

Impact of a major thermoelectric plant on self-perceived health status

Liliane Chatenoud, Sc.D.^{a,*}, Paola Mosconi, Sc.D.^a, Matteo Malvezzi, Sc.D.^a,
Paolo Colombo, Sc.D.^b, Carlo La Vecchia, M.D.^{a,c}, Giovanni Apolone, M.D.^a

^aIstituto di Ricerche Farmacologiche “Mario Negri”, Via Eritrea, 62-20157 Milano, Italy

^bIstituto Doxa, Gallup International Association, 20144 Milano, Italy

^cIstituto di Statistica Medica e Biometria, Università degli Studi di Milano, 20133 Milano, Italy

Available online 29 January 2005

Abstract

Background. Measuring self-perceived health status and risk perception according to environmental factors remains a major open issue with important health policy implications.

Methods. To measure self-perceived health status in an area where a major thermoelectric plant has been active since 1994, in October 2001, we conducted a two sample survey using the SF-12 Health Survey. The study sample (2001 individuals) representative of the population living in the plant area (Montalto di Castro, Central Italy) was compared with a random sample of the general Italian population (1928 individuals). Mean values were adjusted for age, sex and education.

Results. SF-12 summary scales means are comparable in both samples: 50.2 (SE: 0.3) versus 49.9 (SE: 0.3) for the physical score, and 47.7 (SE: 0.4) versus 48.7 (SE: 0.4) for the mental score for Montalto di Castro area and Italian sample respectively.

Conclusion. People living near a major thermoelectric plant have a subjective health status comparable to that reported by the general Italian population.

© 2005 Elsevier Inc. All rights reserved.

Keywords: Thermoelectric plant; SF-12; Health status; Italy; Health perception

Introduction

Measuring self-perceived health status and risk perception according to environmental factors remains a major open issue with important public health and health policy implications. It is known, for instance, that poorly defined risks are systematically overestimated, and that media coverage may substantially influence and modify health-related public concern [1–3]. Validated measures of perceived health, however, do not necessarily reflect widespread anxieties. Thus, self-reported health among residents in a Scottish area contaminated by a chromium waste was similar to that of an uncontaminated area, despite systematically worse health scores among participants who believed chromium to be harmful to health [4–7].

Public perception of risk can also be influenced by the wording used by the media. Thus, “irradiation” or “nuclear” usually evoke anxiety even if referred to “irradiated food” or “nuclear magnetic resonance” [8].

Health-related concerns may apply not only to areas with documented contamination, but also to those where major environmental changes have occurred, with potential implications on health-related hazards. One of these areas is Montalto di Castro, a municipality about 120 km north of Rome on the Tirreanean Sea, where a major nuclear plant was planned, and almost completed in the 1980s. Following the Chernobyl accident and the consequent policy decisions in Italy to close all nuclear plants, between 1994–96, the plant was reconverted as thermoelectric. The total plant power is 3.600 MW (fuelled by combustible oil or methane gas), with an extension of 3,000,000 m², and about 300 employers, i.e. one of the main thermoelectric plants in Europe [9].

Several concerns towards environmental issues still persist also following widespread attention in the media

* Corresponding author. Fax: +39 02 33200231.

E-mail address: liliana@marionegri.it (L. Chatenoud).

and local press, but information on the potential health effects of thermoelectric plants on the general population remain scant.

The Montalto di Castro plant should limit such a direct effect (it is situated at least 5 km from the nearest urban area), but concerns and anxiety might still have an impact on individuals' physical, psychological and social functioning and well-being perceptions. As such health-related quality of life outcomes are considered either an important component of health concept or a complement of more traditional measures, in October 2001, we conducted a survey measuring subjective health status in the area using a standardized and validated instrument—the SF-12 Health Survey [10–12]. For comparative purposes, the survey was also conducted on a representative sample of the Italian general population. In addition to the principal analysis that has the objective of comparing the self-perceived health status between the two samples, we also carried out pre-defined subgroup analyses in the Montalto di Castro sample to identify potential differences in self-perceived health.

The aim of this study was therefore to measure the perceived health of a population living in an area where, for several reasons, there was widespread attention and concern about environmental issues. The study hypothesis was that such concern about health-related hazards might have had an impact on the individuals' health perception, especially in domains pertaining to mental and psychological health.

Materials and methods

Study design and data collection

Data were collected in two different population samples between the 6th and 13th of October 2001. The first sample included 1928 individuals identified through the phone directory. The universe to which it is referred is given by 49 million Italians of all regions aged over 18 and stratified according to the region and size of the municipalities. Individuals were interviewed according to a representative population proportion (quota) of sex, age, education and professional condition. The second sample, made of 2001 individuals, was extracted with the same method described for the whole Italian population sample, but it was representative of the population living in the area of the thermoelectric power plant, Montalto di Castro (Central Italy) and other 15 neighboring municipalities.

For both groups (Montalto di Castro and Italy), a sample of 15,000 telephone numbers was considered for dialing procedures. According to the “auto dialing” procedure, each phone number called was selected randomly from the initial sample. Calls were only processed when the phone was answered (by a person). For both samples, ad hoc trained interviewers collected data in the context of a computer assisted telephone interview. In addition to the health-related quality of life questions, information regarding the socio-

demographic profile and the occupational status was collected. Interviewees were also asked for their opinion on risk perception according to a predefined set of environmental factors. These were investigated in three sections. The first concerned the importance rating (four levels varying from “very important” to “not important”) the interviewee gave to eight sources of air pollution (industrial, automotive, central heating and thermoelectric plant exhausts, fermentation from animal farms, fire-raising, spray products and tobacco smoke). The second part asked whether the air quality at home, work and the area of residence was perceived as very good, quite good, not so good or bad. The final section inquires as to how important the interviewee considered five causes of water pollution (microbes, chemicals added to drinking water and chemicals of industrial, domestic and agricultural origin) on a four valued qualitative scale (from “very important” to “not important”).

For the Montalto di Castro sample, people were also asked for their involvement with the plant, in occupational terms (“do you or a member of your family work at the plant”) and also in terms of visual impact (“do you see the plant from your house?”).

Both surveys were conducted by the DOXA Institute [13], the Italian branch of the Gallup International Association.

The SF-12 questionnaire

The SF-12 is a multi-purpose, short form health survey that produces two summary measures evaluating physical and mental aspects of health derived from 12 questions. It was originally developed in the US to provide a shorter alternative to the SF-36 [14] for use in large samples to monitor the yield of medical interventions on subjective aspects of health and quality of life. After its translation in several languages in the context of a wide international project [15,16], it was validated in several independent samples in Europe and Italy [11,12,17]. Results from empirical studies to date indicate that the 12-item version of the two summary scales (Physical Component Summary: PCS-12 and Mental Component Summary: MCS-12) correlate with the SF-36 versions in the 0.94 to 0.97 range. Both summary scores are standardized using US weights to have an expected mean of 50 and standard deviation of 10, and higher scores indicate better health perception. Normative data from a large random sample of Italians are also available for historical comparison [18].

Statistical analysis and sample size

Mean value (adjusted for sex, age and education) and standard errors were used to describe the summary measures (PCS-12 and MCS-12) for the two groups considered (Montalto and Italy) according to the major socio-demographic characteristics such as area of residence, sex, age, education, marital status, family size and occupational

Download English Version:

<https://daneshyari.com/en/article/9206312>

Download Persian Version:

<https://daneshyari.com/article/9206312>

[Daneshyari.com](https://daneshyari.com)