

## ORIGINAL ARTICLE

# Embodying the nuclear: The moral struggle of family care in postfallout Japan

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## Abstract

This paper examines the moral struggle of family care by focusing on parents' efforts to raise "healthy" children in irradiated environments of Fukushima following the 2011 Fukushima Daiichi nuclear disaster. Drawing on fieldwork between 2017 and 2020, it explores the lived experiences of primary caretakers, mostly mothers, as they strive to cultivate "health" in their children while negotiating conflicting logics of radiological exposure, risk assessment, and gendered childcare. Central to this endeavor is what I call an ethical labor of "balancing:" the daily negotiation between protecting children and allowing them to live fully in risk-laden environments. Emphasizing intercorporeal and interpersonal aspects of embodied care, the paper examines the nuanced ways in which three mothers recalibrate notions of health, personhood, and responsibility to safeguard their children's everyday lives. Such notions of "health" carry significant implications for family dynamics amid the uncertainties of postdisaster life. By highlighting the critical role of family care in potentially stigmatizing environments, the paper advocates for developing frameworks that address the real-life complexities of making life in an increasingly compromised world.

## KEYWORDS

embodiment, family, Fukushima, health, kokoro, personhood, radiation

## Abstract in Japanese

本論文は、2011年の東京電力福島第一原子力発電所事故後の放射線環境下で、「健康」な子どもを育てるために奮闘する親の姿に着目し、家庭内ケアにおける道徳的葛藤について考察する。2017年から2020年にかけての現地調査に基づき、放射線被曝、リスク評価、ジェンダー化された育児の相反す

るロジックを交渉しながら、子どもたちの「健康」を育むために努力する母親たちの生活経験を探究する。この取り組みの中心にあるのは、「バランスをとる」という倫理的労働である。これは、被曝リスクを伴う生活環境において、子どもを守りながらも充実した生活を送らせるために、日々交渉することを意味する。特にケアの相互身体的 相互人格的な側面に着目し、三人の母親が健康、人格、責任の概念を再構築して、子どもたちの日常生活を守っていく様子を丹念に検討する。このようにして形作られた健康の概念は、災害後の不確実性が続く中で、親子のかたち、そして、家族全般のダイナミクスに影響を及ぼす。本稿は、潜在的にステイグマを生じうる環境において家庭内ケアが果たす重要な役割を強調しながら、ますます妥協を余儀なくされる世界において、生活を営む現実的な複雑さに対応するためのフレームワークの構築を訴えるものである。[身体化、健康、家族、人格、こころ、放射能、福島]

## INTRODUCTION: “FUKUSHIMA CHILDREN” AND THE NUCLEAR CRISIS

There is really no way to manage the stress. Look out the window—what do you see? I see vast fields that I know have been contaminated. Where has all the radiation gone? These questions can be endless. The *zawazawa* [a crackling sound] on my mind will never disappear. [...] So, as a mother, I compromise everyday. I must be careful not to be consumed by negative thoughts. Doing so doesn't make anxiety go away, nor my daughter's thyroid clean. But that's how I'm trying to protect my daughter's health, both her body and mind.<sup>1</sup>—Fumie,<sup>2</sup> Fukushima, 2018

On March 11, 2011, a magnitude-9 earthquake and tsunami triggered nuclear meltdowns and hydrogen explosions in Northeastern Japan, spreading large amounts of radioactive materials into open environments. The Japanese government responded by raising permissible levels of radiation twentyfold (from 1 to 20 mSv in annual dose), declaring that heightened levels of radiation would not pose “immediate risk to health.” While encouraging residents to resume their everyday activities at home, work, and school, it also maintained a neoliberal stance that whether to live within or move away from risky environments is a matter of individual choice. These policy decisions minimized the overall cost of post-disaster recovery by normalizing the acceptance of higher-than-usual risk in areas exposed to the fallout. At the same time, they subsequently gave rise to widespread “anxiety” (*juan*) over the health risk of radiological dispersal. Scientific debates continue to focus on whether those forced to live with heightened risk levels will manifest symptoms attributable to dispersed radiation.

Such discussions about the uncertain impact of radiation's risk have centered around the child's body, partly because of their biological vulnerability to long-term exposure due to their faster cell division than adults. In this sense, the health of “Fukushima children” (*fukushima no kodomo tachi*)—those who are living amid what is assumed to be a tolerable yet risky level of radioactivity—has become the barometer to evaluate the potential impact of the government's deregulating move on the reproduction of the nation's future body politic. And yet, such approaches generally do not address the actual families of those children

in making their biological health in scientifically risky environments. This disregard toward care work in imagining the stakes of health postfallout is problematic because it not only drives care work—and gender inequities by extension—out of the picture in formulating the relationship between health and risk, but also conceptually downplays the effects and affects of nuclear risk by limiting their interpretations into established fields of references such as specific disease categories. This gap is what I turn to in this essay by foregrounding the kind of “health” that parents like Fumie strive to cultivate in their children while living with and against radiation at the margins of regulated hazard zones.

Between 2017 and 2020, I met child-raising families living in variously exposed towns of Fukushima, forming close connections with twenty families. Interacting with the primary caretakers of the children, mostly mothers and occasionally fathers, I noted a common theme: parents, like Fumie, strongly believed that they were actively crafting a degree of healthiness in their children in their daily lives. I argue that it is through what I call an ethical labor of “balancing” that the parents cultivate the health of their children, which helps these families to survive the uncertainties of nuclear risk that seep into everyday life through conflicting norms of safety, risk, and childcare. To demonstrate how such generative notions of health emerge across heterogenous family dynamics is what I aim to do in this essay.

In the following sections, I delve into the complexities of living with the uncertain risk of radiation by focusing on the lived experiences of child-raising families in postfallout Fukushima. Drawing on anthropological approaches toward embodiment, I shift focus from an individual-centered view of the body to a broader consideration of the body as a peopled assemblage of feelings, perceptions, and reflections. This approach emphasizes the significance of understanding the body not just as a singular entity, but as an interconnected dynamic of shared human experiences that is animated by moral personhood, such as ideas of parenthood and childhood. Focusing on three families, the analytic sections examine how parents negotiate the intertwined physical, psychological, and material dimensions of health and risk by trying to perceive and relate to their children’s bodies and minds differently. The families I discuss construct a livable present through the tangible and imaginative experiences of their bodies and minds, amid the persisting uncertainties of radiation exposure. Thus forged visions of health, I argue, are an ethical achievement of everyday care labor.

## **SITUATING THE NUCLEAR BODY: RADIATION ANXIETIES AND THEIR EMBODIMENT**

Almost three decades ago, Margaret Lock coined the term “local biologies,” further developed later into “situated biologies,” demonstrating how sociocultural processes structure biological materials, rather than being epiphenomenal to it (Lock, 1993; Lock, 2017). Focusing on embodied intersections of power dynamics, such approach has helped to illuminate how social inequalities corporeally manifest through suffering and symptoms in biologies as well as how the patterns of the healthy and the sick closely overlap with historical violence (Farmer, 1996). Yet, in the following decades, the category of “body” itself has become a powerful tool for disciplining, dominating, and normalizing people, particularly through knowledge practices that prioritize biomedical understandings of health as the ultimate good (Metzl & Kirkland, 2010; Yates-Doerr, 2017). Yates-Doerr (2017) makes a keen observation that medical anthropologists have become “too focused upon bodies,” that is, producing generalizing descriptions of bodies while leaving unquestioned the assumption that the individual body entails parameters of health universally across different places (143–144). Warning that such presumption could render “ontological violence,” she proposes for situated engagement with the body itself as a category-in-making, putting forth a call to embrace diverse and distinctive modes of cultivating bodies and minds (2017, 150–151; cf. Haraway, 1988).

In anthropology of health, Thomas Csordas’s methodological framework of embodiment, or “embodiment as a paradigm,” has provided enduring inspiration for examining the body as a dynamic of perpetual negotiation through practice and perception (Csordas, 1990). Based on the analysis of the therapeutic use of language and reconstruction of the self in healing rituals, he demonstrates how embodiment can be leveraged to complicate the presumption of binaries, including the subject–object and the mind–body.

Rather than a physical entity that is layered with social meanings to function, the body provides the “existential ground of culture” at large (Csordas, 1990, 5). Such somatic attention to the performativity of the body (Csordas, 1993) advances studies of embodied cultures and cultured embodiments by generating analytics that are rooted in the emotional and existential aspects of experience such as sensations, attachments, feelings, and imageries—what used to be denied as lacking scientific objectivity. In doing so, it allows us to see, not only how bodies and minds are biosocial processes (Lock, 2002), but also how people share, express, and interpret the vitality of life through heterogeneous practices—which often come in tensions with normative definitions of biomedical health: the (Western) “body proper” (Garcia, 2010; Stevenson, 2014; Street, 2014). Working in the margins of health regimes makes observable such dynamics that tend to be masked by the goodness of health, as anthropologists have paid increasing attention in recent decades for examining conditions of chronic illness, debility, and disability (Agard-Jones, 2013; Kim 2017; Terry 2017). When the stakes of the body–mind–environment entanglements take shape at the edges of epistemic certainties, these nonessentialist and culturalist analyses have the potential to create a condition that is faithful to both the felicities of lived experience and the socioenvironmental–historical efficacy of biomedicine itself (Mattingly, 2010; Meinert & Seeberg, 2022).

I draw on these critical insights on embodiment to examine how child-raising families seek livable measures of “health” while living in anxiety-ridden environments in the aftermath of radioactive fallout in Fukushima. In Japan, the potential impact of radioactive contamination on “Fukushima children” has been predominantly examined with a focus on one specific disease category: childhood thyroid cancer.<sup>3</sup> Little outside the “counting” (Yates-Doerr, 2017) of their thyroids is discussed regarding the long-term impact of the nuclear disaster in public discourses in Japan. What counts as “health” here remains firmly tied to the schematic understandings of the body as “the battery of organs” (Canguilhem, 2012, 51–58), which underpins a one-radioisotope-to-one-disease approach, for example, iodine for thyroid, cesium for heart, and plutonium for bones. By simplifying the interactions between radioisotopes, places, people, and more, into a spatially flattened dynamics of demarcated space, bodies, and organs, this ostensibly objective, or “scientific,” approach obscures the complex ways that the uncertainty of the fallout reconfigures people’s lives over time—and how it’s already been the case—by “externalizing” what doesn’t fit within equations as redundant (Adams, 2016; Murphy, 2006). By foregrounding family care in discussing the health of “Fukushima children,” I disorient the microscopic attention to the child’s body, and instead, demonstrate how their bodies and minds are molded through carefully arranged joy, friendship, and trust outside of the “body proper,” against the “miniaturization” (Lock, 2020) of the irradiated environment as merely a biological concern confined to a womb, an organ, or a cell. The focus on everyday life is significant when the negotiation of radiological health for biologically vulnerable children has been largely relegated to individual families.

In Japan, radiation exposure isn’t just a physical experience that happens in a vacuum but constitutes a terrain of political, cultural, and historical meanings, as critical scholars have variously conceptualized by drawing on the term “nuclear” (Gusterson, 1996; Hecht, 2012; Kumaki, 2022; Masco, 2014; Morimoto, 2023). On the one hand, the nuclear is collectively embodied through the iconic images of mushroom clouds and atomic bombing victims (*bibakusha*) which symbolize the moment of national defeat. These images and narratives have been passed down through generations and embedded in the national consciousness (Yoshimi & Loh, 2012), often exceptionalized through the trope of “the only atomic-bombed country” (*yuitsu no bibakukoku*). On the other hand, the nuclear is a source of national pride in that the country’s rise as a global power, technologically and economically, has been historically entwined with the emergence of the nuclear industry as a “national policy” (*kokusaku*). Yet, similar to the “national sacrifice zones” in the United States, such nation-level reinvention of the “bad” atom to the “good” atom has been rationalized and implemented across the rural–urban divide; now crumbling infrastructures of nuclear reactors were actively installed as in special zones of “reactor-hosting regions” (*genpatsu ricchi chiiki*)—jurisdictional black box that calculates potential injuries in terms of cost and benefit—for the sake of bringing national wealth to underdeveloped areas such as Fukushima (Takahashi, 2012).<sup>4</sup>

Such complex legacies of Cold War inform a nuclear milieu for child-raising families in postfallout Fukushima. The emphasis on future risk of molecular mutations has prompted a “politics of protection”

(Weston, 2017) across the nation, placing “Fukushima children” at the center of biogenetic imagination of the body politic (Morris-Suzuki, 2014; cf. Scheper-Hughes & Lock, 1987). Yet, at the local level, while the state prioritized “building back better” the regional economy of Fukushima from physical damages of the earthquake and tsunami (Yamakawa & Yamamoto, 2017), the need to deal with radiation’s risk has been largely sidelined as not exactly a productive way to talk about the disaster, even antagonized as damaging the interests of local people and places, by suppressing and belittling dissenting mothers (Kimura, 2016). The state’s neoliberal stance that people should make their own risk choice regarding whether to live with higher-than-usual risk or move to an elsewhere has sewn disconcerting seeds for conflicts, jealousy, and self-blame for those whose roots are too deep to simply leave the region (Yamashita & Kainuma, 2012; Yamashita et al., 2013).

Epidemiologically speaking, there is no “signature disease” for radiation, let alone “sick role,” with which people living in Fukushima could lay claims to their identity as nuclear bodies toward the state. And yet, the recovery itself has largely relied on women’s reproductive labor in their homes and communities through not only civil engineering projects such as campaigns and community-oriented programs (Kimura, 2018; Koikari, 2020) but also institutional mobilization of the home as a backup shelter for keeping schools open whenever the airborne level exceeds a target level of permissible dose since April, 2011. Refusing to participate in such state-level strategies could lead to social isolation and criticism for both parents and children. Under such circumstances, the stakes of embodying the “nuclear” in everyday life are not limited to its im/perceptibility or in/visibility. Parents with at-risk children are rather worried about potential discrimination for both themselves and their children, much like what Tine Gammeltoft (2014) observed among Vietnamese families eschewing discussions of war-related toxicity in the aftermath of Agent Orange. While radiation has become less “sayable” (Das, 2007) in both public and private life, parents in my research, primarily mothers, often faced everyday dilemmas as they strive to care for their children while negotiating tolerable risk and elusive health at the level of norms.<sup>5</sup>

Many parents were well aware that their children were being discussed mainly in terms of thyroid cancer. But, for most parents, their notion of health was informed more by specific occasions, relations, or knowledge concerning their children’s daily life, rather than that of one organ, one symptom, one disease. Instead, they almost unanimously talked about seeking a “balance” when it came to their children’s health. In interviews and conversations, I heard time and again that “striking a balance” (literally *baransu o toru*) is what they do for the sake of their children, to allow them to live well amid nuclear risk. As I learned, balancing indexes a variety of efforts used to produce a livable life otherwise inescapable from radiation’s risk—a practical strategy that seemed distinctive to the parents who must negotiate these risks while living in nuclear-affected hometowns. Families who moved elsewhere did not speak of balance as a significant aspect of their postnuclear lives. Balancing, put differently, seemed to me a way of exploring how health is imagined when a “healthy” distance from risky environments is not possible. How, then, do families seek a balance to raise “healthy” children in a risky everyday?

Among many possibilities of studying the everydayness of the nuclear, this paper centers on how the fallout has altered the texture of family dynamics, especially the parent–child relationship. Methodologically, I analyze the caring narratives of three mothers to investigate how “health” is rendered as a living category as they live out a nuclear milieu, focusing on the moral dynamics of health and personhood in family care. In her extensive study on African American families dealing with chronic conditions, Cheryl Mattingly (2010) advocates for subject-oriented, ethical approach over biopolitical ones to examine how people maintain viable senses of life amid the uncertainty of illness and healthcare system. As she tells us, a significant portion of these struggles include contending with how to reconstruct a personhood, when the Foucauldian notion of subjugation tells only part of the story (Mattingly, 2014). Medical anthropologists have also utilized the notion of personhood to depart from the binaries of self/society, body/mind, and nature/culture while simultaneously illustrating how such categories get enacted in practices driven by universal models (Kondo, 1990; Strathern, 1988; Street, 2014). Drawing on these insights, I examine how attentive forms of family care reconfigure the parent–child relationship by giving rise to a distinct ontology of interconnected body/mind with implications for both parties (Jackson, 2023). The central tension revolves around whether radiation exposure is a transient health risk or an enduring alteration of family

life. The performative potential of care is crucial in understanding how parents negotiate this tension by grounding the porosity of their children's bodies and minds (Lock & Farquhar, 2007) as a basis for enacting what I call an ethical labor of "balancing."

## RESEARCH CONTEXT AND METHOD

This essay is based on ethnographic research I did between 2017 and 2020. In 15 months spread across three years, I met 120 families who were living with higher-than-usual risk of radiation exposure in the aftermath of the 2011 nuclear fallout. Regionally, their homes are in inner cities of Fukushima Prefecture, mainly cities of Fukushima, Koriyama, Shirakawa, Iwaki. These areas, or the "gray zones" of the 3.11 disaster (Yamakawa & Yamamoto, 2017, 2), have been at the center of radiation debates because they were governed through loosened standards of radiological protection outside (previous) evacuation zones despite the evidence of radioactive contamination. I interviewed parents, played with their children, made home visits, went on picnics with them, and followed them to local gatherings such as tea parties, parenting sessions, and talking circles (*zadankai*). Although many parents felt that it was unjust and absurd that they were forced into enduring a disproportionate amount of risk (compared to both other "Japanese" people and global standards), they couldn't afford a distance for acquiring a better level of radiological safety for their children and themselves due to various reasons such as a job, a family farm, or caring duties for elderly relatives. How, then, could many of them view themselves as actively caring for their children concerning radiation? I carry this question forward as I discuss how three mothers conceptualize the stakes of risk, health, and life while continuously recalibrating their presence for their children, and vice versa. In what follows I present the caring narratives of the three mothers before discussing their implications.

## FUMIE AND MAO

Fumie, a mother of two daughters, ages one and three, living in an exposed town in Fukushima, fled her home at the time of the disaster, but eventually came back because she didn't have any friends or relatives she could turn to outside Fukushima. While staying at home, she searched for any helpful information she could find on the internet about radiation's risk. NGOs, scientists, and the media all diverged on how much risk should constitute evacuation needs, but they all agreed on two facts. First, children would be affected the most by chronic exposure through DNA or cell damage. Second, the best way to mitigate this was to distance risky environments altogether—which was not an option available to people like Fumie.

When Geiger counters became available through the ward office (for encouraging self-decontamination), Fumie's belief that the inside of her house would be the safest place for her daughter was shattered. The measurements differed among the four rooms, and all of them were higher than the estimate made for predisaster times. After finding out that one room at the center of the house was a tad lower than the other rooms, she and her children came to spend most of their time there. To protect her children's health, what Fumie could do was to shield her two children from any possible contact with the environment outside the home. So, she started confining her daughters to inside as if she were "caging them up," in her terms.

There was little that the children could do inside the house, so she kept the TV on all day. Her daughters often spent over 10 hours a day watching TV. After a year and a half, Fumie noticed that her 5-year-old daughter, Mao, had stopped laughing at some point: "She just seemed unwell" (*genki nai na*). Taking this as a sign of developmental disorder, Fumie decided to take her outside. Because most public places in her town were not decontaminated until 3 years later, she drove 3 hours to find a small playground in a different prefecture. But, unlike her expectation that the daughter would get "naturally excited because that's how children are," Mao did not show any interest:

She just stood there frozen, not moving or anything. I led her hands to the sand and the tree. She was frightened. She stiffened with fear. When I stopped prodding her, she went straight back to the car and played an animated video she had been watching on the way there. It was less than five minutes that we were actually on the playground after driving three hours. I feared that I had broken my child. I think, in fact, I did break her [*kowashita*], for a time, at least.

It was not only her daughter who suffered during the period of confinement. Whenever her daughters laughed, Fumie yelled at them because, as she spoke later, she was also “losing her mind” (*ki ga kurui sou de*):

I was doing nothing other than just watching my children and thinking about the bad situation we were in. I would yell at them when they get closer to the window or A/C. I was furious whenever I found they were laughing. I would think to myself, ‘How dare you laugh like everything’s okay when your mother has to sacrifice so much to protect you?’ Every step I took outside the home felt suffocating and I resented being a mother. If you had seen me back then, you might have thought of me as an angry demon [*oni*], as if taken over by something. Some people may call it abuse... But no one told me that what a mother does can actually harm her child. So it took me a while to realize what was happening with my daughter because of what I did.

In her idealized notion of motherhood, efforts taken to protect her child could not possibly harm her daughter. But, as she learned over time, this norm of domestic care did not make sense in the everydayness of postfallout Fukushima. By “breaking” her child, Fumie said she was also breaking herself, becoming a “poisonous parent” (*dokuoya*): a parent who wills their definition of care and protection onto her child without taking the implications of this into proper consideration. She was becoming harmful to Mao’s growth.

After this day, Fumie had to reconsider what “protection” should mean or look like where they live. What is protection when radiation permeates the environment within which one must live and cultivate life, rather than a separate entity that can be removed from one’s everyday milieu? For Fumie and her children, the outside environment was not merely a source of risk, but something they needed to turn to for bringing back her daughter’s health.

Since then, Fumie has been trying to “fix” her daughter by making “choices” to cultivate deliberate contacts between Mao’s body and the outside environment. This meant for Fumie that she needs to make efforts each day to forge a different orientation toward her living environments and her perception of her children’s body. She began to take Mao out for a walk everyday, starting with 30 seconds. She also went on trips outside Fukushima with whatever money she could find. About this, she emphasized the need to find a “balance” by trying to imagine “what’s happening on her daughter’s mind:”

Now I think I was only taking care of her body (*karada*) while neglecting her mind (*kokoro*). I could not see that, without a healthy mind, her body was vulnerable to getting sick. So, as a mother, I must give up everyday to live here.

This also marked an epistemic shift; her decisions are no longer based on the principles of risk models and health norms. Measures for this kind of health—in the sense of recovering the energetic connection between the body and the mind in her daughter—depended less on a Geiger counter, she told me, but more on a corporeal/kinesthetic knowledge that Fumie produced and retained in interactions with and through daily observations of her daughter. As they went out more often, Fumie diligently recorded what they did for how long and where, and how her daughter behaved, ate, or slept, or what they talked about. She also “gave up” each day, thinking of how a mother should restrain her impulses for protection. This is

how her daughter became “healthy” again in two years, by which Fumie meant not fearing the soil or the trees outside.

## KAZUMI AND TORU

Kazumi is a mother of two sons, ages eight and ten at the time of the disaster. Upon hearing about the explosions, she fled with her children to a relative’s place, a few hours farther from the power plants than her home, to escape the radioactive fallout. Staying away for a week, she anxiously waited for the plume to pass to some place far from her home. However, to her frustration, she learned later that her home and her relative’s were exposed to a similar level of radioactivity. Flowing in a direction different from the seasonal wind people knew, the plume had unexpectedly spread toward the southwest through wind and rain, following the same road Kazumi had taken to run away from it.

As someone who works daily on a family farm, she came to hold vast knowledge about contamination in her town. Despite increasing worries about the health of her children, leaving was not an option for Kazumi. As a homemaker, a mother, and a worker, she contributed to the livelihood of her family and the caring duties for elderly relatives. After five years of failed attempts to move out, she was left with “nothing but stress” and a bottomless sense of guilt toward her children, feeling as though she was “failing to protect them everyday.”

Like Fumie, the first thing Kazumi did to protect children was to prohibit her sons from going outside unless absolutely necessary for schoolwork. However, when Kazumi said no to her first son’s field trip with his friends from school, she realized that the moment of having to “give up” had come earlier than she wished. Although her son, Toru, did not directly confront her, he stopped talking to her, or anyone at home, retreating to his room except when he had to come out to eat. She saw a “shadow” in his face when he slipped out of sight, stayed in bed, and avoided looking at her. Toru’s dispirited behaviors made her see what she was doing to him; in her words, she was “spreading depression” everywhere in the home.

Eventually, Kazumi decided to “compromise.” She said, “I chose to actually live because, back then, I spent all my time just thinking about how to live.” This meant for her to let Toru have his own world, instead of turning away from it, so that he could grow up as an “ordinary child.” In action, she started suppressing her worries to give her children more leeway in the world outside. This included giving her permission to a field trip where her son volunteered to help struggling farmers in more contaminated areas (than her town) in Fukushima.

After the trip, Kazumi noticed, the shadow cast on Toru disappeared from his face. After two summers, she knew that working alongside the farmers had definitely changed something in her children—now both of her sons volunteering in town. They regained liveliness (*genki wo torimodosbite*), with their faces glowing with the “pride as children of Fukushima,” as she described while smiling. And this is how she knew that her sons might be getting “even healthier” now than before (*motto kenkō ni naru*), flourishing both mentally and physically.

Kazumi’s effort to “swallow” her endless worries was for creating room where the children could develop their own images, feelings, and understandings about their bodies and minds. Seen in this way, the child’s growth could be debilitated if the mind withers away by, for example, losing desires, aspirations, and willingness—for life. It could also dissolve the family by severing the caring bonds between the parent and child if the child received the care as more oppressive than nurturing. By submitting to her children’s desires, Kazumi managed to distance those possibilities and regenerate the health of their children. The care she practices here is not an act of protection but an act that facilitates social growth both inside and outside the home.

The pride that her sons brought home from the outside was also infectious. After discussing the change in her sons, she added:

We live off of harvesting the land, and I know what people might think of us. That we are not smart enough to understand what radiation is. Or we couldn’t leave because we didn’t



have money. Well, I can tell you this, my family is not poor. Now I wonder, ‘Why did I feel so much shame?’ It’s a fact that Fukushima reaped benefits from the reactors [*onkei wo uketa*],<sup>6</sup> but it is the electric company that is in the wrong [*bi ga aru*].

As she reckoned, it was not anger or sadness that had taken over Kazumi. Rather, it was a deep sense of “shame” (*haji*) that was chipping away at her. What allowed Kazumi to breathe again, the “air hole” (*kazaana*) in her terms, was a realization that it was the electric company that should be ashamed for the harms done to the land, not people who lived and made a home there for generations. Kazumi took in this insight—what may appear as deceptively simple logically speaking—through daily acts of “compromise,” recalibrating how she felt toward her children, the town, and her family’s place in society:

I can now speak with conviction. We did not do anything wrong for living here. We did not do a single thing wrong. I often tell Toru that there is no reason to be ashamed just because they are growing up in Fukushima. But it is really my children who taught me that. Watching them grow, I too have learned something.

There is a clear connection between the children’s social growth and Kazumi’s overcoming guilt. After years of feeling frustrated, depressed, and hopeless as a mother who couldn’t do anything, this mother regained energy for life from her children’s change through the temporality lived through “we;” it was her who felt ashamed as an individual, but now, “we” did not do a single thing wrong, and “we” were proud of living and making a home in Fukushima.

## MARI AND AKI AND RINA

Mari is a mother of two children, Aki and Rina. At the time of the disaster, she only had her one-year-old son, Aki. After the government approved an airborne radiation level of 3.8 microsieverts per hour ( $\mu\text{Sv/h}$ ) in preparation for the upcoming school year in April, her husband—who returned to work in March—borrowed a Geiger counter from someone he knew, and started measuring the house on a daily basis. In May, the inside of the house was measured at 20  $\mu\text{Sv/h}$ , and between 30 and 40 on the roof and in the front yard. This would mean they would reach the maximum amount of annually permitted exposure predisaster in only one and a half months. It became clear to Mari that her town had been rendered as “unlivable” (*bito ga sunja ikenai*) by the fallout.

Yet, such a realization did not necessarily mean that she had somewhere else to go to live. Under a revised standard of permissible dose, they were not recognized as a disaster victim with evacuation rights. All their relatives lived in similarly contaminated areas in Fukushima. Turning to charity as a “Fukushima mother” seemed the only chance to acquire some kind of shelter for Mari. After extreme efforts for three months—because of high demands in applications for informal temporary shelters—she and her husband acquired a free temporary housing that was provided by a charity campaign under the title, “Save the Babies of Fukushima.”

However, after spending a year on mother–child evacuation, Mari eventually came back to Fukushima in 2013. The airborne level in town was still 10 to 20 times the predisaster estimate. No one in her family—her husband, parents, uncles, or sisters—ever compelled her to return; Mari alone “chose” to return to a place that she once had thought to be “unlivable.” This was for “Aki’s health” (*kenkō*), as she explained:

Living away from Fukushima might have been good for Aki’s body, but it wasn’t good for his mind. I always made sure he had everything he needed, but there was a limit to what I could provide. You know, when you’re part of a family, you live together, you’re just there, you eat meals together, and talk about silly things? I think being able to do such things without making an appointment is what makes a family. We didn’t have that [while living away from Fukushima]. We were becoming something other than family. It wasn’t a life that was lived properly [*chanto shita seikatsu*].

While living separately, her husband came to visit Mari and their son, Aki, once or twice a month by driving about 4 hours after work. After managing this long drive, he typically arrived too late for family dinner, getting there usually after his son fell asleep. Although he tried to play with his son as much as he could on the weekends he came to visit, the son found it awkward to be near his father; he was getting used to his absence. Whenever the father left for Fukushima, Aki who was just learning to speak started saying *bai bai* (“bye, bye”), a parting phrase for guests, instead of *itterasshai*, a phrase that anticipates a safe coming back for those who belong to the same place: home. Although Mari was trying to make sure that Aki had everything he needed, she started wondering what was happening to his “mind” (*kokoro*).

It was not only Mari and Aki who were affected by their evacuation. In Fukushima, the whole family—including their relatives who often shared the work of childcare—was affected by their absence. As Mari and Aki spent increasingly more time alone, not only did Aki behave awkwardly around his father, but he also didn’t recognize anyone among the relatives who had participated in his life more frequently before. Mari was also affected by this arrangement. Despite living in a place where she didn’t have to worry about eating, breathing, and touching all the time, Mari developed a slight depression for having to make herself constantly available to the needs of her son—who only recognized and relied on her.

As Mari realized, familial connections, even the one between her husband and son, were not a given. Rather, family was something that needs to be made by being in proximity to each other’s lives, ideally through everyday rituals (embodying practices) of touching, sleeping, eating, talking, and just being together “without making an appointment” to do so. What they needed to sacrifice to achieve a radiologically safe environment was the “familial” environment—relational connections which Mari understands as the wherewithal for the child’s growth into an adult who knows how to care for, share with, and love others. So, she came back, “for Aki’s health.” As soon as Mari’s family started living together, in the proximity of relatives and friends, Aki quickly recovered (*sugu genki ni natte*) in the new environment, no longer behaving awkwardly around his father at home. Neither did she with her husband.

And it isn’t just Mari who care for her children. They—Aki and her sister, Rina, who was born after they came back in 2013—also look after their mother. When I asked Mari in 2019 whether her children understand radiation, she smiled affirmatively and shared an anecdote with me. Both Mari’s and her husband’s families live within an hour’s drive, and they routinely share vegetables, fruits, fish, and snacks. Mari’s parents stopped sharing homegrown vegetables, which Mari took as a sign of their care for her even though they never discussed radiation. The problem is that Aki’s great-uncle would bring *ayu* (sweetfish) he caught in a river to eat with his niece and nephew. This didn’t mean that he did not care for the children. He likely misunderstood Mari’s decision to return as her not “believing in” radiation anymore [*shinjiru shinjinai*].

Such misunderstandings were common in almost all the families I met. People held diverse, often incompatible views about the risk of radiation or the dangerousness of their environments in general. Radiation has largely become a taboo topic in family conversation, much like politics, because of its potential damage on the region’s economy and, for some families, the disparities in compensation among relatives.

In this context, Mari couldn’t say anything about the sweetfish. Nonetheless, Aki and Rina often managed to avoid eating them by telling their uncle things like “I am so full!” or “I don’t like fish.” Mari knew they were lying. Reflecting on this, she told me, “I am not sure if they understand everything, but they were lying because they cared that I worry about them.” Aki and Rina were caring for their mother in their own way, and this is how they understood what living with radiation entails.

## DISCUSSION: EMBODYING THE NUCLEAR THROUGH AN EVERYDAY ETHICS OF CARE

The families I’ve discussed were forced into making life amid higher-than-usual risk because they couldn’t simply move out from their hometowns for various reasons. Initial responses to contamination involved information gathering and rigid protective measures within their homes. However, these strategies, aimed at shielding children from environmental risks, proved counterproductive when extended indefinitely. Fumie’s daughter grew unresponsive to anything; Kazumi’s son withdrew from the world; and Mari’s son

misrecognized the father. These encounters unsettled the mothers and compelled them to reevaluate their notions of “health” and “protection” within the porosity of irradiated living. In an effort to “strike a balance,” they have been experimenting with an alternative parenting strategy of recalibrating their orientation toward their children and the living environments.

These parental struggles to raise “healthy” children through everyday acts of care can best be understood, I argue, as an ethical labor of balancing. To be sure, I am not trying to say that these families are passively “coping” in the absence of much needed state and/or medical care. Neither am I saying that these mothers are becoming “experts” about the behaviors of their children and dispersed radiation. Finally, despite the mothers’ colloquial use of mind/body binaries (*kokoro* and *karada*), I do not suggest that they now began to prioritize psychological health over physical one in their children. Rather, by conceptualizing “balancing” as an ethical practice, I would like to stress that everyday acts of care have power to transform the categorical understanding of the body itself and redefine “health” as a living category. Let me explain this point through a closer examination of materials at hand, using the concepts of *kokoro* and personhood.

In her comparative study of brain death in the United States and Japan, Margaret Lock highlights *kokoro* as the core of personhood, a concept rooted in the “depths of the body” and extending “beyond the bounds of the body” (Lock, 2002, 228). As a site where the person can be centered, *kokoro* exists in tension with *ki*, or a natural flux of energy.<sup>7</sup> Both concepts, rooted in regional philosophical traditions, continue to hold significance in ordinary people’s lives in East Asia. In contrast, Western philosophical tradition constructs the individual “self” by emphasizing the brain as the core organ of personhood, separating the individual from society, and dividing personhood into body and mind (Kondo, 1990). Through the lens of *kokoro* and *ki*, Lock explains how the ontological difference between Japanese and Western perspectives shapes distinctive engagements with brain death. In Japan, personhood extends beyond the brain, which allows for a brain-dead body to not necessarily mean the death of the person (Lock, 2002, 228). Crucially, she notes that the diffuse nature of *kokoro*, serving as the anchor of personhood, may provide a source of enduring resilience due to its inherent openness to continuous change through socioenvironmental interactions (Lock, 2002, 277–78).

In light of the above discussion, we can consider the everyday idioms of health that the mothers used by way of “ordinary ethics” (Das, 2020; Lambek, 2010), an analytic approach that defines the ordinary as a site of moral and ethical struggle. When the uncertain risk of radiation is politically “permitted” into the grounds of everyday living, the mothers found themselves in a demoralizing situation among conflicting norms of safety, health, and childcare surrounding irradiated environments; they are the ones who are supposed to “protect” their children when the science-informed policy decisions impose the risk as if it were tolerable and the biomedical models point to their children’s bodies as the location of risk accumulation. After various failures of shielding their children from now risky home environments, the parents in my research often encountered the limits of what they can do to become a “good” parent.

As with the three mothers, such limits were often explored by “compromising” (*dakyō*), “giving up” (*akirame*), or “letting go” (*warikiru*) what the parents know and believe, by way of “descending into the ordinary” in Veena Das (2007)’s phrasing. This fundamental move toward an ethics of “balancing” is driven by alternative conceptualizations of personhood through engaging with *kokoro*. Instead of fixating on unattainable bodily purity, the mothers have been cultivating their children’s “health” by recalibrating their own affectivity regarding their child’s *kokoro*, striving to be responsive to signs of “brokenness,” “shadow,” or “awkwardness.” Thus, reconfigured perception allowed for a more realistic or practical view of “health” within their lives. Teresa Kuan (2015) notes a similar trend in postsocialist China, where parents, grappling with market uncertainties, focus on cultivating the child’s “inner life” over expert definitions of good parenting, by what she terms “art of disposition” (20–21). In my research, I was repeatedly told that a key to seeking “balance” lies in imagining “what is happening on the child’s mind (*kokoro*).”<sup>8</sup> This kind of engagement presents a hermeneutics of bodily connections and the body itself, distinct from the Foucauldian “medical gaze” (Foucault, 1973).

I frame these acts of care as an ethical “labor” to underscore them as tangible practice. Parents in my research often felt compelled to create scrapbooks, maps, journal entries, and check-up records.<sup>9</sup>

Fumie developed a kinesthetic understanding of her daughter's health through an "observational journal," meticulously documenting their activities, her daughter's behavior, eating habits, sleep patterns, and casual conversations, while acknowledging that such records will be "probably meaningless." Another mother kept a journal detailing her daughter's unidentified symptoms (nausea, allergies, headaches, etc.), along with seemingly "pointless" (*tawai nai*) conversations and "unclear" (*moyamoya*) feelings of her own. These records, as hinted by these descriptors, lacked the scientifically or biomedically decipherable value of "premonitory knowledge" (Lock, 2005; cited in Rose, 2007). More aptly, they held power as forms of "moral knowledge" which guided the mothers to ask, "What is the concrete situation asking of me?" rather than "What is this concrete situation?" (Gadamer, 2003; cited in Mattingly, 2017, 260). Indeed, including Fumie, many mothers told me such recording practices helped them to make an "informed" decision about how much they can "give up" even when the gains remain elusive.

The interconnectedness of body and mind did not only form within the child but also between family members, specifically the child and the parent. Emma Bunkley (2022) introduces the concept of "interembodiment" to note that everyday care work creates shared, animate biologies of illness experiences, sick roles, and diagnostic uncertainties across individuals and generations. Similarly, scholars have argued that individuals can construct embodied "pathways" through engagement with their physical, biological, and social environments, where otherwise "uncommunicable" or nontransferable illnesses become pervasive among communities and generations (Cook, 2020; Heckert, 2020). These insights prompt further exploration into how people recalibrate the porous boundaries between their bodies and minds at the margins of epistemic certainty (of both diagnosis and therapy) (Meinert & Seeberg, 2022).

In the examples discussed, the interembodiment is evident through the contagious impact of a child's well-being on family dynamics. Achieving "balance" between *kokoro* and *karada* often results in regaining *genki*—a widely used term embodying a sense of vitality that extends beyond the child's inner body or self. *Genki* represents a personalized form of vitality that can be shared with others within and beyond the family,<sup>10</sup> as the mothers pointed out. Kazumi, for instance, absorbed her children's "pride," creating an "air hole" to rework feelings of shame and guilt after having "spread depression" for many years (see Kuan, 2020; Throop, 2017). Fumie's efforts to repair her daughter's "brokenness" helped dispel demons (*oni*) that she hadn't been able to see, partly due to the ideology of motherhood. Similarly, Mari's choosing a life of "balancing" over risk-free environments warded off signs of her son's potentially pathological attachments and her depression—which had been creeping up in the absence of the corporealization of humane time (cf. Allison, 2013, 174–76). In these narratives, "balancing" entails an ontology of bodies and minds distinct from the biopolitical framework of radiological protection and exposure. It creates an ethical milieu where parents can also "grow" by responding to their children's spoken and unspoken needs (Jackson, 2023).<sup>11</sup> In this milieu, the caring bond can make a tangible difference, preventing the parent–child relationship from becoming "poisonous," as Fumie noted (cf. Grøn, 2022, 103).

To be sure, I am not essentializing cultural categories of *kokoro* and *ki*, to say that the families do not *believe* the realities of diminishing safety, deteriorating health, and care deficits. My point is rather that the dialogic relationship between *genki* and *kenkō* allows for a situated understanding of unwellness and well-being within irradiated environments. As the uncertainty shaped by biopolitical norms appears to overdetermine their lives, parents have turned to ordinary concepts to redefine the otherwise cruel notion of "health" into a living category that can be rendered within their everyday lives. Care<sup>12</sup> in these accounts is not merely a burden or a task that is negotiated between the caregiver and the carereceiver in dyadic terms. Instead, it becomes a mutual embodiment of each other's presence that can guide one through concrete moments of uncertainty and simultaneously lies *besides* the direct experience of specific events.<sup>13</sup> In this sense, the acts of "balancing" constitute a subtle yet powerful form of resistance that challenges the prevailing assumption that "health" is achievable only in a risk-free body, family, or environment. Though not entirely removing anxiety,<sup>14</sup> "balancing" enables families to "actually live," as Kazumi described, creating a form of "life lived as itself" (Lambek, 2010, 3).

## CONCLUSION

I am not saying that we are living a perfect life. Maybe people aren't supposed to live here. But I am actually living here and trying to live as such.—Mari, Fukushima, 2020.

The Fukushima nuclear disaster precipitated a profound reevaluation of health and care within affected families in Japan. Faced with an inescapable presence of radiation and its accompanying uncertainties, parents have been compelled to craft new understandings of health that incorporate not only the physical but also the psychological and relational aspects of everyday life. This paper has highlighted the moral struggles and ethical labor involved in this landscape, revealing the nuanced ways in which child-raising families strive to balance the resonance of risk with the necessities and possibilities of making life. Rather than relying solely on biomedical/biopolitical definitions of safety, the parents have been striving to reimagine the contours of health, setting forth a broader, more inclusive paradigm that acknowledges the complexity of living in less-than-ideal environments.

In retelling their stories, I foregrounded an ethical milieu where parents and children participate in cultivating and inhabiting a livable present. It is in this milieu that such ideas as health, choice, and personhood (i.e., what it means to be a caring mother, what it means to grow as a child) acquire new meanings, expressions, and nuances in an otherwise demoralizing environment—which I view as a labored achievement through everyday acts of care. These struggles for embodying nuclear realities otherwise have created different textures, prospects, and understandings of life beyond a tragic prospect of *the* nuclear body—that is implicit in the discursive construct of “Fukushima children” through knowledge practices in post-3.11 Japan. Embodying the nuclear, so I argue, has become a moral endeavor for child-raising families in postfallout Fukushima.

It is important to acknowledge that “balancing” could be interpreted as a recapitulation of neoliberal notions of care or biopolitical notions of motherhood. Given that children’s biological vulnerability to long-term exposure has been largely relegated to individual families, it may as well appear that these mothers are simply conforming to dominant structures and expectations by doing their job. However, such interpretation risks imposing end points to indeterminate social forms and interactions, glossing over how the parents pain themselves to “give up” repeatedly and, in doing so, actively reconfigure their child’s healthiness in relation to their concrete interactions, situations, and environments. To situate “balancing” within a broader framework of ordinary ethics helps us to develop a more nuanced understanding of how people navigate and transform the conditions of their lives in subtle yet powerful ways even in the face of structural overdetermination (Das, 2007).

As I have shown, the “embodiment as a paradigm” (Csordas, 1990) gives us tools to further examine how such ethical labor happens through everyday care work, simultaneously asserting the value of embodied, relational, and emotive knowledge. Though not taking the overt form of political activism or social organization, ethical labor of “balancing” opens up space for alternative configurations of health, personhood, and responsibility. To my point, this altered space of irradiated kinship is where “living again,” to quote Fumie, becomes possible as people relearn to breathe, dream, and grow while living within risk-laden environments. It is in this sense that I contend that “balancing” is a resilient and creative response to the persisting uncertainties and injustices of life after the fallout.

Beyond the specifics of Fukushima or radiation exposure, the families’ experiences I have discussed highlight an urgent need for environmental health frameworks that are sensitive to the embodied dimensions of care and the moral imperatives to nurture life in an increasingly imperfect and toxic world in the Anthropocene. Alexis Shotwell (2016)’s notion of “constitutive impurity” posits that a more inclusive, approachable, and pragmatic politics may emerge when we let go of fantasies of purity and begin with acknowledging irreversibly compromised conditions of our time. This paper has examined how some families have already been engaging with this possibility in their attempts to raise a “healthy” child outside the prospect of a pure body in the aftermath of the fallout. Their “compromised” yet vital sense of life

can perhaps help us to reimagine the politics of life itself beyond the constraints of biological/molecular definitions of health—at a time when the environment is increasingly becoming biosocial destiny in speculative terms, as families of “Fukushima children” know too well. Such is what I have grappled with here in terms of balancing life: a moderate hope that life is created by the very acts of living it with and through others.

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## CONFLICT OF INTEREST STATEMENT

The author declares no conflicts of interest related to this research.

## ETHICS APPROVAL STATEMENT

This study was conducted in accordance with the ethical standards of Duke University’s Institutional Review Board (IRB) and approved under protocol number 2017-0007.

## ENDNOTES

<sup>1</sup> I translate *kokoro*—often interpreted as heart, mind, feelings, conscience, and memories—as “mind” to align with how mothers frequently use the term to denote a combination of body and mind, as demonstrated in this sentence. Nevertheless, it is important to note that *kokoro* and *karada* do not precisely correspond to English binary distinctions. Further elaboration on this point is provided later in the essay.

<sup>2</sup> All personal names mentioned in this article are pseudonyms.

<sup>3</sup> Childhood thyroid cancer—“the canary of the medical coal mine” (Brown, 2019) in post-Chernobyl studies—became a focal point for studying low-dose radiological health (Baverstock, 2007; see Suzuki et al., 2016)

<sup>4</sup> The calculation of nuclear damage in Japan was modeled after the 1957 Price-Anderson Act of the US, the first legal action to introduce limited liability for nuclear accidents. This resulted in the estimation of compensation costs per resident of the affected area (Takeda, 2002, 133-36) and, in Japan, many reactors ended up in predominantly coastal areas with shrinking economy and population—such as Fukushima.

<sup>5</sup> The revised standard of airborne exposure post-3.11 classified certain districts as technically “permissible” for risks below 20 mSv/year, which the government often justified by saying that it is far below the 100 mSv/year threshold where probabilities of contracting cancer become greater. Yet, it is hard to say that the allowed level of 3.8  $\mu$ Sv/h is “safe;” it is six times the standard for “radiation controlled area” which prohibits the entry of those aged 18 and below. Also, the complexities of exposure (eating, inhaling, skin absorption) and age-sensitive effects were not fully considered in this regulation.

<sup>6</sup> The Fukushima Daiichi power plant primarily supplied electricity to the Tokyo Metropolitan Area, managed by the Tokyo Electric Company. Kazumi’s reference to *onkei* (literally blessing, favor, or benefits) alluded to the infrastructural development she’d seen as a child, particularly welfare-related facilities such as hospitals, libraries, and paved roads although she did not know how much her town benefitted from such arrangements specifically.

<sup>7</sup> “The relation of individuals to the natural world is considered fundamental to the philosophic tradition of East Asia, and the concept of *ki* is crucial to this thinking. Good health, individual well-being, and individual maturity depend on a proper flow of *ki* in the body. *Ki* is manifest everywhere, including in individual bodies; it is individualized but not personalized. That is, *ki* does not take on the specific character of a person, but rather remains in a state of flux, varying with the environment both inside and outside the body.” (Lock, 2002, 226)

- <sup>8</sup> A father explained to me how sharing *kokoro* forms the basis of his bond with his foster children, creating a sense of family beyond blood ties. This example indicates the open-ended potential of *kokoro* in caring practices; one doesn't have to be a biological parent to care for a child, and *kokoro* may even precede conventional kinship ties. In contrast, the gendered childcare practices in Japan (e.g., the myth of the first three years, *sansaji shinwa*) often define intimate ties of *kokoro* as an attribute of biological connections between the mother and the child (Doi, 1973).
- <sup>9</sup> Besides regular check-ups of thyroid, some mothers in my research (including Fumie) also kept track of the number of red blood cells of their children, based on the physiological knowledge that red blood cells respond sensitively to environmental risks in general.
- <sup>10</sup> *Genki* can be cultivated by both human and non-human elements, as in Kazumi's sons deriving *genki* through volunteering activities with their friends and by raising rice crops in the field.
- <sup>11</sup> Parents often cited the proverb "children raise their parents" (*oya wa kodomo ni sodaterareru*) to reflect on their own growth as caregivers.
- <sup>12</sup> In Japanese, idioms of care often involve managing *ki* with one's *kokoro* (i.e., *ki wo tsukau*, *ki ni suru*, *ki wo tsukeru*, *ki wo kubaru*).
- <sup>13</sup> "[T]he psychic life of biopolitics is also a kind of 'life beside itself'—that is, a life that cannot be reduced to what biopolitics 'is' or 'enacts' in any mechanistic/intentional sense." (Stevenson, 2014, 44)
- <sup>14</sup> Mothers often described the impact of their balancing acts in visceral terms—like "heart sinking," "holding breath," "swallowing words," and "pushing thoughts deep down." Many of them experience actual somatic responses such as unidentified chest pains, headaches, and limb numbness. Caregiving roles in Japan are deeply gendered and ingrained in societal norms (Borovoy, 2005). In the aftermath of the Fukushima Daiichi nuclear disaster, these gendered expectations and responsibilities have been reconfigured within a public discourse that, driven by scientism, scrutinizes expressions of radiation-associated anxiety (Kimura, 2016). In this political landscape, somatic symptoms of "stress" that mothers experience may be interpreted as the "physicality of emotions" (Tapias, 2006) that are, in this case, held up disproportionately in the bodies of women navigating the complexities and contradictions of child-rearing in irradiated environments.

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