

Ecological, social and medical research
on the long-term effects of Chernobyl
nuclear power station accident.

A comparative epidemiological study.

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Objectives

To get more light on the possible effects of Chernobyl accident on:

- Thyroid and parathyroid
- Oral
- Cardiovascular
- Metabolic
- **Mental and perceived health status**

of the people still living in contaminated areas. Furthermore,

- **To investigate social and psychological aspects related to the management of and coping with the consequences of the accident**
- To clarify radiation exposure using cytogenetic methods (biodosimetry)

Study design

- In 1993, a pilot study was conducted in the Bryansk region: 7 years after Chernobyl accident
- Mirnyi: Bryansk area, strict control zone (> 1300 kBq/m² Cs-137); radiation levels close to background in village center after clean-up measures
- Karsnyi Rog: control area (< 37 kBq/m² Cs-137)
- Villages with similar socioeconomic status
- Comparable age groups studied
- The accident had impact on lifestyle in Mirnyi: occupations, hobbies, sources of food etc.

The Chernobyl accident and mental wellbeing (Viinamäki et al. 1995)

- Mental wellbeing was assessed using a 12-item General Health Questionnaire (GHQ)
- N =325 in Mirnyi and 278 in control area (Krasnyi Rog)
- Mental wellbeing of women in the study group was poorer than in controls
 - A minor mental disorder among 48% vs. 34% (women), and 26% vs. 28% (men)
 - Those living with partner coped better
 - Level of education was not associated with the GHQ score
- 59% of study group vs. 14% of controls wanted to move away from the area of residence, but this was not associated with the GHQ score
- Independent factors explaining the GHQ score were uncertainty about the future in the men and, in addition, poor financial situation and insufficient social support in the women

Conclusions on mental health and coping with the consequences of the accident

- Chernobyl accident impaired the long-term mental wellbeing of women living in the contaminated area
- People were trustful for the future
- Their attitudes toward nuclear power had changed towards more negative
- They saw the actions of the authorities after accident as inappropriate and untrustworthy
- They trusted on science and technology in solving present problems
- There were no remarkable differences between the attitudes of people in contaminated vs. control areas

Thyroid ultrasound findings

(Kumpusalo et al 1996)

- No pathological US findings
- Prevalence of total thyroid abnormalities was significantly higher among the children in the contaminated area
 - Age group 0-9 at time of accident: 8.1% in Mirnyi vs. 1.6% in control
 - Age group 10-27: 18.8% vs. 17.7%

Unstable and stable chromosomal aberrations in lymphocytes (Salomaa et al. 1997)

- A higher rate of unstable chromosome type aberrations in lymphocytes of people living in the contaminated area, indicating radiation as the causative factor
- On the basis of translocations, the mean excess dose from Chernobyl to residents of Mirnyi is likely to be < 100 mGy, which is in agreement with environmental measurements and radiological countermeasures carried out in the area