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Hiroshima's Hibakusha: The Costs of Human Health in a Nuclear Age

Jane Powell

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Abstract

At the end of World War II, Japan, as well as the rest of the world, was thrust into a new age of unbelievably destructive possibilities: the first use of nuclear weapons against human beings. Not only could such a bomb flatten an entire city, it could do so in only an instant. The poorly understood scars that were left showed a new level of war that the world needs to come to terms with. By considering the many medical effects of the atomic bomb on the victims of Hiroshima City, which encompasses the initial blast, radiation, and traumatic effects, we can gain a better understanding of the terrible costs of human health in nuclear war.

On August 6th, 1945, Hiroshima Japan experienced the first use of nuclear weapons against human beings. Japan, as well as the rest of the world, was thrust into a new age of unbelievably destructive possibilities: not only could such a bomb flatten an entire city, it could do so in only an instant. Thousands of citizens were killed in this instant, but what became even more horrific about the bomb's power were the effects left on those who survived, even if only for a few hours. While the initial intended effects of destruction represented a step beyond the "firebombing" that had become widely used against the Japanese, the long-term and poorly understood scars left by radiation and the trauma of survival showed a new level of war that the world needed and continues to need to come to terms with. As Hiroshima and its *Hibakusha* (atomic bomb survivors) struggled to rebuild their lives, a common theme emerged: the scars left on survivors

were rarely clear-cut or predictable. One result of this new, unique style of warfare was that survivors and researchers were forced to deal with these effects with hardly any previous understanding. By considering the many medical effects of the atomic bomb on the victims of Hiroshima, which encompasses the initial blast, radiation, and traumatic effects, we can gain a better understanding of the terrible costs of human health in nuclear war.

The initial effects of the A-bomb came from the combination of force and heat that were created in the blast. These were obviously the main causes of immediate death or injury for those closest to the hypocenter or for those who were not shielded by building structures. At only 500 meters from the hypocenter, there was an estimated 19 tons of pressure per square meter, and wooden buildings as far as two kilometers away were completely crushed (Hiroshima Peace Site). While many of those directly exposed to this force were thrown through the air, the real danger was the debris caused by these crushed buildings. The proximity to buildings, which were not created to handle such a blast, would prove to be an even greater danger for many. Glass, for example, was often a direct cause of death or injury, as it “flew through the air at tremendous speeds, cutting people in half, blinding them, or penetrating deep into their bodies” (Hiroshima Peace Site).

Keiko Ogura, a *Hibakusha* who often speaks about her experiences for the Hiroshima Peace Cultural Foundation, luckily only suffered small cuts from falling glass. Although her house was in the surrounding hills of Hiroshima, she noted that at even this distance the force was great enough to wedge glass fragments into cement walls (Ogura). In the instant when the bomb was detonated, it would have been impossible for people to reach a safe area away from this hazardous debris.

Even for those who were lucky enough to avoid the flying debris, there was also the risk of being trapped or crushed by the collapsing structures. The Hiroshima Peace Memorial Museum notes

that “Thousands of victims were crushed to death under toppled houses” (Hiroshima Peace Site). Yasuko Yamaguchi, a college student at Hiroshima Jogakuin University at the time of the bombing, wrote about her first-hand experiences with these destroyed buildings. The atomic bomb exploded as she and fellow students were attending chapel, and the three-story building collapsed on them, “we had tumbled over like dominos”. Although Yamaguchi was luckily unharmed and free from the debris, many of her fellow students were not. Most of her friends were trapped, badly hurt, and covered in blood. After finding one who had been trapped under a beam, “I pulled her with all my might but was unable to free her. I told her I would find a teacher to come and help” (Yamaguchi). However, there was no help. In the destruction and chaos that followed the bomb, those who were trapped or injured faced little chance of rescue; there were just too few people left who were healthy and able to help. “Thousands worked frantically to help family members pinned helplessly under buildings” (Hiroshima Peace Site). However, as the flames spread through the city, many were forced to leave in the hopes of at least preserving their own lives.

The force of the bomb was only part of the blast, as it also created incredible heat. At the hypocenter, temperatures instantly reached an estimated 3000 to 4000 Centigrade (or 5400-7200 Fahrenheit). To provide a more concrete perspective for these rather abstract figures, this temperature was twice the amount needed to melt steel, which is only 1500 Centigrade (or 2700 Fahrenheit). Humans closest to the hypocenter would have been completely destroyed by such heat, and even 3.5 kilometers from the blast, people’s skin was severely burned (Hiroshima Peace Site). The Hiroshima Peace Memorial Museum displays several “material witnesses”, giving testimony to the burns many faced: tattered uniforms, singed lunchboxes, and even preserved keloid scars (large, bulging, and sometimes painful scars caused by improperly healed

wounds) removed from patients. Most of these objects carry a very similar story: those who were not instantly killed by the heat of the bomb faced incredible burns. For Tetsuo Kitabayashi, for example, “his face was so burned it swelled up like a rubber ball. It was impossible even to distinguish his eyes and nose” (Hiroshima Peace Site). As visitors enter the second part of the museum, which is dedicated to these “material witnesses,” they are first confronted by two wax figures of a terribly burned mother and child walking through the rubble. As Hajimi Kito, having experienced from such extreme heat what many other burn victims did, related later in life “my skin just peeled off and was hanging from my body” (Terkel, 537). An unbelievable statement! Even as museum visitors stand face to face with gruesome wax figures, these injuries defy logic.

The dangers of the heat did not stop at burning victims directly through the blast, but followed them as the city, constructed mostly out of wood, began to burn. Almost everything within the two kilometers of the hypocenter was completely burned to the ground (Hiroshima Peace Site). Yasuko Yamaguchi described seeing hundreds of dead bodies floating in the nearby river, and despite the swift current, many had no choice but to jump in: they were chased there by the fire. She watched helplessly as a child was forced in on the other side, “he would be burned alive unless he jumped into the river” (Yamaguchi). At least in this case, some had a chance to escape the fire, but many were doomed by the combination of the fire and being trapped in the rubble.

Keiko Ogura described the difficulty many other survivors faced being forced to leave family or friends behind, especially for parents who were powerless to save their trapped children (Ogura). Those who survived the initial blast and fire did not walk away free: they would also carry both the physical and mental scars of the experience. With the combination of force and heat, those closest to the blast experienced some of the most powerful and horrifying effects of the atomic bomb.

Despite the horror of the initial effects of the bomb, the ordeals of survivors were far from over; the blast created by the nuclear fission in the atomic bomb also emitted dangerous levels of radiation into the area. One of the foremost research foundations, The Radiations Effects Research Foundation, also known as the RERF, has extensively studied the effects of radiation. Located in Hiroshima, the center took control in the 1970s of previous work done by the Atomic Bomb Casualty Commission, which was largely responsible for the US's initial research of radiation in the Hiroshima area. The RERF notes that people within one kilometer of the hypocenter were exposed to a "life-threatening dose", and about 50% would have died within days, or even hours (RERF). Those exposed to this high level of radiation suffered from acute radiation syndrome: the earliest effect of radiation. Victims experienced vomiting, hair loss, diarrhea, temporary sterility in men, and skin covered in purple spots (from internal bleeding) (RERF). Taeko Teramae, one of the few survivors of acute radiation syndrome, remembered her experience: "I suffered from high fever. My health began to deteriorate. The gums in my mouth began to bleed and I had many purple spots all over my body. Also my hair gradually fell out, I vomited many times..." (Teramae). Those who had seemed relatively unharmed, were soon struggling with severe symptoms and an unknown cause. This was even worse for those who had also been injured or burned by the blast. While the initial injuries may have seemed survivable to victims and their caretakers, subsequent injuries in combination with radiation greatly reduced their chances. For example, according to brochures outlining the research of the RERF, the cell damage caused by radiation exposure can lead to a suppressed immune system, "both mature lymphocytes and bone marrow stem cells were severely damaged... which together defend against microbial (or bacterial and viral) invasion. As a result, many people died from active

infections.” Furthermore, those caring for the wounded had almost no access to medical supplies, and so victims were left on their own to try to fight such infections, and often failed.

Aside from the terrible symptoms caused by radiation, its effects are also important to study because the unprepared response on the part of the people of Hiroshima on August 6, 1945 reflects the chaos surrounding the use of atomic bombs. In other words, at the time of the attack on Hiroshima, the effects of radiation on human health were almost completely unknown. As the RERF states, “because Hiroshima was the first atomic bombing in history, no one knew what to expect from exposure to high levels of radiation”. Doctors such as Shuntaro Hida, were helpless to treat patients with these symptoms, as they were totally unprepared and uninformed and referred to the syndrome as “atomic bomb disease” (Okazaki). The combination of severe radiation exposure and the inability to provide aid proved to be a new, unpredictable terror. Worse yet, because people were unaware of the risks of radiation, many were exposed even further as they did not take precautions against it. As a method of classifying *Hibakusha*, four categories were established: “(1) people who were directly affected; (2) those who, afterwards, entered the city limits; (3) those, outside the area, who took care of those who were bombed; (4) those who were in their mother’s womb” (Terkel, 536). Category two and three survivors, who would have otherwise been safe from radiation, became victims of this lack of information. Keiko Ogura, who came from a village outside Hiroshima, witnessed some of these secondary effects as neighbors and family members attempted to help. She described how a family friend and her two small children walked through the city for over three hours, in an attempt to take food to their grandmother. When they returned, they all experienced symptoms of radiation poisoning, and the youngest (two years old) died within days, as children were especially susceptible. Although this family had good intentions, they, like many others who entered the

city, paid the price, as they had no knowledge of this invisible danger. Her own father developed symptoms of the syndrome as a category three *Hibakusha*, after handling and cremating hundreds of bodies on his own property (Ogura). Although he was able to survive, his experience reflects the lack of understanding of the effects of nuclear weapons, and the unpredictability of who would ultimately die from it.

Another source of radiation exposure was the “black rain” which followed. About 30 minutes after the explosion, the ash and particles thrown into the air began to fall back onto the area around Hiroshima in the form of a thick, black rain. These particles were contaminated by radiation, and so expanded the reach of the bomb to 29 kilometers as the cloud moved (RERF). However, because the people were unaware of the danger, the rain was seen as a blessing at the time. Keiko Ogura described how many of the survivors were happy to see the rain, as they hoped it would help to put out the fires across the city. She even saw one girl who had been walking through the rain. She was covered in black completely, yet she thereby felt relief from the heat, unaware of the incredible danger she had placed herself in (Ogura). Many, like Ogura, witnessed others attempt to drink the water, creating even more danger, as they were “too burned to move and desperate for water” (RERF). These incredibly deadly effects of radiation are critical to understanding the effects of nuclear war on human health. Nuclear bombs, unlike conventional bombs, are not limited in damage to their blast radius: the invisible reach of radiation creates a new level of killing capability.

As the *Hibakusha* of Hiroshima began to rebuild their lives, the medical effects of radiation were far from clear. Aside from the immediate effects of severe radiation, lesser doses that had not resulted in acute radiation syndrome could develop into cancerous diseases. As early as 1947, Dr. Takuso Yamawaki began to notice higher than normal levels of Leukemia in exposed

survivors (RERF). At the time of Dr. Yamawaki's research, the effects of radiation on human health were still poorly understood, and so new research into the relation to leukemia had to be understood as correlation. However, as the RERF now states, "...it is well known that leukemia is the most susceptible disease to radiation." Because of this higher susceptibility, leukemia became the quickest and most easily recognizable after-effects of radiation, and "began appearing about two years after radiation exposure, and the excess peaked at about 6-8 years after exposure" (RERF). Although leukemia was still a relatively rare disease in comparison to solid cancers, within these six to eight years the rate of diagnosis for sufferers increased dramatically. The RERF compared the rates of the normal, unexposed Japanese population to those of the *Hibakusha* at different levels of exposure, and found that there was an increase of risk from 7 in 1000, to 10 in 1000. Although this increase may not seem drastic in these figures, it is important to remember that the increase in risk will also be accompanied by an increase in fatalities. For example, for those exposed within one kilometer of the hypocenter (about 1Gy of radiation), RERF observed that "death by leukemia increased by 310%". Even for the seemingly insignificant increase in risk, this presented another struggle for survivors to deal with: not only were they more likely to get this disease, but they are also much more likely to die from it. Without a clear understanding of the dangers of this level of radiation, this sort of effect would not have been predictable. The short-term intentions of a nuclear bomb's use carry many unforeseeable, long-term repercussions.

Years after the appearance of leukemia, other forms of solid cancers began to appear in survivors. According to the RERF, Gensaku Obo first began to notice higher rates of cancer in *Hibakusha* around 1956. This time frame greatly aided the research of radiation's effects in relation to both leukemia and solid cancer, as it reflected the theory that leukemia is more

susceptible to radiation, and therefore developed earlier. For example, when comparing the different rates of cancers between survivors, the RERF noticed a clear jump in leukemia cases within six to eight years after exposure, while solid cancer began to develop around ten years after exposure and steadily increased to today. The RERF also noted that after eight years the cases of leukemia began to decrease, and almost none exist in their studies today. Considering these results, it becomes clear that there are many long-term effects that survivors are forced to deal with even decades after their exposure. Even for those who were able to endure the initial aftermath, they still face the risks of their exposure affecting their future health. For example, Taeko Teramae suffered cuts on her face from debris, loss of her left eye, and later symptoms of acute radiation syndrome. Teramae began to move on with her life, despite her disfiguration, but later developed uterus and breast cancer. Although the uterus cancer was found to be terminal, Teramae was luckily able to have a successful surgery to remove it (Teramae). This reflects on the trait that both solid cancer and leukemia carry: the greater the risk of cancers, the greater the risk of death for those exposed to radiation. The RERF states that on average, for those exposed to 1Gy of radiation (within 1 kilometer of the hypocenter), the risk of death increased by 47%. Although this increase is not as large of a percentage as leukemia, it is important to note that because solid cancer is much more common, this percentage leads to an even greater death rate. What becomes clear is that the reach of the atomic bomb does not stop: the instant that Hiroshima was devastated was not self-contained in history. Its effects are long lasting, and follow survivors for the rest of their lives. Because of this, it becomes critical to better understand these consequences.

Despite the many long lasting health effects the use of the atomic bomb had on Hiroshima survivors, for many, one of the most difficult factors has been living with trauma. As Keiko

Ogura explains, “we talk about only that day, but there [is] long lasting pain” (Ogura). The pain of that day is not limited in time, but haunts the victim. Although trauma could be considered an outlier in comparison to the physical effects of atomic weapons, it is also important to consider as a part of the complete health of the survivor: to look at both the physical and mental aspects of health. Sigmund Freud attributed trauma to “...the chief weight in [trauma’s] causation seems to rest upon the factor of surprise, of fright...” (Freud, 12). The instantaneous destruction of Hiroshima, an entire city, presented a new level of surprise and terror. In many survivors, a common list of symptoms and experiences emerges that can easily be attributed to post-traumatic stress disorder, or PTSD. Cathy Caruth, who is famous for her work on trauma, attempts to describe PTSD, “...a response, sometimes delayed, to an overwhelming event or events, which takes the form of repeated, intrusive hallucinations, dreams; thoughts or behaviors stemming from the event, along with numbing that may begin during or after the experience” (4). Trauma itself is difficult to define, even for the trained eye, as each individual experiences and reacts to the trauma in a different way. Even so, when examining the testimony of *Hibakusha*, it is clear that trauma has become a major factor in their everyday lives, as many exhibit and describe multiple symptoms of PTSD.

However, before going into detail of the different experiences and symptoms of survivors, it is important to consider the history of the understanding of trauma. While we can look at both radiation and trauma in terms of the unpredictable, the difficulty of treating trauma in *Hibakusha* differs in one way: unlike radiation, which was poorly treated because of ignorance, trauma could actually be considered much better studied by the time of the bombing. Sigmund Freud had created progress in the field of “traumatic neurosis” after the First World War, which had previously been called “shell shock, combat stress, [and] delayed stress syndrome” (Caruth, 3).

However, it was very difficult for *Hibakusha* to receive treatment for these issues, as limited resources were available during the years following the dropping of the atomic bomb. Even as more aid became available, many felt and still feel discouraged to discuss their experiences, in fear of being shunned or mistreated as a *Hibakusha*. Dr. Ronald Klein, a retired professor of Hiroshima Jogakuin University, notes that out of all the survivors today, only 10% have spoken out, while the rest have opted to move on and hide the experience. For example, Keiko Ogura feared that her appearance on national television in relation to an anti-nuclear event would lead to discrimination against her relatives, and so, “people try to hide their invisible scars” (Ogura). Although Ogura is able to talk about her experience, those who cannot or will not seek this help are forced to deal with the trauma alone.

One of the most common symptoms to trauma is a delayed response. As Caruth details, “the event is not assimilated or experienced fully at the time, but only belatedly” (4). Basically, although the victim, in a way, experienced the moment of trauma as he or she was in it, the full trauma of it can register much later. For example, in a radio interview of Hideko Friedman in 1960, she describes, “...I began to hear smaller voices and smaller sounds in the background, calling for help. That I hadn’t really heard. I saw more things coming back more vividly than my actual recollection of the time” (Terkel, 540). Although she may have been aware of the calls at the time, the actual realization and clarity of the experience came to her much later. Rather than fading as a memory, she is forced back into the situation in more vivid detail. This is greatly related to the common feeling of numbness in relation to the trauma. Cathy Caruth explains the connection, that “...in trauma the great confrontation with reality may also occur as an absolute numbing to it, that immediacy, paradoxically enough, may take the form of belatedness” (6). It seems that part of the reason that the recognition can be delayed for the survivors is that they did

not fully experience the event as it was happening. For example, Friedman seemed to have a severe sense of numbing as she began the search for her mother; in her words, “in order for you to function, you must desensitize yourself. You may be moving automatically, with the simple instinct to survive. You do not feel as if you were in a real situation. You feel as if- I can’t believe this is happening to me. As if you are looking at television, something detached, outside your feelings” (Terkel, 539). Years later, she began to experience the delayed response: that “calling for help” she had not heard before. For most of us, disturbing memories can gradually fade over time, but for *Hibakusha* and their experience of such a catastrophe, reminders of trauma are constantly triggered and can even develop in intensity over time.

Further difficulty arises in the persistence of images, sounds, and feelings that constantly return to the victim. That is, these senses are not confined in the past, but can be experienced constantly. Caruth notes that “...to be traumatized is precisely to be possessed by an image or event” (4-5). For *Hibakusha*, while they are trying to live consciously beyond August 6, they are being drawn into it and repeatedly re-experiencing this trauma. For example, Hajimi Kito described being possessed by his sense of helplessness, walking past so many people begging for help, “...you couldn’t possibly provide water for a fraction of them. It was an impossibility ... I can still hear those voices very clearly” (Terkel, 537). These sorts of images constantly reappear, greatly harming the individual’s ability to cope in everyday life. Even if victims are able to consciously control these images, they can still appear in the form of dreams. As Sigmund Freud notes, “dreams occurring in traumatic neurosis have the characteristic of repeatedly bringing the patient back into the situation of his accident” (13). This inability to find peace from the trauma, even in sleep, can present terrible consequences for the mental health of the survivor. It begins to become clear why Keiko Ogura called many other survivors “the most miserable people.” In her

meetings with other survivors, she found that this is especially true of parents who lost children in the bombing: they are constantly seeing the faces of their trapped and disfigured children in their dreams, and so are often unable to sleep (Ogura). For *Hibakusha*, the cost of nuclear weapons does not lie just in the loss of loved ones, or even in deterioration of their physical health; it also manifests itself in their struggle to deal with these images.

In the case of Hiroshima, the response of victims to these repeated images also resulted in strong feelings of guilt. Even though these victims played no role in the actual dropping of the atomic bomb, small actions in relation to it are often interpreted as causation. For example, Toshiko Sekioka was a thirteen-year old student at the time and was forced by her mother to attend school, despite complaining of a headache, an all too familiar story. However, she was killed like many other students working on the creation of fire lanes in Hiroshima. Because her mother, Aiko Sekioka, survived, she felt immense guilt that she had caused Toshiko's death: "I forced her out to work for her country. I killed her." Aiko's actions are only, in a way, reflective of her motherly duty: she was trying to do what was best for her child. And yet, when the coincidence of those actions led to Toshiko's death, Aiko tortured herself with self-blame until her death" (Hiroshima Peace Site). Similarly, guilt also seems to stem from the helplessness survivors experienced afterwards, feeling overwhelmed by not being able to do anything during the suffering. Hideko Friedman felt guilt in the years after, but could not pinpoint what had caused it. After she began to remember the "calling for help", she began to understand that the guilt came from her helplessness, "[t]hen I was able to say that this was why I felt truly guilty. That I wasn't able to help them" (Terkel, 540). Multiple symptoms of trauma can be linked together in this way, so that the cause of her guilt could only be found after her delayed recognition of experience; it is difficult to unravel the different facets of trauma as it relates to the individual.

Therefore, the unpredictable nature of trauma plays a crucial role in our understanding of the costs of nuclear weapons on human health. The true cost of a traumatic event to an individual is unknowable: it is trapped in the mind and continues to harm the mental health of the victim for decades after their experience.

These consequences need to be considered when discussing nuclear weapons. The atomic bomb is not limited to “that day,” and neither should our discussion of it be limited in such a manner. For many who speak up against the bombing, a common goal arises: to make that day real to those who will never be able to comprehend it. With the number of nuclear weapons held around the world today, which are all much more powerful than the bomb used against Hiroshima, we can no longer afford to think of victims as numbers, or as distant parts of the past. Sixty-nine years later, the suffering continues for *Hibakusha* and their families, and this suffering can happen again. Because of this, it becomes critical to look at this suffering, both physical and mental. For the sake of humanity, we need to understand these costs in order to make it real to us, to really know what the chant “no more Hiroshimas” means.

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