



PSYCHOSOCIAL FACTORS IN THE

EPIDEMIOLOGY OF

ACUTE RESPIRATORY INFECTION

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THESIS SYNOPSIS

There is some evidence that psychosocial stress is related to susceptibility to acute respiratory infection. This thesis, in a series of four studies, attempts to determine the existence, nature and biological plausibility of this relationship. Three issues are investigated:

- (1) the relationship of psychosocial stress to acute respiratory infection in adults,
- (2) the relationship of parental and family stress to acute respiratory infection in childhood, and
- (3) the relationship of stress and emotional factors to local immunity in the upper respiratory tract.

The thesis is divided into seven chapters. The first reviews the epidemiology of acute respiratory infection in adults and children. It also contains a review of the literature detailing the relationship between stress and illness and in particular examines prior evidence of the relationship between stress and respiratory illness in adults and children. Chapter 2 explores the available evidence that psychosocial stress can influence the neuroendocrine and immune systems. Animal and human studies are reviewed. Studies suggesting that stress might suppress the concentration and secretion rate of secretory IgA in saliva are outlined. These data lend a biological plausibility to the hypothesis that stress is causally related to respiratory illness.

The third chapter is a report of a community based six month prospective study of stress and upper respiratory illness in adults. Using multivariate techniques, stress was observed to be associated with susceptibility to respiratory illness even when it clearly preceded illness onset and when controlling for a range of known respiratory illness risk factors.

Chapter 4 is a report of study of maternal stress, social support and family functioning in relation to susceptibility of children to acute respiratory infection. A case-control design was employed. The sample was drawn from the 1983 birth register for metropolitan Adelaide and a score representing their previous 12 month experience of respiratory illness was calculated for each child. Cases represented children who had been particularly prone to upper and lower respiratory illness in the previous 12 months (upper quintile of respiratory scores) while controls were non-prone children (bottom quintile). Maternal stress, but not maternal social support or family function, was significantly associated with an increased risk of having a prone child. This increased risk persisted when other risk factors were simultaneously examined in stepwise logistic regression analyses. Given the study design, however, it was not possible to determine the direction of causality in this relationship. So the same issues were also examined

using prospectively collected data drawn from the study described in Chapter 3. These data are discussed in Chapter 5. Stress data from both parents, collected before and during the six-months of respiratory morbidity data collection (via respiratory diaries) were compared with morbidity in their children. Once again parental stress was significantly associated with childhood respiratory morbidity even when:

- (1) stress preceded illness onset,
- (2) other risk factors were simultaneously examined in multivariate analyses,
- (3) only clinically definite respiratory episodes were used as an outcome measure.

With three epidemiological studies showing a clear relationship between stress and respiratory illness, a study of the immune response to stress and emotion was undertaken. This is reported in Chapter 6. A cross sectional study of 114 registered nurses revealed that frequently anxious nurses had significantly lower secretion rates of salivary secretory IgA than occasionally anxious nurses. There was also marginal evidence that IgA concentration in saliva might also be influenced by anxiety.

A summary of the thesis and a precis of the conclusions that can be drawn from this work are presented in Chapter 7.

SUMMARY

Susceptibility to acute respiratory infection varies from individual to individual and with time. Epidemiological studies have identified a number of external factors which appear to alter susceptibility to respiratory illness. In this chapter the epidemiology of acute respiratory illness in both adults and children is reviewed and the concept of psychosocial stress as a risk factor for respiratory illness is introduced. Also reviewed is the evidence pertaining to stress as a predisposing factor to illness in general and respiratory infection in particular. The important methodological issues that have arisen in stress research, particularly that of stress measurement, are discussed.