

Family Stress Linked to Kids' Illnesses

ROCHESTER, N.Y., March 6 -- Chronic family stress was associated with an increase in febrile illness in children, researchers here reported.

In a three-year study of 169 children, elevated family stress was associated with an 11% increase in total illnesses and a 36% increase in febrile illnesses compared with unstressed children, according to a report in the March issue of the *Archives of Pediatric and Adolescent Medicine*.

Most of the children's illnesses were upper respiratory tract infections (159), followed by gastrointestinal tract infections (51), and sinus infections (25).

An unanticipated finding was that natural killer cell function increased in children whose parents reported more chronic stress (estimate, 0.15; 95% CI, 0.05-0.26), added Mary Caserta, M.D., of the University of Rochester, and colleagues.

This contrasted with findings for adults in whom stress decreases natural killer cytotoxicity.

Previous research had linked impaired parental function and family stress to negative effects on children's emotional and social functioning. The present findings broaden the evidence to include objective health and biological indicators showing a possible negative effect on children's immunity and susceptibility to illness, Dr. Caserta and colleagues said.

Elevated parental psychiatric symptoms occurring along with family adverse events were associated with more total illnesses (rate ratio, 1.11; 95% confidence interval [CI], 1.00-1.22) and more febrile illnesses (rate ratio, 1.36; 95% CI, 1.13-1.64) in children.

Natural killer cell function was enhanced in children whose parents reported more chronic stress (estimate, 0.15; 95% CI, 0.05-0.26). This step-up in immune response was not associated with short-term changes in stress, suggesting that family stress extending for longer periods may have a more consistent influence on immune function in children, the researchers said.

The study included 169 children (ages five to 10, mean age seven) and their parents (mean age 35). Of the participating parents, 158 (93.5%) were women, and most (89.4%) were mothers of the children.

The children were recruited from 2001 to 2003 from a population already participating in a study of childhood infections at the University's Golisano Children's Hospital at Strong. The study involved seven visits about six months apart. Children's blood samples were obtained for assays every six months.

During the one-year reporting period following the second visit, the researchers found that the number of illnesses reported by parents ranged from zero to 10 (median two). The number of febrile illnesses ranged from 0 to six. During the follow-up, 2% of the children did not have a febrile illness, 37.3% had one or two, and 7.1% had three or more, the researchers reported.

Parental psychiatric symptoms, included depression and anxiety, negative mood and dysfunctional behavior, parents' relationship with children, and their response to parenting responsibilities, as measured on the 51-item Brief Symptom Inventory. In addition, parents reported on external family stress events, such as exposure to violence and unemployment, using the Stressful Life Events checklist.

Parental stress was associated with a rate ratio of 1.11 (95% confidence interval 1.00 to 1.22) for total illnesses in their children and a rate ratio of 1.36 (CI, 1.13-1.64) for febrile illness, the researchers reported.

In a year-and-a half, parental stress was associated with an alteration in children's immune function. Mean natural killer cell function varied from 4.3 to 4.6, with an overall range from 0.4 to 44.2.

One single individual variable was significantly associated with an increase in natural killer cytotoxicity at 18 months of follow-up: family psychosocial adversity, which outdid parent-child stress. The mean score on the Stressful Life Events checklist was associated with an increased natural killer cell function (estimate 0.02), the researchers said.

Studies of adults, especially those over age 55, have shown diminished natural killer cell activity during chronic stress, suggesting that this decrease may be age dependent and present only in older adults.

The findings of this study are in keeping with a previous small study that showed an increase in natural killer cell activity in depressed subjects. Levels of natural killer cell function in the current study were not associated with rates of illnesses or alteration in natural killer cell function.

It is possible that children's immune systems are still developing, or that other, as yet unspecified deficiencies in immune function, promote a compensatory response of natural killer cell activity, Dr. Caserta said.

The study's limitations included a lack of generalizability as the cohort had a large proportion of low-income families recruited through emergency departments. Also, children's illnesses were recorded by parents without physician or laboratory confirmation, and even though all families received thermometers, not all parents recorded temperatures consistently.

"Further studies of children using more in-depth measures of the psychological-behavioral interaction between parents and their children are necessary to elucidate the specific mechanisms linking family stress with children's health," the researchers said.

In addition, future investigations using more refined indexes of specific aspects of children's immune function and the types of illnesses responsible for the increase in disease burden are needed, they concluded.

Action Points

Explain to patients who ask, that children exposed to chronic family stress plus an adverse family event, such as job loss or exposure to violence, have an increased risk of fever and illness.

By Judith Groch, Senior Writer, MedPage Today

Reviewed by [Zalman S. Agus, MD; Emeritus Professor at the University of Pennsylvania School of Medicine.](#)

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