

ABSTRACT

Nicaragua experienced rapid social transition and decreasing infant mortality rate (IMR) during the late 1970s and the 1980s. Important steps were made towards universal basic education, and making essential child health services accessible. In 1990, the IMR was reportedly 72 per 1000 live births. The putative link between socio-economic conditions and IMR, and the relative lack of information on these relationships in Nicaragua, motivated socio-epidemiological studies of infant and child mortality. Thus, the overall aim of this thesis is to describe trends in fertility and infant mortality from the early 1960s to the early 1990s, and to analyse the influence of mothers' demographic characteristics, socio-economic conditions and social environment on infant mortality risks.

This thesis is based on a variety of studies performed in the municipality of León, Nicaragua. In 1991 a hospital based incident case-referent study (108 and 285 infants, respectively) was conducted to evaluate risk factors for neonatal mortality. A cross-sectional survey of 7,789 urban and rural households in 1993 provided reproductive histories from 10,867 women (15-49 years). These were used to evaluate the transition in fertility and infant survival from 1964 to 1993. Risk factors for under-five mortality were assessed through an age- and sex-matched case-referent study (110 cases and 203 referents) nested into the database from 1993, which had been updated by a re-visit to all households in 1996.

From 1964 to 1993 IMR decreased from 120 to 40 deaths per 1000 live births. Fertility and infant mortality rates declined simultaneously. The transition in fertility was mainly a result of the expansion of education for girls, while the decrease in infant mortality seemed to be a result of health interventions targeting poorer women and their children. Mothers' age at first delivery and birth spacing increased. Birth intervals over 18 months were associated with better survival chances for the subsequently born child. Assuming a causal relationship between spacing and infant mortality risks, the trend towards increased spacing accounted for one quarter of the reduction in infant deaths over the three decades of the study.

The absolute level of poverty, expressed as unsatisfied basic needs of the household, increased the risk of infant death by fifty per cent. Relative poverty or social inequity, which contrasted the degree of unsatisfied basic needs of the household to the prevailing level of the neighbourhood, further increased infant mortality risks. The protective effect of mothers' educational status was only shown in poor households. Interestingly, an intra-household educational inequity, expressed as a literate father and an illiterate mother, was associated with excess risk of neonatal mortality.

Many of these mothers were exposed to physical and sexual violence by intimate partners or others; two thirds of mothers of diseased children and one third of population based referent mothers reported experience of such violence. The adjusted risk of infant mortality was increased seven times if mothers had experienced both physical and sexual violence by an intimate partner.

These findings illustrate how the implementation of progressive social policies targeting the poorest segments of society contributed to a decline in IMR, despite a lack of economic development. IMR was also highly associated with social and gender inequity at various levels, including the community and household, as well as the intimate partner relationship. Thus, further improvements in infant survival in Nicaragua may be in part dependent on corresponding advances with regard to social, economic and gender equity. The findings point to the need for health authorities as well to policy makers to improve social policies, reinforcing women's empowerment by improving access to education, health services, economic opportunities, and programs to address domestic violence.

Keywords: Infant mortality, fertility, demographic transition, birth interval, education, poverty, inequity, wife abuse, Nicaragua.