

[Clin Oncol \(R Coll Radiol\)](#). 2011 May;23(4):297-305. Epub 2011 Feb 16.

## **A 25 year retrospective review of the psychological consequences of the chernobyl accident.**

[Bromet EJ](#), [Havenaar JM](#), [Guey LT](#).

### **Source**

Departments of Psychiatry and Preventive Medicine, Stony Brook University, Stony Brook, New York, USA.

### **Abstract**

The Chernobyl Forum Report from the 20th anniversary of the Chernobyl nuclear power plant disaster concluded that mental health effects were the most significant public health consequence of the accident. This paper provides an updated review of research on the psychological impact of the accident during the 25 year period since the catastrophe began. First responders and clean-up workers had the greatest exposure to radiation. Recent studies show that their rates of depression and post-traumatic stress disorder remain elevated two decades later. Very young children and those in utero who lived near the plant when it exploded or in severely contaminated areas have been the subject of considerable research, but the findings are inconsistent. Recent studies of prenatally exposed children conducted in Kiev, Norway and Finland point to specific neuropsychological and psychological impairments associated with radiation exposure, whereas other studies found no significant cognitive or mental health effects in exposed children grown up. General population studies report increased rates of poor self-rated health as well as clinical and subclinical depression, anxiety, and post-traumatic stress disorder. Mothers of young children exposed to the disaster remain a high-risk group for these conditions, primarily due to lingering worries about the adverse health effects on their families. Thus, long-term mental health consequences continue to be a concern. The unmet need for mental health care in affected regions remains an important public health challenge 25 years later. Future research is needed that combines physical and mental health outcome measures to complete the clinical picture.

[Health Phys.](#) 2007 Nov;93(5):516-21.

## **Psychological and perceived health effects of the Chernobyl disaster: a 20-year review.**

[Bromet EJ](#), [Havenaar JM](#).

### **Source**

Department of Psychiatry, State University of New York at Stony Brook, NY 11794-8790, USA.  
evelyn.bromet@stonybrook.edu

### **Abstract**

The mental health impact of Chernobyl is regarded by many experts as the largest public health problem unleashed by the accident to date. This paper reviews findings reported during the 20-y period after the accident regarding stress-related symptoms, effects on the developing brain, and cognitive and psychological impairments among highly exposed cleanup workers. With respect to stress-related symptoms, the rates of depressive, anxiety (especially post-traumatic stress symptoms), and medically unexplained physical symptoms are two to four times higher in Chernobyl-exposed populations compared to controls, although rates of diagnosable psychiatric disorders do not appear to be elevated. The symptom elevations were found as late as 11 y after the accident. Severity of symptomatology is significantly related to risk perceptions and being diagnosed with a Chernobyl-related health problem. In general, the morbidity patterns are consistent with the psychological impairments documented after other toxic events, such as the atomic bombings of Hiroshima and Nagasaki, the Three Mile Island accident, and Bhopal. With respect to the developing brain of exposed children who were in utero or very young when the accident occurred, the World Health Organization as well as American and Israeli researchers have found no significant associations of radiation exposure with cognitive impairments. Cognitive impairments in highly exposed cleanup workers have been reported by Ukrainian researchers, but these findings have not been independently confirmed. A seminal study found a significant excess death rate from suicide in cleanup workers, suggesting a sizable emotional toll. Given the magnitude and persistence of the adverse mental health effects on the general population, long-term educational and psychosocial interventions should be initiated that target primary care physicians, local researchers, and high risk populations, including participants in ongoing cohort studies.

[Public Health](#). 2008 Nov;122(11):1239-49. Epub 2008 Jul 10.

## **A multilevel analysis of long-term psychological distress among Belarusians affected by the Chernobyl disaster.**

[Beehler GP](#), [Baker JA](#), [Falkner K](#), [Chegerova T](#), [Pryshchepava A](#), [Chegerov V](#), [Zevon M](#), [Bromet E](#), [Havenaar J](#), [Valdismarsdottir H](#), [Moysich KB](#).

### **Source**

Roswell Park Cancer Institute, Buffalo, NY, USA. [gregory.beehler@va.gov](mailto:gregory.beehler@va.gov)

### **Abstract**

#### **BACKGROUND:**

Radiation contamination and sociopolitical instability following the Chernobyl nuclear power plant disaster have had a profound impact on Belarus.

#### **OBJECTIVE:**

To investigate the factors that impact long-term mental health outcomes of this population almost 20 years after the disaster.

#### **STUDY DESIGN:**

Cross-sectional study.

#### **METHODS:**

In-person interviews were conducted with 381 men and women from two geographic areas of differing radiation contamination within Belarus. Participants completed surveys of demographics, psychosocial factors and psychological distress. Individual-level characteristics were combined with household-level measures of radiation contamination exposure and family characteristics to create multilevel predictive models of psychological distress.

## **RESULTS:**

Between-household effects accounted for 20% of variability in depression and anxiety scores, but only 8% of variability in somatization scores. Degree of chronic daily stressors showed a significant positive relationship with psychological distress, whereas mastery/controllability showed a significant inverse relationship with distress. At household level, perceived family problems, but not level of residential radiation contamination, was the best predictor of distress.

## **CONCLUSIONS:**

Multilevel modelling indicates that long-term psychological distress among Belarusians affected by the Chernobyl disaster is better predicted by stress-moderating psychosocial factors present in one's daily life than by level of residential radiation contamination.

[J Child Psychol Psychiatry](#). 1999 Feb;40(2):299-305.

## **The psychological development of children from Belarus exposed in the prenatal period to radiation from the Chernobyl atomic power plant.**

[Kolominsky Y](#), [Igumnov S](#), [Drozdovitch V](#).

### **Source**

Belarusian Pedagogical University, Minsk, Belarus.

### **Abstract**

This study examined psychological development in 138 children at the age of 6-7 and 10-11 years, who had suffered prenatal radiation exposure at the time of the Chernobyl accident in 1986. These children were compared to a control group of 122 children of the same age from noncontaminated areas of Belarus. The examination included neurological and psychiatric examination, intellectual assessment, and clinical psychological investigation of parents as well as the estimation of thyroid exposure in utero. The exposed group manifested a relative increase in psychological impairment compared with the control group, with increased prevalence in cases of specific developmental speech-language disorders (18.1% vs. 8.2% at 6-7 years; 10.1% vs. 3.3% at 10-11 years) and emotional disorders (20.3% vs. 7.4% at 6-7 years; 18.1 vs. 7.4% at 10-11 years). The mean IQ of the exposed group was lower than that of the control group, and there were more cases of borderline IQ (IQ = 70-79) (15.9% vs. 5.7% at 6-7 years; and 10.1% vs. 3.3% at 10-11 years). The mean value of thyroid doses from  $^{131}\text{I}$  0.4 Gy was estimated for children exposed in utero. No correlation was found between individual thyroid doses and IQ at age 6-7 years or 10-11 years. We notice a positive moderate correlation between IQ of children and the educational level of their parents. There was a moderate correlation between high personal anxiety in parents and emotional disorders in children. We conclude that a significant role in the genesis of borderline intellectual functioning, specific developmental disorders of speech, language and scholastic skills, as well as emotional disorders in the exposed group of children was played by unfavourable social-psychological and social-cultural factors such as a low educational level of parents, the break of microsocial contacts, and adaptational difficulties, which appear following the evacuation and relocation from the contaminated areas.