found that prone sleeping is a major risk factor for SIDS

What this study adds

- Historical investigation has revealed the implementation of a well organised, active system of monitoring infant deaths in East Germany before reunification
- Health experts in East Germany found that prone sleeping was a risk factor for SIDS 20 years before to the "Back to Sleep" campaigns in the west

numerous well designed epidemiological studies conducted in many European countries 20 years later.⁸

While SIDS rates in countries with well developed medical resources were between 0.8 and 2.0 per 1000 live births and SIDS was the most frequent cause of post-neonatal death, it was much lower in the GDR, even though some infectious cases were reclassified as SIDS. As a consequence, post-neonatal mortality in the GDR was among the 10 lowest in the world, in spite of limited medical resources. The SIDS rate in East Germany rose sharply after reunification. There are several explanations for this, one being the adoption of the prone sleeping position from West Germany, and also the fact that the widespread system of maternal consultations collapsed in December 1990 (the mothers were paid for by the state if they attended these consultations). Another reason for the rise in the incidence of SIDS is the low autopsy rate after 1990. In East Germany every infant and child dying below the age of 16 years had to undergo autopsy. However, after reunification the autopsy rate decreased sharply and thus most infants dying from suspected SIDS no longer underwent autopsy and the assumed diagnosis could not be verified. Therefore, the central statistics are based, as in West Germany, mainly on diagnosis assumed from the death certificate.

In conclusion, due to the well organised, active monitoring system which was in place in the early 1970s, doctors in East Germany realised that the prone sleeping position was a major risk factor for SIDS. This was 20 years before to the international "Back to Sleep" campaigns. Active monitoring is an effective tool in the early detection of risk factors and serves to prevent unnecessary deaths.

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IMAGES IN PAEDIATRICS

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Transverse leukonychia and AIDS

An 8 year old boy with a history of perinatally acquired HIV, who was CDC immunological category 3 (T CD4+ = 4/μl),¹ and had been treated for six years with zidovudine and ritonavir, developed white lines in all fingernails three months after having pneumonia (fig 1). The lines disappeared within five months, following nail growth. He died one year later as a result of sepsis.

An 8 month old infant, who was HIV positive, CDC category 3 (T CD4+ = 408/μl), and had been under treatment with zidovudine, ritonavir, and lamivudine, for four months, developed visible white lines in all fingernails two months after his mother's death (fig 2). The lesions grew out with the nail within five months. He is now 4 years old and is controlled with high dose active anti-retroviral therapy.

White nails discolorations are frequent dermatological findings. They result from nail plate abnormal keratinisation. Generalised involvement of the nail matrix is responsible for transverse leukonychia, which can induce complete or partial whitening of the nail.² Traumatic injuries are the main causative factor. Acute systemic illnesses and emotional stresses may be trigger factors.³ The underlying pathophysiological causes are unclear. Transverse

leukonychia are a "late mirror" which indicate the severity of an illness or emotional problem.

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Figure 1 White lines in all fingernails.

Figure 2 Transverse bands of leukonychia.