



## Gender difference in the health risk perception of radiation from Fukushima in Japan: The role of hegemonic masculinity



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### ARTICLE INFO

#### Article history:

Received 25 February 2013

Received in revised form

5 February 2014

Accepted 7 February 2014

Available online 14 February 2014

#### Keywords:

Japan

Nuclear disaster

Risk perception

Gender identity

Masculinity

Work

Culture

Health activism

### ABSTRACT

This paper presents the preliminary findings of gender difference in the perception of radiation risk in the aftermath of the Fukushima nuclear disaster in Japan. In-depth interviews were conducted with the residents of Fukushima and other parts of Japan in November 2011 and July 2012. Compared to mothers, fathers in general expressed less concern for radiation. Fathers prioritized their responsibilities as the breadwinner for their families and saw radiation risk as a threat to economic stability and masculine identity. As a result, mothers' health concerns were dismissed, and they were prevented from taking preventive actions. The social norms in the dominant institutions such as corporations and the government influenced men's perception of radiation risk. The findings illustrate the importance of socio-cultural context in which meanings of health risk are constructed.

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Three months after the explosion of the Fukushima Daiichi Nuclear Power Plant in Japan on March 11th, 2011, Goto Yukiko, a thirty-five year old female kindergarten teacher, organized mothers in the city of Sendai, 58 miles north of Fukushima, and marched into the government building to demand accurate information on radiation levels and actions to protect children from radiation. The local government had been refusing to measure the levels of radiation on the ground. The government's inadequate responses to the radiation threat and its emphasis on economic recovery from the disaster suggested that the nation's economy took precedence over concerns for people's health. The group submitted an official letter of request for the measurement of radiation in public places and the provision of Geiger counters to schools. Unable to ignore the mothers' demand, the prefectural government distributed the counters to all cities and townships.

On October 3, 2011, Japan's national public broadcasting company NHK reported the lifting of the shipment ban on beef from Tochigi Prefecture (where radioactive cesium in the beef far exceeded the national provisional safety limit) that had been put in place only two months earlier. To encourage consumers to buy and eat beef, the national news reported that Kanuma City in Tochigi

Prefecture served the beef to elementary school children in school lunches. Alarmed by the state sanctioned feeding of possibly contaminated foods to children, Professor Takeda Kunihiko of Chūbu University, a well-known writer on environmental issues, urged fathers to stand up and join the mothers' protests. "Strangely, fathers are not interested in children's health," he wrote. "They [the government, producers, distributors, and the media] have shouted down mothers who search for radiation-free foods... Again, I want to appeal to fathers. Please return to the frontline [of the protest]" (Takeda, 2011). His call was unheeded, and efforts to minimize radiation exposure mostly remained a mothers' movement.

While far from clear, past nuclear incidences suggest the seriousness of the potential health consequences of radiation exposure. Chernobyl Forum Report drafted in 2005 by UN agencies, estimated there would be 4000 excess cancer deaths among those with the highest levels of exposure in that disaster. Children are more vulnerable to radiation hazards than adults. Significant increases in the incidences of childhood thyroid and other diseases after radiation exposure have been reported (Eheman et al., 2003). Among the children born soon after the Chernobyl accident, a large number of mental and physical anomalies including cardiovascular diseases and leukemia were also found in affected areas (Lazjuk et al., 1993; Bard et al., 1997). While Fukushima is not directly comparable to Chernobyl, the amount of radiation fallout is not negligible. The

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radiation at a quarter mile from the Fukushima plant at one point was 0.1 rem (1 millisieverts) per hour, a level considered to increase overall risk of cancer after less than four days of exposure (Grady, 2011). The estimated doses in the first year following the disaster in the areas surrounding the Fukushima plant was 100–5000 times higher than neighboring countries (WHO, 2012: 44).

How then did fathers perceive the risk of radiation? Why did so few fathers of young children take action to prevent harm? These questions have important implications not only for the individuals' abilities to protect themselves from harmful radiation exposures, but also on the management of environmental and health risk at the larger societal and institutional levels where men dominate leadership positions.

## 1. Background

The explosion of the nuclear plant in Fukushima and the anxiety that followed epitomizes the 'risk society' articulated by the works of Beck (1992) and Giddens (1991). An emphasis on risk in 'late modernity' is not only a defining feature of post-modern society, but is a catalyst for the individualized process of reflexive critique of the central institutions such as government, industry, and science that are seen as the producers of risk. Beck (1992) notes the importance of gendered division of labor and unequal positions of men and women as a basis of industrial society as well as a source of its dissolution. Empirically, the reflexive process of defining risk and responsibility seems to occur unevenly between the sexes. Women are more critical of environmental risks and prominent in the leadership role among the opponents of toxic materials (Krauss, 1993; Tindall et al., 2003). In Japan, the effects of gender in the attitude towards radiation risk stood salient in reactions to the catastrophe. Post-disaster surveys consistently confirmed the difference: 73% of women and 56% of the men surveyed felt threatened by radiation ( $n = 500$ ) (Marsh Research, 2011), 71% of women and 52% of the men were concerned about food safety ( $n = 1167$ ) (Ibaraki Prefecture, 2011), 57% of the women and 48% of the men used extreme caution toward food and drink, 35% of women and 23% of the men went outside less frequently ( $n = 867$ ) (Ibaraki University, 2011).

Studies in the field of psychology have consistently shown women express higher levels of concerns toward health risks posed by technology than men do (Kleinhesselink and Rosa, 1991; Flynn et al., 1994). Such findings are stronger for nuclear and other technologies that are seen as posing risks of contamination (Davidson and Freudenburg, 1996; Slovic, 1999). Davidson and Freudenburg (1996) noted risks related to nuclear power are seen as an environmental problem by women while they are viewed as scientific and technical issues by men. The authors suggested some relevant factors in explaining the gender difference, particularly the importance of social roles and everyday activities. Women's social responsibilities are still defined in terms of daily activities in the domestic sphere, with concerns about child rearing, food production, health and housekeeping. Men's social responsibilities are viewed as the breadwinner for family and engaging in the public sphere of business, politics and science. Another study (Mohai, 1992) found women employed full-time are more concerned about environmental risks than are men employed full-time, showing the persistent influence of gender beyond employment status per se.

### 1.1. White-male effect, dominant institutions, and the social construction of risk

The findings of the 'white male effect' in the US highlight the importance of power and structural factors in risk perception (Flynn et al., 1994; Finucane et al., 2000; Kalof et al., 2002; Satterfield et al., 2004; Palmer, 2003). White males with better

education, income, and conservative views put more trust in the authorities and have less concern about environmental risks. Their historically privileged position and membership in the most advantaged group socializes them for risk taking while women and the disadvantaged who experience social subordination rely more on collective resources (Kalof et al., 2002). Since risks are often created and handled by men, men perceive risks as more acceptable than women (Gustafson, 1998). Kahan et al. (2007) argue that the white male effect may be explained as motivated cognition aimed at protecting identities through commitment to social and economic activities and cultural norms. The mechanism of identity-protective cognition works as a self-defense against challenges to beliefs important to one's identity, which are also connected with membership in a group that provides material as well as nonmaterial benefits such as self-esteem.

The white-male-effect points to the significance of one's relationship to dominant institutions. Central institutions are dominated by males, and their perceptions influence what is defined as risk. Professionals in science have been found to perceive risk less than the lay public (Slovic et al., 1985; Kraus et al., 1992). Among them, male experts perceive risk less than female experts (Flynn et al., 1994; Kraus et al., 1992; Slovic et al., 1995). People's perception of environmental risk and their sense of personal agency to take meaningful action are also strongly linked to the level of trust in controlling and regulatory institutions (Bickerstaff, 2004). Men are more trustful or confident than women in institutions involving government, science and technology (Flynn et al., 1992; Fox and Firebaugh, 1992).

The privileged social positions of men and their need to maintain a sense of control and stability can influence their evaluations of risk created by central institutions. Giddens (1991) refers to trust in institutions as a 'protective cocoon' that guards over the self against overwhelming threats of change. In the field of social psychology, system justification theories hold that the need for stability gives rise to a motivation to perceive the system as fair, legitimate, beneficial, and stable, as well as to the desire to maintain the status quo. Those who are advantaged by the system and subscribe to the 'dominant social paradigm' typically engage in system justification more enthusiastically than those who are disadvantaged (Jost et al., 2008). In the U.S., conservative white males have disproportionately occupied positions of power, and their greater tendency to deny environmental problems (McCright and Dunlap, 2011), to justify existing systems (Jost et al., 2008), and to dislike change (Amodio et al., 2007) has been noted. System justification can lead people to rationalize the social system even in situations in which they are harmed by it (Feygina et al., 2010). Research also suggests that the dynamics of risk perception is not always a conscious process but often unconscious through the workings of affect and anxiety (Hollway and Jefferson, 1997; Slovic, 1999; Parkhill et al., 2011).

Confronting the radiation risk from Fukushima requires accepting the possibility for fundamental changes. As Feygina et al. (2010) point out, the acceptance of environmental risk not only requires acknowledgment of the scope and unpredictability of the problem, but also of challenges to the foundations of existing socioeconomic system. The inclination of industrial corporations, market-based businesses, national governments and leaders for defensive system justification that may inhibit a realistic assessment of environmental and health risk has been suggested (Feygina et al., 2010; Jost et al., 2003). The 'stigma effects' of nuclear has caused products as well as persons from contaminated regions to suffer economic ill effects (Pettersson, 1988). The existence of radiation from Fukushima is a threat for economic instability and change. A survey in Tokyo showed that 63% of male respondents affected by the triple disasters wanted to get back to 'life before the disaster' compared to 38% of women (Dentsu, 2012). The threat of

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