



Perceptions of cancer risk factors and socioeconomic status. A French study[☆]

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ABSTRACT

Objective: The present paper investigates on lay people's beliefs regarding cancer risk factors' and their correlates, especially people's socioeconomic status (SES), as they may heavily contribute to social health inequalities. **Methods:** We used data from the 2010 *Baromètre Cancer*, a national representative telephone survey conducted in France (N = 3359, age 15–75, participation rate 52%). **Results:** Respondents differentiate behavioral factors (smoking, drinking, unprotected sun exposure, etc.), environmental risk factors (air pollution, chemicals in food, etc.) and psychosocial risk factors (stress, painful experiences, etc.) for cancer. Those with a higher SES were more likely to emphasize behavioral and psychosocial factors, while those with an intermediate SES were more likely to do so for environmental ones. Perceived financial vulnerability was associated to higher perceptions for both environmental and psychosocial factors. After adjustment on socio-demographic background and SES, respondents who emphasized behavioral risk factors were less prone to endorse fatalistic attitudes (considering that nothing can be done to avoid cancer), while those who emphasized environmental risk factors were more prone to do so, and were also more frequently daily smokers. **Conclusion:** These results suggest that lay people's beliefs regarding cancer risk factors are shaped by their conceptions regarding one's body and health, and especially their health locus of control, as the tendency to either emphasize behavioral or environmental factors was correlated to fatalistic attitudes. Prevention campaigns designed to tackle lay people's perceptions regarding cancer risk factors should not consider they simply reflect ignorance or misinformation, as they are embedded in social and cultural contexts.

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Introduction

Cancer heavily contributes to social health inequalities (HCSU [French High Council for Public Health], 2009; Huisman et al., 2005). Such inequalities arise at every stage of cancer history (that is before and after diagnosis) as well as among cancer survivors (Merletti et al., 2011; INCA [French National Institute for Cancer], 2014). For example, people with a low socioeconomic status (SES) are more prone to engage in risky behaviors (such as cigarette smoking), more frequently exposed to carcinogens at home or in their workplace, less likely to participate in cancer screening programs and more likely to be diagnosed later than people with higher SES (Merletti et al., 2011; Peretti-Watel et al., 2009).

Two main kinds of explanations (not mutually exclusive) have been proposed to elucidate the SES disparities in health-related behaviors, referring to either structural factors or cognitive ones (Lynch et al., 1997; Wardle and Steptoe, 2003). On the one hand, structural explanations

stress the importance of material and social contexts, and view poor health behaviors as the consequences of material hardship, stressful life conditions or lack of social support. On the other hand, the SES disparities in health-related cognitions, including knowledge, attitudes and beliefs, may also fuel the SES disparities in health behaviors. For example, in the case of screening for bowel cancer, Wardle et al. concluded that cognitive factors play a leading role in the relationship between SES and intention to go for screening (Wardle et al., 2004).

The present paper focuses on the second kind of explanations, the one referring to SES disparities in cancer risk beliefs. Several previous studies found a significant relationship between SES and fatalistic cancer beliefs: people with a low income or a low educational level are more prone to consider that 'everything causes cancer' and such belief may fuel a sense of powerlessness that prevents people from engaging in cancer prevention behaviors (Powe, 1995; Niederdeppe and Levy, 2007; Peek et al., 2008; Befort et al., 2013; Marcus et al., 2013). There is of course an obvious link between such fatalism and one major aspect of people's beliefs regarding health and illness issues, namely the health locus of control: some people consider their health mainly depends on external forces beyond their control (external locus of control, which may fuel fatalism), while others rather consider it depends on their

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behaviors (internal locus of control) (Wallston et al., 1978). In her classic study on social representations of health and illness (Herzlich, 1973) delved further into this issue. She found that, for many people, health resides within the individual while the sources of illness lies outside, in their social environment. More specifically, many people think that modern society and social life produce illness, and especially cancer, as they 'intoxicate' both people's body and mind: on the one hand, artificial food and pollution, among others, intoxicate the body, and on this other hand, stress, bitterness, disappointment and other negative emotions poison the mind. Those negative emotions, which are frequently referred to as 'psychosocial factors' now, have been considered as potential causes of cancer for several centuries (Lebrun, 1984), and these beliefs related to the psychogenesis of cancer are still quite widespread in contemporary French society (INPES [French Institute for Prevention and Health Education], 2006; INPES [French Institute for Prevention and Health Education], 2011). In the present study we investigated in detail lay people's perceptions of cancer etiology, by distinguishing various kinds of cancer risk factors that are usually merged into the statement 'everything causes cancer', in order to capture fatalistic attitudes, but also beliefs related to the psychogenesis of cancer. To do so, we used data from the 2010 *Baromètre Cancer*, a national representative survey conducted in France by the French National Institute for Prevention and Health Education (INPES). Its questionnaire embraces a broad spectrum of lay people's beliefs regarding the etiology of cancers, including behavioral risk factors (e.g. smoking), environmental risk factors (e.g. air pollution) and psychosocial risk factors (e.g. stress) (INPES [French Institute for Prevention and Health Education], 2006; INPES [French Institute for Prevention and Health Education], 2011).

We aimed to test three hypotheses. First, we assumed that people's perceptions were shaped by their conceptions of one's body and health, thus we expected strong positive correlations between perceptions related to risk factors pertaining to the same type (behavioral risk factors for an internal locus of control, environmental ones for an external locus of control, and psychosocial ones for beliefs related to the psychogenesis of cancer) (Hypothesis 1). Secondly, we assumed that lay people's perceptions of cancer-related risk factors were correlated to their SES. More precisely, we expected that people with a high SES were more likely to emphasize behavioral risk factors (internal locus of control) while those with a low SES were more likely to emphasize environmental risk factors (external locus of control), and we also assumed that people with a higher SES were more prone to emphasize psychosocial factors, as Herzlich had conducted her interviews with people from the middle and upper classes (Hypothesis 2). We used both an objective composite indicator of SES (combining income, occupation and education) as well as a subjective one (perceived financial situation of one's household). Thirdly, as previous studies found that people who endorse the 'everything causes cancer' belief are more likely to feel powerless and to engage in risk behaviors, we tested the relationship between our three kinds of perceptions of cancer-related risk factors and two outcome variables: a fatalistic attitude ('nothing can be done to avoid cancer') and a major risk behavior (cigarette smoking). We assumed that people who stressed the importance of environmental risk factors for cancer were more likely to feel powerless and to report current smoking (Hypothesis 3).

Material & methods

Sampling design and data collection

We used data from the second Cancer KABP survey, a survey on cancer-related knowledge, attitudes, beliefs and practices conducted by the National Institute for Prevention and Health Education (INPES). This telephone survey (using a computer-assisted telephone interview system) was carried out in 2010 on a representative random sample of the general population aged 15–85, based on a two-stage random sampling design (first selecting households by phone number, secondly

selecting an individual within each participating household). People not speaking French and residents of retirement homes, hospitals, and other institutions were excluded from the survey. The participation rate was 52%. Questions related to perceptions of cancer risk factors were only asked to individuals without a personal history of cancer and aged 15–75 (n = 3359).

The French National Commission for Computer Data and Individual Freedom (*Commission Nationale de l'Informatique et des Libertés*, CNIL) approved the 2010 *Baromètre Cancer*.

Questionnaire

The questionnaire included 14 items on perceptions of risk factors for cancer, proposed in a random order. For each item, respondents were asked to report whether they thought this factor could increase a person's risk of developing a cancer ('certainly not', 'probably not', 'probably', 'certainly', 'don't know'/no response). These items covered three kinds of risk factors: behavioral factors (tobacco smoking, drinking more than 2 (for women) or 3 (for men) glasses of alcohol per day, sun exposure without protection, lack of physical activity, having tanning lamp sessions, cannabis smoking); environmental factors (exposure to air pollution, chemicals in food, living near a nuclear power plant, or near a mobile phone relay station); psychosocial factors (stress, painful experiences, difficulties in expressing feelings and emotions, bitterness due to personal or professional disappointment).

The questionnaire also investigated respondents' general opinion on cancer, with an item specifically designed to identify fatalistic attitudes ("Nothing can be done to avoid cancer": 'strongly disagree', 'somewhat disagree', 'somewhat agree', 'strongly agree', 'don't know'), as well as respondents' smoking status (with a binary indicator spotting current daily smokers, i.e. respondents who reported that they smoked at least one cigarette per day at the time of the survey). Other data collected included respondents' main information sources on cancer (they had to choose two sources among the following ones: TV/radio/newspapers, Internet, relatives, health professionals, health magazines), and having at least one relative with a history of cancer (yes/no). Indeed another important aspect regarding lay people's perceptions of cancer risk factors is the kind of information they use, especially in the Internet society (Befort et al., 2013; Peretti-Watel et al., 2014), and previous studies found that family cancer history was correlated to cancer-related attitudes and beliefs (Marcus et al., 2013; Kobayashi and Smith, 2015). Respondents' self-reported socio-demographic characteristics included gender, age, educational level (<high-school, high-school, >high-school), occupation status (unemployed, manual worker, intellectual worker) and equivalized household income per month (EHI), which takes into account the household size and composition. Finally, participants were asked about their perceived household financial situation (living comfortably, going well, getting by, finding it difficult, impossible without debt). We considered this last question because it is a subjective indicator of SES, and as we tried to capture the impact of SES on specific perceptions, we assumed that perceived SES may be more predictive than 'objective' SES. More specifically, one's perceived vulnerability may influence one's beliefs regarding cancer etiology.

Statistical analysis

Data were weighted to match the sample more closely to the French population for age, gender, educational level, geographic area and size of residency town. All analyses were performed with weighted data.

We first conducted a principal component analysis (PCA) on the 14 items related to perceptions of risk factors (with the following coding: certainly not = 1, probably not = 2, probably = 3, certainly = 4, don't know/missing value = 2.5). PCA is a useful statistical method for identifying correlational patterns in a large data set as it highlights the strongest bivariate correlations existing between selected variables. It is a useful preliminary step before combining numerical variables into

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