

GENDERED IMPACTS

The humanitarian impacts of nuclear weapons from a gender perspective

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ILPI-UNIDIR Vienna Conference Series

Paper N° 5 of 6
#HINW14vienna

- Using a gender perspective 'adds a layer' to understanding the effects of nuclear weapons on humans.
- Women are biologically more vulnerable to harmful health effects of ionizing radiation than men.
- Social effects of nuclear weapons are gendered, women often being the ones most affected in relation to psychological health, displacement, social stigma and discrimination.

Introduction

A nuclear weapon detonation in a populated area would be indiscriminate in its immediate destructive effects. Nevertheless, as with the impacts of other weapons, the consequences may be different for men and women in terms of the profile and severity of harm. This article adopts a gender perspective in analysing nuclear weapon impacts.

The flash, blast, and heat generated by the explosion of nuclear weapons are virtually instantaneous, and are accompanied by prompt radiation that is also harmful, and possibly lethal, for anyone within range. Ionizing radiation is harmful to the human body in significant doses. It also increases the long-term risk of cancer and other diseases, and the prevailing view in the scientific community is that it does so even at very low doses. Nuclear weapons detonated on or near ground level also generate radioactive contamination—

including fallout, the process by which radioactively contaminated particles and water droplets gradually fall to the ground, often far from the initial point of detonation.¹ Beside these effects, nuclear weapon detonations in populated areas have a number of harmful longer-term impacts on survivors, their offspring, and society in general, including psychological trauma, displacement and other social changes. In addition to the harm a nuclear conflict would cause, production of nuclear weapons, storage and testing are all also conduits for risk of harmful exposure to ionizing radiation: see the second joint-paper in this series.²

There are both sex-specific health impacts pertaining to the biological effects of radiation, as well as gender-specific impacts due to different cultural and social roles or stereotypes based on gender (see Box 1).

WHAT IS GENDER?

Gender most often refers to social and cultural differences between male and female, as opposed to biological differences. Gender relates to socially constructed roles and behaviour in society, and the meaning of it evolves over time, across nations and cultures. Gender is associated with stereotypes, a generalized view or preconception about the attributes or characteristics possessed, or the roles that are or should be performed, by women and men.³ The social construction of the differences between men and women generate different social capabilities and opportunities.

Gender can be used as a tool of analysis: a gender perspective is a way of looking at situations and issues taking into account the respective roles of men and women in society. A policy implication is that a gender perspective can be used to design programmes and policy in a way that ensures that the impact is non-discriminatory.

The paper does not intend to be exhaustive. Instead, it introduces some relevant issues in how nuclear weapons affect men and women differently. The gendered impacts of nuclear weapons

focus here is presented in the awareness that other factors and parameters such as class, political context, cultural beliefs and societal structures are also important.

Biological impacts

Fortunately, the world has not witnessed war fought with nuclear weapons since 1945. However, the legacy of the nuclear bombing of two Japanese cities, more than 2,000 nuclear weapons tests since then, as well as several major nuclear plant accidents, have resulted in significant radiation release into the environment. Studies of these effects provide indications of the kinds of health impacts due to ionizing radiation that could be expected from use of nuclear weapons in populated areas if it were to occur again (see Box 2).

One important finding about the stochastic effects of ionizing radiation is that cancer incidence and mortality risk due to exposure to it depends, among other factors, on sex. A life span study of survivors of the 1945 nuclear weapon attacks on Hiroshima and Nagasaki in Japan found that the risk of developing and dying from solid cancer due to ionizing radiation exposure was nearly twice

as high for women as for men.⁵ Gender-specific cancers and female breast cancer seem to be the main reason for the heightened risk for women: when these cancers are excluded from analysis, the absolute rates were essentially equal.⁶

Figure 1 on the next page shows the estimated number of cancer cases expected to result in 100,000 persons exposed to a certain dose (0.1 gray) of ionizing radiation. The Figure illustrates only cancer cases that arise from ionizing radiation: it does not cover other causes of cancer.⁷

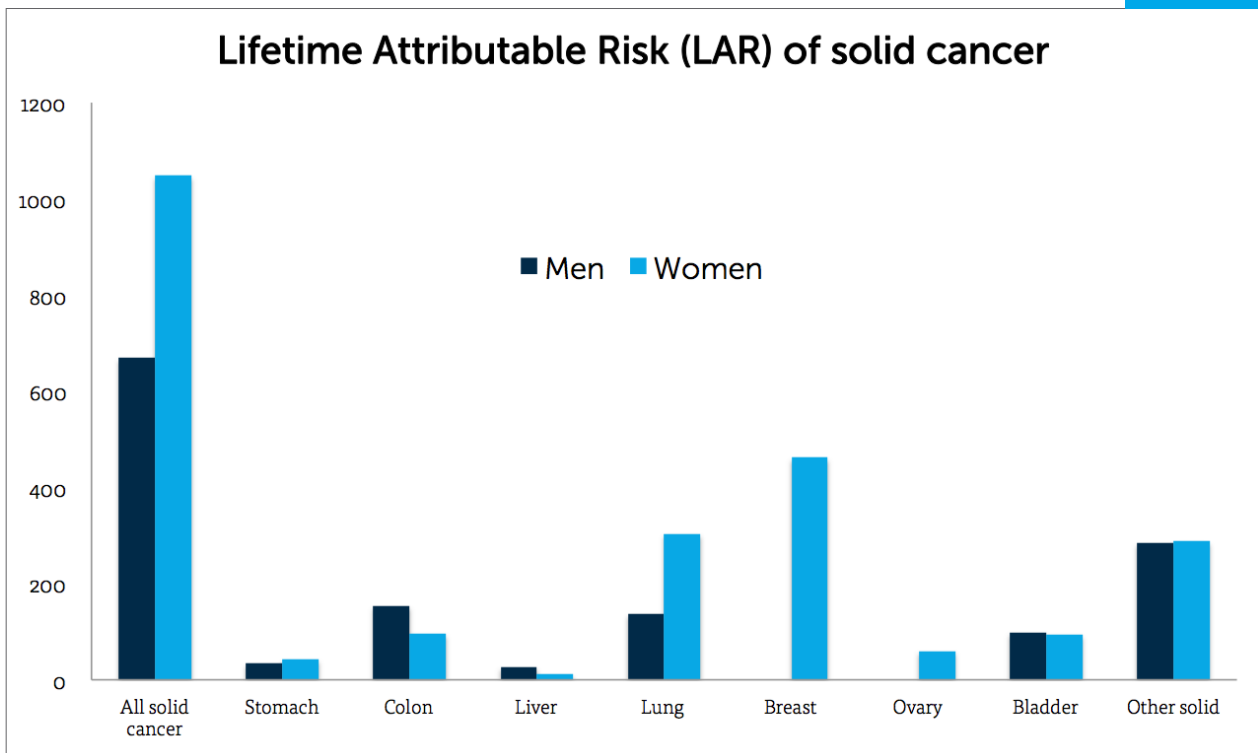
Pregnant women exposed to high doses of ionizing radiation have the risk of damage to their children, including malformations and mental retardation.⁸ Spontaneous abortion and stillbirth will occur if pregnant women are exposed to a certain level of radiation. Evidence for human inter-generational genetic effects due to exposure to ionizing radiation currently appears to be inconclusive.

IONIZING RADIATION

Ionizing radiation is a travelling particle or gamma ray with enough energy to cause atoms or molecules to gain or lose electrons. It can harm the body in two ways—ionizing radiation can directly kill cells, or it can cause mutations to DNA. If the mutations are not repaired, the cell may turn cancerous. Radiation effects on the human body are divided into deterministic and stochastic effects:

- **DETERMINISTIC EFFECTS** are injuries caused when cells are killed by radiation e.g. radiation burns, radiation sickness. This type of effect is observed immediately or soon after the exposure to radiation.
- **STOCHASTIC EFFECTS** are caused by DNA mutations (e.g. cancer, genetic effects). These effects are observed a long time after the radiation exposure.⁴

FIGURE 1



Estimated number of cancer cases expected from 100,000 persons exposed to a certain dose (0.1 gray) of ionizing radiation. The Figure illustrates only cancer cases that arise from ionizing radiation: it does not cover other causes of cancer. SOURCE: Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation (BEIR VII PHASE 2).⁷

The 1986 Chernobyl nuclear power plant accident released a large amount of radiation into the surrounding environment, and created fallout that spread for long distances at high altitude before settling back to earth. After the Chernobyl disaster, an increase was recorded in thyroid cancer in children and adolescents, most prominently in the areas surrounding the plant (see the second paper in this joint-series for more about thyroid cancer risk). Here too, there are apparent sex differences. The increase in thyroid cancer incidence rate in Belarus for children under ten years

old at diagnosis was substantially higher for female children than for male children,⁹ probably in accordance with the normally higher female incidence risk, both for youngsters and adults.

This section has focused on the biological effects of ionizing radiation, noting that women are biologically more vulnerable to harmful health effects of ionizing radiation than men. In addition, there is also strong evidence to suggest that a range of other negative impacts may be gendered, as will be considered next.

Gender-specific impacts

In most societies men and women have different social and cultural roles and responsibilities. These gender roles result in different social impact of nuclear weapons for women and men.

PSYCHOLOGICAL EFFECTS

Invisible environmental contamination from radiation can have traumatic psychological effects that are not related to radiation dose.¹⁰ These fears may be widespread, as contaminated radioactive

particles from atmospheric nuclear detonations can travel over long distances in patterns that can be difficult to predict. Ionizing radiation cannot be sensed: being exposed to it constitutes what one study termed a 'silent disaster.'¹¹ Although the effects of high doses of ionizing radiation lead to deterministic effects such as acute radiation syndrome that become apparent soon after exposure, the harmful effects of exposure to low doses, on the other hand, are more unpredictable since the link between absorbed dose and effect,



The "Baker" explosion, part of Operation Crossroads, a nuclear weapon test by the United States military at Bikini Atoll, Micronesia, on 25 July 1946 (Photo: United States Department of Defense / Creative Commons, duotone added).

is stochastic. This means that there is no threshold, and the probability of having the effects is proportional to the dose absorbed. Information and uncertainty about health risks then become a stressor, as is the fear of the delayed effect of radiation exposure.

The psychological impacts of radiation contamination may be more serious for women. After the Chernobyl nuclear accident fallout, women in most European countries reported more stress than men, and women were shown to have taken protective measures more often.¹² Mothers with children under 18 in the city of Gomel, approximately 110 kilometres north of Chernobyl, had a higher prevalence of mental health problems.¹³

After the Three Mile Island nuclear accident in the United States in 1979, researchers found that the 'most highly distressed people around Three Mile Island were mothers of young children who were asked by the Pennsylvania governor to leave the area in the initial aftermath of the accident to safeguard their families'.¹⁴

The traumatic psychological effects due to fear of radiation potentially have a range of health implications for women. For example, in Ukraine pregnant women were advised to have abortions without being given clear explanations,¹⁵ and it has been claimed that thousands of additional abortions were undertaken in Western Europe in the months after Chernobyl.¹⁶

EVACUATION AND DISPLACEMENT

The destruction caused by a nuclear weapon detonation in a populated area, as well as the risk of radioactive fallout, will necessitate evacuation and lead to displacement. This displacement causes a range of problems (see the fourth paper in this series). Displacement is in general often considered to impact women differently than men, and this is also of relevance if the cause is nuclear weapon use. Due to their gender roles and position in many societies, women may face specific risks and are less likely than men to have access to their rights,¹⁷ which can be worsened by displacement. Women tend to be more susceptible to sexual and gender-based violence, have less access to assistance, and are likely to face difficulties in exercising rights to housing, land and property—exacerbating pre-existing patterns of discrimination.

Due to their gender roles and position in many societies, women may face specific risks and are less likely than men to have access to their rights

Gender differences were apparent in the impacts of resettlement after the Chernobyl nuclear accident. Women did not experience any significant reduction in stress following relocation. While a conclusive explanation has yet to be found, this is perhaps because the women affected were more rooted in the extended family and the community.¹⁸ Research has also found that evacuee mothers from the Chernobyl accident reported worse health than the control group eleven years after the accident.¹⁹

Women survivors of fallout during the Marshall Islands nuclear tests have told of the shame they experienced during the evacuation process when subjected to examination; being stripped naked and hosed down with liquid in the presence of their male relatives, and enduring on-site examination of their pubic hair by American male personnel.²⁰ Tales of humiliating examinations, particularly in the accounts of women, was also a repeated theme in the accounts of Japanese survivors of the Hiroshima and Nagasaki nuclear attacks.²¹

Long-term or permanent displacement can affect cultural and indigenous rights that have a gender dimension. Indigenous Marshallese women are an example: in a matriarchal society where land is passed from mother to child, displacement from land due to nuclear testing prevented Marshallese women from exercising their cultural right as custodians of land in society.²² Displacement also meant that these women lost their ability to generate income as they did on their own property because they lost access to materials needed to make handicrafts and household supplies.²³ Marshallese men were also affected by displacement in a particular way: they used to ensure food for their families by using their cultivated fishing and food-gathering skills, but in the areas they now live the ability to survive largely depends on generating cash income. People interviewed by researchers have noted that suicide has increased dramatically among young Marshallese men. The interviewees further believed that the higher suicide rate could be explained by perceived loss of worth.²⁴

SOCIAL STIGMA AND DISCRIMINATION

Japanese survivors of the bombing of Hiroshima and Nagasaki have also faced radiation-related social stigma. They were deemed ‘contaminated’, and were treated with fear and suspicion by some others in Japanese society.

Though this stigma was experienced by both male and female ‘hibakusha’—a term used to describe survivors of the atomic bombings in Japan—the images and beliefs related to female bodies seem to contribute to the intensified discrimination experienced by women in respect of marriage or reproduction. It is often the case that women, rather than men, are those blamed for sterility or abnormality in offspring. In Japan, beliefs and popular imagination about the dangers of radiation and the ‘contaminated blood’ of female survivors contributed to marriage discrimination.²⁵

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In the Marshall Islands, some women face stigmas and fears of the prospect of marriage and motherhood.²⁶

OTHER CULTURAL AND SOCIAL IMPACTS

Gendered cultural habits may also lead to different radiation effects on women and men, for example because of eating traditions. In the Russian Bryansk region affected by the Chernobyl accident, men were more likely to eat 'wild' natural foods (such as forest mushrooms, forest berries, game and lake fish) that contributed to much higher internal doses of radiation.²⁷ In Marshallese dietary customs on the other hand, women eat different parts of the fish than men,

especially bones and organ meat, in which certain radioactive isotopes tend to accumulate.²⁸

The Chernobyl nuclear accident also influenced the inner functioning of social groups and family, and the relationship between spouses. One study found that spouses of the men taking part in the clean-up of the Chernobyl nuclear accident's consequences living in the contaminated area were afraid of having a new child with them, which affected the frequency of their sexual relations.²⁹ In turn, these wives' fears about having sick children contributed to the development of inferiority complexes in their husbands, the men fearfully avoiding genetic examination that could confirm an unfavourable diagnosis.³⁰

Concluding remarks

As this paper has shown, using a gender perspective deepens insight into the humanitarian consequences of nuclear weapons. There are biological differences; women are more vulnerable to ionizing radiation than men. A number of social and cultural gender differences can also be found. These relate to psychological impact, stress, and shame in situations of evacuation and displacement, for instance, as well as to the nature and relative intensity of social stigma and discrimination.

This paper indicates that the sex- and gender-specific impacts of nuclear weapons have policy implications. As yet, these gendered impacts and implications do not appear to have been subject to comprehensive research. Nevertheless, existing information underlines the challenges of adequate humanitarian response—and thus the importance of preventing nuclear weapons from ever being used again in populated areas.

Endnotes

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