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chernobyl

Psychological Fallout: The Hidden Mental Health Crisis



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Abstract:

This essay investigates the psychological consequences of the Chernobyl nuclear disaster in terms of cognitive impairments, PTSD, and displacement trauma among liquidators and the population in general. The research points out a variety of long-term mental health effects, including depression, anxiety, and feelings of isolation.

Overview:

Few concepts in science are as complicated and tedious as nuclear power. Harnessing the power of nuclear fission is a task that requires expertise and patience. However, on April 26, 1986, reactor four of the Chernobyl Nuclear Power Plant in Ukraine was in the hands of 32-year-old Akimov and his operators, Toptunov, Kirshenbaum, and Stolyarchuk, all of whom were under the age of 30 and very unqualified to be working in such a position, (Ploky, 2023, p. 195). The senior manager of the control room, Diatlov, insisted on finishing a test as quickly as possible to impress his superiors. His pride caused the young operators to attempt a procedure they were not trained to complete. This resulted in two different

internal combustions of Reactor 4. At 1:24 am, radioactive particulars were released into the atmosphere (Ploky, 2023, p. 193). Merely 36 hours after the explosion, the Soviet Union evacuated nearly 200,000 people to protect them from further radiation exposure (Frequently Asked Chernobyl Questions, n.d.). However, 3.5 million people were not displaced or given government relocation grants. They were forced to stay in their homes that had been contaminated by radiation (“Psychosocial Effects of the Chernobyl Nuclear Disaster on JSTOR,” n.d.). The nuclear disaster at Chernobyl would go on to cause severe cognitive and emotional issues for the people of the Soviet Union.

This research essay intends to focus on the impacts of the Chernobyl nuclear disaster from the perspectives of the different ways it devastated the people of the Soviet Union. First, it will review the extent of the radiation exposure effect from a cognitive perspective. Next, it will illustrate the emotional impact of the radiation, including the increased cases of post-traumatic stress disorder (PTSD), depression, and anxiety. Finally, it will discuss the long-term consequences of



displacement trauma and anxiety towards the government of the Soviet Union and how this manifested itself in day-to-day life. The overall purpose of the essay is to explain how insight into the aftermath of the Chernobyl nuclear disaster contributes to more successful mental health interventions following other such disasters.

Cognitive Impacts of Radiation Exposure:

Following the disaster at the nuclear power plant, a clean-up team, called liquidators, was needed to dispose of the radioactive waste at Chernobyl to attempt to minimize environmental damage. It is estimated that 830,000 people were given liquidator status for Chernobyl's damage control (Nesterenko et al., 2009). All of these liquidators were exposed to varying degrees of radiation, all of which were dangerous to their health.

35 years after the explosion, scientists began to find a "high prevalence of cerebrovascular diseases, organic mental and depressive disorders, cognitive impairment and even dementia" (Loganovsky & Marazziti, 2021) in liquidators. One of these cognitive impairments was the left, dominant cerebral

hemisphere (Loganovsky & Marazziti, 2021). This part of the brain controls functions like mathematics, language, speech patterns, memory, and analytical thinking (Shmerling, 2022). Unsurprisingly, this led to a decline in the liquidators' IQ scores as well as an increase in dementia among the workers (Loganovsky & Marazziti, 2021).

Furthermore, there were also abnormalities observed in the serotonin transporters of the brain. Because the brain's reaction to radiation is to ionize it, the brain has been damaged on a cellular level (Loganovsky & Marazziti, 2021). This disrupts the flow of serotonin. Serotonin is a vital chemical (and hormone) that helps control human moods, stability, body temperature, and libido (Bakshi & Tadi, 2022). Because this critical neurotransmitter was being tampered with, many of the liquidators also experienced depression. A group of Lithuanian liquidators were tested for anxiety and depression 35 years after the incident and they were seen to have a depression rate of 23.4% compared to the control group which was only 4.7% (Kazlauskas et al., 2023).

Emotional Impacts of Radiation Exposure:

In addition to these cognitive impacts of radiation exposure among liquidators, the general public also began to suffer in the form of mental disorders. In the years after, the people of the Soviet Union began to increasingly suffer from anxiety, depression, paranoia, delusions, and PTSD. Because radiation is not visible to humans, a constant fear of it being all around but just not visible began to brew in people. Researcher, Dr. Galina Rumyantseva, who conducted studies in Russia in the 1990s, consistently reported people claiming to be able to see the radiation all around them. In Moscow, in 1991, 38% of citizens claimed that they were affected by depression and/or delusions (Rich, 1991).

Anxiety about physical health was also extremely prevalent following the event. Many studies found that in the Soviet Union, anxiety was twice as high as it was in neighboring countries. Unfortunately, this anxiety is likely to continue to spread due to parents, who lived through the Chernobyl disaster, spreading ideas of contamination and radiation to their children.

Although they might believe they are just being protective of their kids, often they instill fears of radiation that cause extreme anxiety and continue generational trauma (Chernobyl's Legacy: Health, Environmental and Socio-Economic Impacts and Recommendations to the Governments of Belarus, the Russian Federation and Ukraine, n.d.). Furthermore, Pregnant women of the USSR, and other European countries who were affected by the radioactive fallout, were so concerned about how the radiation would affect their child, that they began having abortions in large numbers, often from advice from their doctors. It is estimated that one million women in affected European countries terminated their pregnancies directly following the reactor explosion (Chernobyl Accident 1986 - World Nuclear Association, n.d.). The psychological and emotional toll these decisions took on these women at the time must have been incredibly intense. Especially at a time when abortions were not viewed in the same way that they are now, many women were shamed and ridiculed by their governments and churches (Gillette, 2019). This of course added an extra layer of stress to their situation. However, the anxiety caused by the Chernobyl accident was enough to persuade these women to make life-altering decisions.





Post Traumatic Stress Disorder Among Liquidators:

Post-traumatic stress disorder (PTSD) is an anxiety disorder that manifests after a person has experienced a traumatic or life-altering event. The disorder often leads to vivid flashbacks of the traumatic event, often so real that the person feels like they are back in that distressing situation, paranoia about the potential dangers about their surroundings and/or their loved ones, being easily startled, having outbursts of rage towards things that are not normally seen as upsetting, issues sleeping, issues getting aroused, and depression. PTSD commonly develops in soldiers after a tour, victims of sexual assault, victims of physical abuse, people badly impacted by natural disasters, and cancer patients (What Is Posttraumatic Stress Disorder (PTSD)?, n.d.).

Considering the situation, it is not surprising that many liquidators were diagnosed with PTSD after working in Chernobyl. Two decades after the disaster, studies show that approximately 45% of liquidators have PTSD. The liquidators that were exposed to the

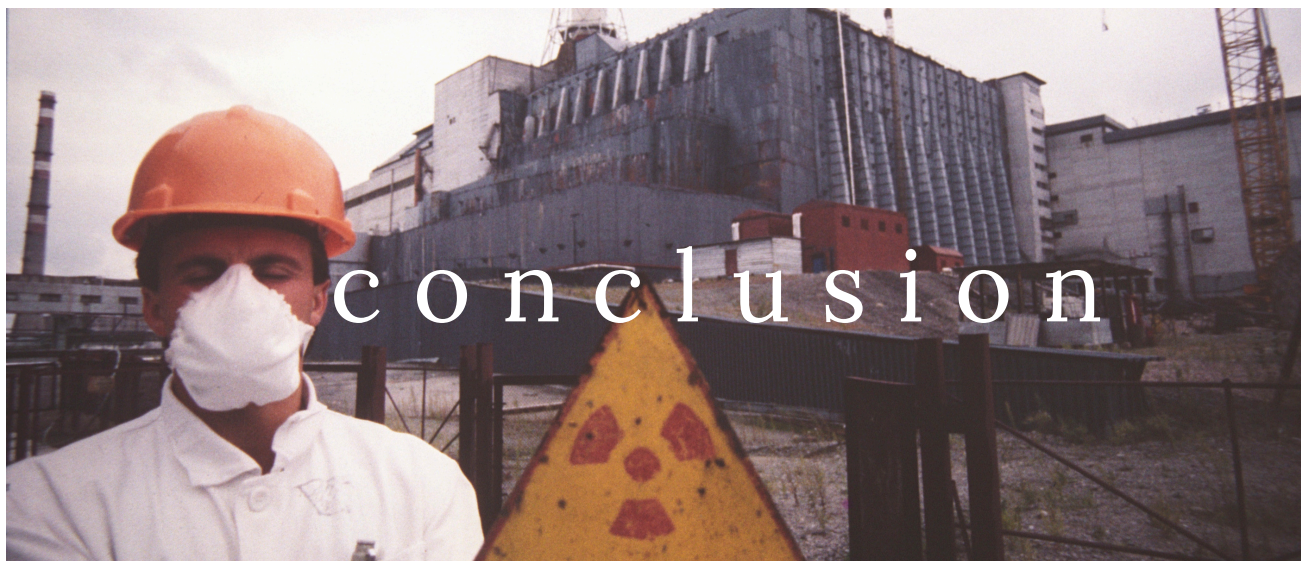
most radiation were also seen to have worse symptoms of PTSD (Bromet et al., 2011). Although the majority of the liquidators were called in weeks, months, and even years after the explosion, PTSD developed severely in the first responders as well. One month after the explosion, 28 firefighters who were called to exterminate the fire in the power plant died of Acute Radiation Syndrome (ARS). Nearly two hundred firefighters from the Kyiv area were brought to the reactor to exterminate the fire. Many of them had the taste of metal in their mouth and experienced a painful sensation all over their bodies. Many of them were struggling to stand due to the nausea and were vomiting. These firefighters were not informed that they were going to a radioactive site, nor were they given proper safety equipment for the hazardous situation. After seeing their friends and co-workers suffer from the initial side-effects of the radiation, and then later the diagnosis of ARS, they began to develop PTSD in rapid succession (Plokyh, 2023, p. 202). Many of them experience constant nightmares, hypervigilance, alcoholism, increased anxiety, insomnia, and flashbacks (Laidra et al., 2015).

Displacement Trauma:

Displacement trauma is a mental health issue and a type of PTSD that comes when someone has recently and suddenly changed environments and is unable to fit into their new surroundings (Dowd, 2020). The Chernobyl disaster led to the forced evacuation of 200,000 people in the exclusion zone, which covered 2,600 square kilometers in Ukraine (Frequently Asked Chernobyl Questions, n.d.). The relocation was sudden and unexpected as it occurred only 36 hours after the explosion. People in the exclusion zones did not even have time to process the event, let alone pack their belongings. This resulted in families having to leave behind precious belongings and family pets that they would never see again. The people who were relocated were completely unfamiliar with their new surroundings and often had no social ties in their new homes. This led to feelings of isolation which only contributed to the displacement trauma disorder. Further, the permanent residents of the relocation sites associated the new residents with the radioactive waste from Chernobyl and thus began the “Chernobyl Stigma”. The discrimination towards the refugees only contributed to their depression. It was particularly hard on the elderly as many of them had lived in the same village/town for their entire lives and were now being forcibly

their entire lives and were now being forcibly relocated for a reason no one understood at the time. Furthermore, children who were displaced were more likely to develop anxiety disorders and depression than their peers (“Psychosocial Effects of the Chernobyl Nuclear Disaster on JSTOR,” n.d.).





The impact that the Chernobyl nuclear disaster has had extends far past just physical and environmental consequences. This research is still relevant to scientists today as it helps inform them of the impacts disasters have on civilizations, including the effects of radiation-induced cognitive impairment, cases of PTSD among liquidators and civilians as a mass phenomenon, and long-term consequences of displacement trauma. Knowing this psycho-social impact is not only a requirement for understanding the extent of human suffering from the Chernobyl catastrophe but also for forming the basis of mental health interventions during similar disasters in the future.

The world still lives with the probability of the repetition of a nuclear accident or any other large-scale disaster. Under these circumstances, it becomes more than imperative that we learn from the experiences of Chernobyl's affected people. The mental health consequences of such events are often overlooked in favor of immediate physical needs; nevertheless, they can be equally debilitating and long-lasting. Further research is needed to examine the long-term psychological effects among future generations, the success of

intervention strategies that are carried out in these cases, and how communities could be better supported following a tragedy.



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