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Exploring Mental Health Issues Among Rice Farmers in the Philippines in Relation to Climate Change Impacts

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Exploring Mental Health Issues Among Rice Farmers in the Philippines In Relation to Climate Change Impacts

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Abstract

In the developing countries of Asia, mental health issues among farmers in relation to climate change impacts are an uncharted research territory. This paper aims to explore the mental health issues and concerns of rice farmers in regard to the impacts of climate change and recommend strategies to support them. This study was conducted in Bulacan province, specifically in Bulakan and Calumpit, Philippines. The effects of climate change have a significant impact on these two towns. Interviews were conducted with rice farmers (n=32), key informants (n = 8), and representatives from other government institutions from August to October 2022. The Biopsychosocial-spiritual model of mental health guided the analysis of this study. Despite national recognition of climate change as a serious phenomenon, the results show that farmers hardly attribute their experiences of natural disasters to climate change. Three themes emerged in relation to farmers' coping mechanisms to climate change impacts: evasion, keeping a positive mindset, and relying on social support. It appears that challenges in adapting to climate change impact cause farmers to suffer from mental health issues such as worry, fear, sadness, and poor sleep quality. In dealing with the mental health issues of rice farmers, a systemic and holistic approach is necessary. This research contributes to the growing body of studies that establish links between climate change impacts and mental health issues.

Keywords: mental health issues or concerns, climate change, climate change impact, biopsychosocial-spiritual model, rice farmers

Étude des problèmes de santé mentale chez les riziculteurs aux Philippines en lien avec les impacts du changement climatique

Résumé

Dans les pays en développement d'Asie, les problèmes de santé mentale chez les riziculteurs liés aux impacts du changement climatique constituent un domaine de recherche inexploré. Cet article vise à explorer les problèmes et les préoccupations des riziculteurs en matière de santé mentale face aux impacts du changement climatique et à recommander des stratégies pour les soutenir. Cette étude a été menée dans la province de Bulacan, plus précisément à Bulakan et Calumpit, aux Philippines. Les effets du changement climatique ont un impact significatif sur ces deux villes. Des entretiens ont été menés avec des riziculteurs ($n = 32$), des informateurs clés ($n = 8$) et des représentants d'autres institutions gouvernementales d'août à octobre 2022. Le modèle biopsychosocial et spirituel de la santé mentale a guidé l'analyse de cette étude. Malgré la reconnaissance nationale de la gravité du changement climatique, les résultats montrent que les agriculteurs attribuent rarement leurs expériences de catastrophes naturelles au changement climatique. Trois thèmes ont émergé concernant les mécanismes d'adaptation des agriculteurs aux impacts du changement climatique : l'évasion, le maintien d'un état d'esprit positif et le recours au soutien social. Il semble que les difficultés d'adaptation aux impacts du changement climatique entraînent chez les agriculteurs des problèmes de santé mentale tels que l'inquiétude, la peur, la tristesse et une mauvaise qualité de sommeil. Pour gérer les problèmes de santé mentale des riziculteurs, une approche systémique et holistique est nécessaire. Cette recherche contribue au nombre croissant d'études établissant des liens entre les impacts du changement climatique et les problèmes de santé mentale.

Mots-clés : problèmes ou préoccupations de santé mentale, changement climatique, impact du changement climatique, modèle biopsychosocial et spirituel, riziculteurs

1.0 Introduction

The agricultural sector is among the worst-affected sectors by the impacts of climate change, such as floods and droughts (Bharambe et al., 2023). Likewise, past studies have projected significant yield declines due to the impacts of climate change (Kogo et al., 2021).

In a review, Vins et al. (2015) demonstrate (see Figure 7 of their work) how climate change, a primarily environmental phenomenon, is linked to various mental health outcomes among farmers. Mental health encompasses a wide range of experiences and conditions, from everyday stress and anxiety to clinically diagnosed disorders. It is more than the absence of mental disorders and is determined by the interrelationship of individual, social, and structural stresses and vulnerabilities (World Health Organization [WHO], 2022). A comprehensive understanding of the complex interplay of these factors, as influenced by climate change impacts, is crucial in the discourse on mental health status and related issues.

Mental health issues are more common in the farming sector than in other sectors (Berman et al., 2021). Usually, it is the case that because of these climate change impacts, farmers can hardly recover their expenses, much less earn from their agricultural ventures, which contribute to their suffering from mental health issues (e.g., Hammersley et al., 2022). Scholars point to disturbed sleep, subjective feelings of stress, tensions or sadness, increased anxiety and depression, and suicide owing to the experience of climate change impacts (Kohlbeck et al., 2023). Approximately 25% of farmers globally could be suffering from poor mental health issues annually (Hagen et al., 2019).

It is worth highlighting that, in general, mental health and climate change have traditionally been investigated as two separate concepts. If these two are combined, the study only focuses on floods and droughts. Additionally, few studies have been conducted on the intersection of mental health and climate change in the rice sector.

On a more general level, mental health-related issues in relation to agriculture are not well-studied in low- and middle-income countries (LMIC). It is also worth noting that the literature primarily originates from developed countries, such as the United States, Australia, and Canada (e.g., Berman et al., 2021; Thompson et al., 2023). In the Philippines, there remain no specific reports on the prevalence of mental health issues among farmers, with a few exceptions (Ancheta et al., 2023; Batayen et al., 2023; Lu & Salas, 2021).

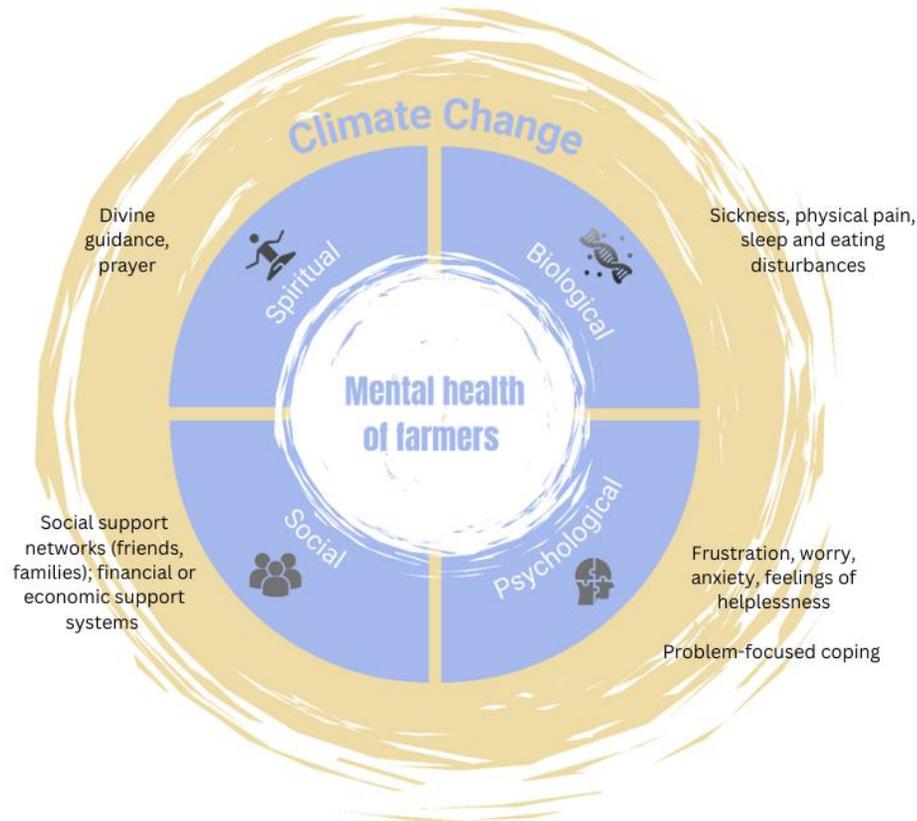
This paper explores the mental health issues of rice farmers in relation to the impacts of climate change, with the ultimate goal of identifying effective ways to support them. The specific questions are: (1) What are the farmers' thoughts, beliefs, and experiences of climate change? (2) How do farmers mitigate the impact of climate change? (3) What are the challenges farmers face in mitigating the impact of climate change? (4) What mental health issues do farmers experience in relation to climate change? (5) How do farmers cope with the mental health issues they experience? and (6) What mental health services do they access?

2.0 Theoretical Framework

This study is guided by the Biopsychosocial-spiritual (BPS-S) model of mental health (see Figure 1), which views well-being as the interplay of biological, psychological, social, and spiritual dimensions that shape health and vulnerability to

stress and other conditions (Thoma et al., 2021; van Denend et al., 2022; Vögele, 2015). Climate change can affect mental health both directly and indirectly, with farmers particularly at risk as environmental stressors disrupt daily functioning, relationships, and self-worth (Kumar et al., 2021; Thoma et al., 2021). The model illustrates how changes in one dimension ripple through the others, influencing overall mental health (Thoma et al., 2021). Building on this framework, the following sections highlight specific ways climate change influences farmers' mental health.

Figure 1. Theoretical framework.



Source: Authors.

2.1.1. Biological dimension. This relates to physical health and physiological functioning (Thoma et al., 2021). Genetic predisposition, medical illness, and existing mental health disorders can heighten risk (Bondy & Cole, 2019). For instance, farmers with preexisting conditions are more susceptible to drought-related distress (Thoma et al., 2021).

2.1.2. Psychological dimension. This domain encompasses attitudes, beliefs, perceptions, affect, and coping mechanisms (Thoma et al., 2021). Stressors such as financial loss or strained relationships increase risks of anxiety, helplessness, and hopelessness (Thompson et al., 2023). Farmers unable to adapt face greater mental health difficulties (Sorgho et al., 2020), while those using strategies like acceptance are less likely to experience severe distress (Gunn et al., 2021).

2.1.3. Social dimension. Social networks, including families, communities, and organizations, play a crucial role in fostering meaningful relationships, support, and a sense of belonging (Thoma et al., 2021; Deegan & Dunne, 2022). The presence or absence of such networks serves as a protective or risk factor when challenges arise (Deegan & Dunne, 2022). For instance, financial strains from low crop yields can lead to family conflict or social isolation, or weakened community support can contribute to anxiety, depression, or suicide (Bondy & Cole, 2019). Conversely, strong family ties and farming organizations buffer against social and economic stresses (Deegan & Dunne, 2022; Sorgho et al., 2020).

2.1.4. Spiritual dimension. Religious and spiritual beliefs, rituals, and practices such as prayer, meditation, or reading sacred texts, provide meaning, hope, and resilience (Bozek, 2020; Henning-Smith et al., 2021; van Denend et al., 2022). These practices can help farmers cope with personal or livelihood challenges but may also limit adaptive responses to climate risks when reliance on prayer replaces agronomic strategies (Fritze et al., 2008; Jellason et al., 2020). For instance, farmers may turn to offerings or surrender to the Divine during crop threats, which can ease the distress but also prolong livelihood-related hardships.

Overall, the BPS-S model illustrates the interconnectedness of these dimensions in shaping how climate change affects farmers' mental health. Addressing only one or two areas would prove inadequate; a holistic approach is necessary to support resilience and well-being.

3.0 Methodology

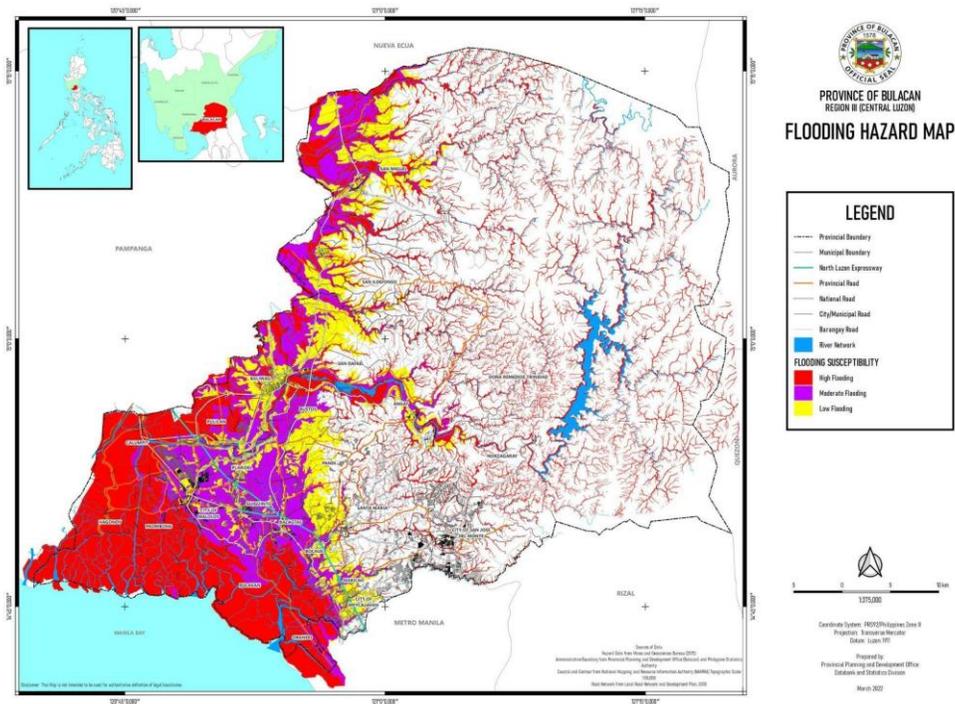
This study was conducted in the municipalities of Bulakan and Calumpit in the province of Bulacan, Philippines (see Figure 2), an area highly vulnerable to climate change, particularly flooding (Peñalba et al., 2021). According to the Philippine Rice Information System (PRiSM), Bulakan has 406 ha of rice areas, while Calumpit has 967 ha. Rice is cultivated during both the dry and wet seasons, with the dry season spanning from November to April and the remaining months classified as a wet season.

In 2023, in-depth interviews were conducted with farmers selected through purposive and snowball sampling. Purposive sampling initially identified farmers who met the study criteria. However, as data collection progressed, finding participants with experiences of climate-related mental health challenges proved difficult. Snowball sampling was then employed to reach additional eligible farmers with the assistance of municipal agriculturists, who are local government staff responsible for promoting agricultural development. Each interview, on average, lasted for 1.25 hours.

This research was participated in by 32 farmers selected based on the following criteria: (a) a minimum of 10 years rice cultivation experience to ensure that they could significantly comment on any known climatic changes in the area; (b) direct exposure to climate-related hazards such as floods or droughts; and (c) non-kinship with other participants to maximize diverse perspectives on coping strategies. The participants belonged to the middle class, with multiple sources of income (i.e., not just farming), reflecting Bulacan's proximity to Metro Manila. To establish a common understanding, definitions of climate change and mental health were provided. In addition, eight key informants from various government offices, as well as two farmer leaders from the respective municipalities, were included to provide

broader contextual insights.

Figure 2. Flooding hazard map of Bulacan province.



Source: Provincial Disaster Risk Reduction and Management Office of Bulacan.

The participants were asked to sign an Informed Consent Sheet, which details the nature and purpose of the study, their rights as research participants, including that their participation was entirely voluntary, their right to withdraw from the research, and the confidentiality of their responses. No sensitive information was collected, and all data were anonymized to protect the participants. Moreover, the participants were also informed about the use of data in research presentations and publications. With this, the researchers conducted the study following the principles of ethical research, including respect for persons, beneficence, and justice.

In analyzing the data, the recorded interviews were transcribed and coded accordingly based on the analytical objectives of the study (Guest et al., 2012). A coding guide was developed to ensure consistency in coding. We employed double coding in coding the transcripts, which is a way to enhance the reliability of analysis (Creswell, 2009). Informal member-checking (Lincoln & Guba, 1985) was also done during and after the data collection to ensure that the researchers had captured the voices of the participants. This was achieved by consulting random locals or key informants on emerging themes observed during data collection. Random locals are basically anyone from the community. The essence of talking to them and capturing their insights was to gain a deeper understanding of the nuances in the research sites, which are important in making sense of the findings. A formal member-checking session was also done, whereby the preliminary results were presented to key stakeholders of this research. We had another round of debriefing sessions to process the feedback and integrate it into the analysis.

Given that two of the authors came from the Department of Agriculture, we recognized that the data may be seen from the perspective of someone working in the sector. We also recognized that our experiences (JAMIV and PGID) in dealing with farmers may have influenced the way we looked at our data. To address these potential issues, we conducted group debriefing sessions where we thoroughly discussed our findings. Also, in coding, we all coded the transcripts to ensure we were all on the same page and to prevent any particular view from dominating the reading of the findings.

During data collection, we (JAMIV and PGID) made an effort to conceal our affiliation, such as not wearing a Department of Agriculture (DA) shirt, and we ensured that we did not unnecessarily mention our affiliation with DA-PhilRice. We noted that there could be some bias in the way the farmers conveyed their stories, knowing that they were talking to staff members from the DA.

4.0 Results

This section presents the socio-demographic profile of the participants and the findings on the farmers' thoughts, beliefs, and experiences regarding climate change, as well as their adaptation strategies to mitigate its effects. The impact of climate change on the farmers' mental health and their coping mechanisms was also presented.

During the data collection, 32 rice farmers participated in the interviews (see Table 1). Most farmers (71%) were within the 46–59 age range. It should be noticed, however, that almost all participants were male farmers. In our communication with the Municipal Agriculture Office, we requested to be referred to farmers who had likely experienced the impacts of climate change, such as drought or flood, in their rice cultivation. There was more emphasis on the experience of disasters as opposed to the gender dimension of climate change adaptation. This underrepresentation of women could be considered a limitation of this study.

Table 1. *Age and Biological Sex of the Participants*

Variables	Bulakan	Calumpit
Age		
> 60	2	7
46–59	14	9
Sex		
Men	1	
Women	15	16

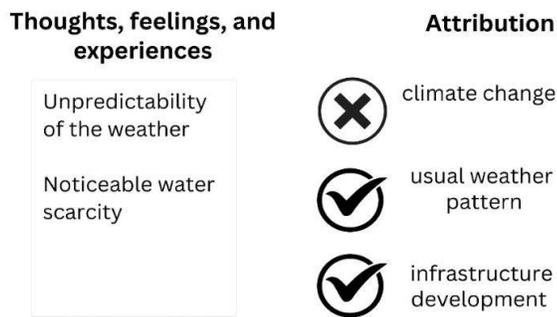
4.1 *Farmer's Thoughts, Beliefs, and Experiences on Climate Change*

The thoughts, beliefs, and experiences of farmers on climate change were explored. The current study defines thought as the farmer's opinion on climate change, while belief refers to the farmer's idea of climate change that they deem as fact.

Experiences, on the other hand, refer to the lived experiences of farmers regarding the impacts of climate change.

Farmers shared the devastating effects of climate-related disasters on their livelihoods (see Figure 3). For instance, the typhoons that hit their area triggered a series of disastrous events. They recalled many experiences of floods, especially with respect to how long the flood stayed in their rice fields—several days, weeks, and even months. A farmer commented, “We have no idea when the rain will come.” Floods were more prominent in the discussion than droughts or other climate hazards. Farmers narrated the unpredictability of the onset of rain and dry months: “Back in the day, rain came either in July or August. Now, we don’t know anymore.”

Figure 3. Farmers’ thoughts, feelings, and experiences relating to climate change.



Source: Authors.

Additionally, the unpredictability of the onset of rain and dry months was a persistent concern. A farmer said, “The changes in weather...when heat rises...typhoons also intensify. That is a change. It is not normal. It is not the same as before... .” There was also a noticeable scarcity of water for rice cultivation, which in some instances fanned conflicts among them. For example, a farmer-interviewee shared that “There had been times when there was just no water for us... [we] fought over water...getting angry at each other. We were really fighting over water.” These events resulted in damage and loss in agricultural production, leading to food insecurity, including the purchase of rice under normal circumstances.

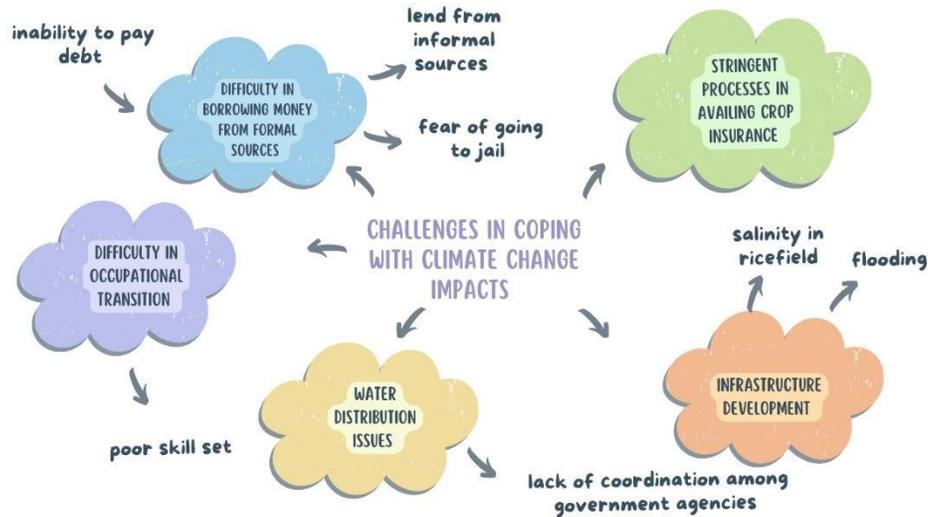
Farmers, however, did not attribute those experiences to climate change, despite national recognition of climate change as a phenomenon by the country’s weather bureau. Except for farmers in Bulakan who attributed the flooding to an infrastructure being built by a private company, farmer-participants saw the flooding as usual occurrences, i.e., weather patterns are bound to change. From the interviews, it was shared that “You cannot do anything since Mother Nature brought the rain. We do not have control over natural phenomena.”

4.2 Challenges in Adapting to Climate Change Impact

Building on the participants’ perceptions and experiences of climate-related hazards, the discussion now turns to challenges farmers face in adapting to the impacts of

climate change. Challenges include limited financial resources, perceived flooding due to infrastructure development, barriers to occupational transitions, inadequate water distribution, and insufficient government funding and support capacity (see Figure 4).

Figure 4. Challenges in coping with climate change impacts.



Source: Authors.

In terms of limited financial resources, farmers found it more challenging to borrow money from formal sources (e.g., banks and farmers’ cooperatives) than from informal sources (e.g., family, relatives, friends, and moneylenders). A farmer shared that “We do not borrow money anymore. Perhaps, if we ever do borrow money, it might be from people we are familiar with.” Due to their inability to pay off their debts, private individuals and financial institutions were reluctant to lend them money: “We cannot borrow from banks, as we might get sent to jail... We are afraid because we cannot depend on our harvest [to pay off our debt].” Bulakan farmers faced this particular challenge more frequently than those from Calumpit, as their rice fields had been submerged in water for many years.

Farmers also mentioned the stringent process to avail themselves of crop insurance. An excerpt captures this point: “If you do not process your papers, you will not get them. You need to show your crop insurance papers to the insurance company. There really is a lot to do...” Aside from this, farmers believed that the infrastructure being built in their town had caused flooding in recent years. It was shared that “These days, we cannot plant. It has been a year since our last planting due to the ongoing construction of an infrastructure project.” They reported that after a private corporation acquired the fishponds, reclamation work commenced, bringing saline water into their rice field, which has since caused flooding: “[We could not plant] because salty water [from damaged fishponds] infiltrated our rice fields. Our rice fields are now salty!”

Moreover, barriers to occupational transition among rice farmers were also identified as a challenge. The farmers found it difficult to transition from one job to another because they required higher self-efficacy to perform new tasks. Especially among the older farmers, they lamented the difficulty of learning new skills:

We were told that we would have a new job. ... For instance, I was given a job at the airport. Do I even know how to operate a bulldozer? Do I even know the work of an electrician?... Can I do that? Obviously, they will send me home because I am old.

Furthermore, the findings also showed issues with water distribution. Traditionally, the Angat Dam has been a source of irrigation water for farms in Bulakan, especially during droughts: “If the water in the dam proves inadequate, they will stop the supply of water.” However, this is no longer true as the Angat Dam's water code prioritizes domestic use for people in Metro Manila. A farmer shared: “That is the major problem amongst farmers in Bulakan. The dam prioritizes supply of water for domestic use in Metro Manila, second is power generation, and third is irrigation.”

Budgetary issues also emerged as a significant challenge: “Our clamor is for the National Water Resources Board to find and develop other dams to reduce water use from Angat Dam...There are lots of studies, but they do not want to work on it...” For instance, in Calumpit, this financial limitation prevented the town from effectively assisting farmers to adapt. Government agencies have limited capacity to solve the irrigation problems in the area.

Farmer-participants reported coordination issues among government agencies involved in managing the water resource from Angat Dam. This excerpt captures this point: “The problem with NIA [National Irrigation Administration], the irrigators’ association is the only one they talk to. They do not talk to the MAO [Municipal Agriculture Office]. The NIA does not communicate with the MAO...”

Overall, the participants faced multiple financial and infrastructural challenges that hindered their ability to adapt to climate-related hazards. These challenges increased their vulnerability to crop loss and food insecurity.

4.3 Farmer’s Mental Health in Relation to Climate Change Impacts

Based on the perceived impact of climate change on weather and farming conditions, including the challenges farmers face in adapting to climate change, several themes emerged that suggest some mental health issues and concerns experienced by the participants.

4.3.1. Sickness and physical pain have an impact on mental health (see Figure 5). The participants mentioned that they became sick due to the stress of overthinking about the times they had not had good harvests and the physical strain they felt from the demanding nature of farming. A participant mentioned, “When you do not harvest anything, you will get sick. Without any harvest, you cannot even afford to buy paracetamol. That aggravates mental health.”

Figure 5. Farmers' mental well-being issues vis-à-vis their coping mechanisms.



Source: Authors.

4.3.2. Sleep and eating disturbances affect well-being. Some participants reported sleep issues; either they had insomnia due to excessive thinking about crop yields and financial matters, or they slept excessively, impacting their overall well-being. As one participant shared, “Sometimes it comes to a point when you do not want to do anything but just sleep.” Aside from sleep disturbances, stress also affected participants' eating patterns: “Oh God, what do I need to do with my crops? Sometimes, I find myself unable to eat because I am preoccupied with my crops. It happens because you invest in them.”

4.3.3. Frustration, worry, and anxiety are often the result of environmental and financial challenges. The participants reported experiencing high levels of frustration, worry, and anxiety in response to weather disturbances and other ecological challenges that affected their crops: “Obviously, you feel nervous!” Specifically, participants from Bulakan felt worried whenever an extreme weather event might sweep away their rice crops, especially those about-to-be-harvested rice crops: “If you did not plant anything, it is fine. However, when you have a standing crop, you will feel like you are dead!” When the worst thing happened, they usually felt frustrated due to losses, loan non-repayment, and the sustenance of their families' needs: “You spent much money... You did not harvest anything yet, still have many loans to pay...”

Aside from frustration and worry, farmers in Calumpit reported anxiety, especially regarding typhoons. Watching the news on television could already cause anxiety among the participants. Nervousness also emerged among farmers in both areas, particularly those who had taken out loans for their capital. When a natural disaster strikes, they lose their livelihood, and their ability to pay their loans significantly decreases.

4.3.4. Feelings of helplessness. The data also suggested that the participants felt helpless when they could not control environmental conditions affecting their farms and harvests. The participants reported that, for instance, when saltwater entered their rice fields, they had no control. In the words of a participant from Bulakan:

I cannot help but cry, especially when it was harvest time. Our rice fields were filled with salt water, and I cried and felt helpless because I was about to lose [the crops]. I was thinking of our loans. The ones allocated for food do not matter because there are still ways to have it, but with a considerable debt... it is just like that.

4.3.5. Economic challenges as sources of stress. As mentioned, financial difficulties were experienced due to climate-induced problems and other environmental constraints. These economic difficulties emerged as a reason for influencing the dynamics within the family. Based on the participants' answers, they often turned to money lenders rather than their families when they needed financial backup to avoid burdening their family members. This excerpt captures this phenomenon:

Sometimes, I feel ashamed to borrow money from my siblings or relatives. It is embarrassing if you borrow often. Of course, they also have their own families. That is the reason we resort to 5-6 [it is a money lending scheme with usurious interest rates].

Furthermore, some participants mentioned that instead of allocating their other finances to meet their basic needs and educate their children, their financial resources were allocated to their farming needs and other financial obligations. A farmer from Bulakan shared about losing some money due to the low yield of crops. He said, "... that hurts. Instead of buying food [for the family], you will lose more...including the budget for children's education."

These economic difficulties and challenges were also identified as sources of stress among the participants. A farmer from Bulakan shared:

If you have a weak mind, you will succumb to stress. Of course, you will be stressed because you have spent much money and relied on it. That is the only thing you relied on [in terms of financial income].

We argue that overall, these persistent challenges illustrate the cumulative influence of environmental, economic, and physical stressors on farmers' mental health.

4.4 Access to Mental Health Services

While the towns of Bulakan and Calumpit offer mental health services to the general population, according to key informants, the farmers were unaware of these services. Farmers narrated that they have no information about the existence of such facilities. From the interviews, it should also be noted that there was a stigma attached to visiting mental health facilities, much less talking to a mental health professional. Being a 'psychopath' comes to mind when mental health issues are mentioned.

Farmers from Bulakan also noted that there must be credible medical professionals who can answer queries, and that the facility must not be too far away, so people, especially farmers, would consider visiting. Farmers from both sites emphasized the need for a more positive and persuasive approach, such as renaming the facility to a ‘coping’ or ‘stress-free’ facility and providing financial assistance to encourage farmers to visit mental health facilities, according to key informants. The key informants also regard mental health issues as ‘invisible’ or ‘unreported’.

As regards the stigma attached to accessing mental health facilities, farmers think that perhaps mental health facilities should be named differently, anything, not just a mental health facility. To encourage farmers to access the facility, the promotion must be accompanied by financial assistance, as they perceive money as the root cause of all their problems. Even if farmers were made aware of mental health programs and services, they would still hesitate to participate because, for them, seeking help is an expensive endeavor.

In the end, financial issues and stigma regarding programs and services are determining factors in deepening farmers’ awareness and need for mental health facilities. Issues relating to their mental well-being are pushed to the back burner when issues of daily living coalesce.

4.5 Farmer’s Coping mechanisms with Mental Health Issues and Concerns

Evading thoughts of climate-related losses, relying on social support, employing problem-focused coping, and seeking Divine guidance (see Figure 4) were the mechanisms by which farmers addressed their mental health issues and concerns related to the impacts of climate change. Evasion refers to a form of escape. Farmers ensured they were preoccupied with various activities to avoid thinking about the damage to their crops. The point of evasion is captured in this excerpt:

Ah, I entertain myself, especially since I tend our variety (sari-sari) store. I have care duties, too. It is not a problem as long as I am preoccupied with various activities. When I am home, however, that is when I think that my rice crop is submerged in water.

Social support refers to a network of relationships and resources people rely on to feel connected and cared for. The farmers expressed a desire to seek connections and interact with others. In both areas, having drinking bouts with their co-farmers had been their mechanism for releasing their farm-related problems and finding solutions to their crop losses. Others included meeting with their co-farmer and conversing with their family or friends: “Then just drink it away! There is nothing you can do. Your friends come to hang out, calling and telling stories with you. You need someone to talk to, or else you might start talking to yourself.”

The farmers employed problem-focused coping, which involved attempting to solve problems on the farm. The farmers found alternative sources of income to recover from losses: “In our town, there are people who drive tricycles, become barangay (village) police officers, or go fishing. There is income so that you can bounce back.”

Others attempted to seek help by reporting their losses to agricultural extension workers or any government official. Additionally, farmers engaged in various

activities to manage negative emotions. It manifested in different ways, such as talking to oneself and/or other living things:

When I feed the ducks, sometimes I talk to them a little bit like “eat up, especially during these times that we have no profit.” You can also share your problems with the plants, like when I spray on the plant, I say “grow big, okay?”

Being spiritual was also reported to be a way of coping, such as when farmers prayed and sought guidance from God, or organized religious activities for a fruitful harvest: “Sometimes [they] pray for it in church, or like when there is mass during harvest season...Of course, who else would you depend on? He is the only one who could help us.”

4.6 Adaptation Strategies

In adapting to the impacts of climate change (see Figure 6), farmers either seek help, enhance their own sense of preparedness, or develop an adaptive mindset. Farmers seek help from organizations or individuals. The DA was their go-to office when faced with natural disasters. A limitation of this finding, however, is that we sought the help of municipal agriculturists to recruit participants, which could have influenced the study’s outcome. The DA and the local government provided them with financial and input subsidies. This excerpt captures this point:

We also have, like the PhilMech (Philippine Center for Postharvest Development and Mechanization). They gave away tractors, machines, and harvesters. The staff of the MAO (Municipal Agriculture Office) gives us updates if there is available financial assistance... .

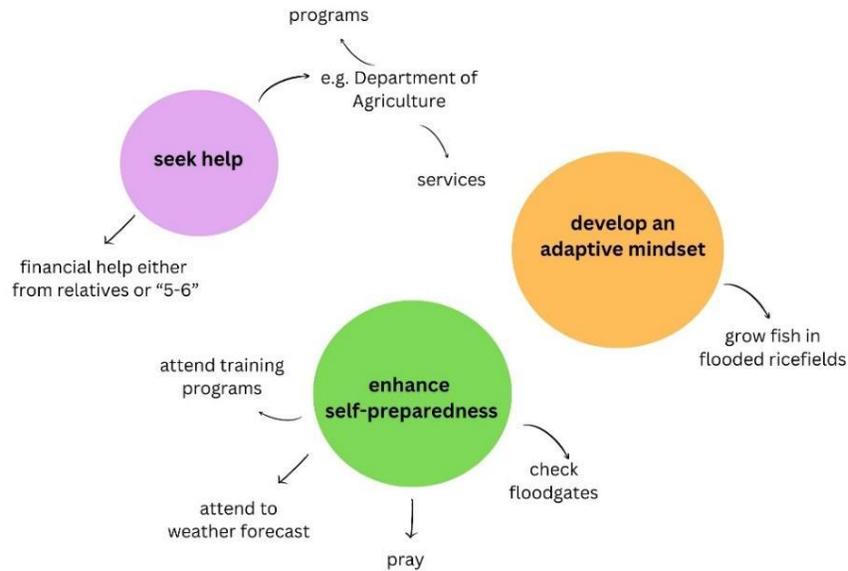
Government agencies also deployed programs and information centers to assist farmers. Examples of the services that governments provide include weather information to ensure the synchronization of water release and planting times, infrastructure repair, and in-kind assistance.

To enhance the technical capabilities and well-being of farmers, the government also provides free training programs. Coming from a Catholic-majority country, farmers also pray to God whenever there is a typhoon or any natural disaster. A participant shared that:

When a typhoon is about to come, we start to pray - Lord, please do not let the typhoon destroy our crops... otherwise we will not be able to recover our expenses. Hence, when the typhoon is over, what a relief for us!

In Bulakan, farmers participate in a novena [prayer practice by the Roman Catholic Church that is said for nine days to make special petitions] to Saint Isidore to request rain during the dry season. Additionally, the country is home to numerous Protestant churches and Muslim communities.

Figure 6. Adaptation strategies employed by farmers.



Source: Authors.

Likewise, they sought financial support from relatives, friends, and banks to help them recover from the onslaught of typhoons. If pressed without other options, they turned to 5–6, a loaning scheme with usurious interest rates, to manage their financial needs.

Farmers know better than to wait for any natural disaster to come. They prepare for it. In Calumpit, they religiously check their calendar and the floodgates to minimize potential damage during high tide. They also keep an eye and ear on the weather forecast. This way, they will not be caught unawares of the coming typhoons. They also ensure they have other sources of livelihood, even in the absence of disasters, such as tricycle driving or growing fish and water spinach instead of rice.

Part of farmers' efforts to prepare for disasters is developing an adaptive mindset, which means keeping a positive spirit in the face of difficulties. Flooded rice fields provide farmers with an opportunity to grow fish and supply water during the crop establishment stage. This sharing summarizes this insight: "Well, when your rice crop gets submerged in water or gets rotten, life is like that! Just aim to do better next time."

5.0 Discussion

From the findings above, it has been established that farmers experience various climate hazards, in particular floods. They, however, do not attribute these experiences to climate change, despite the country's national recognition of climate change as a serious phenomenon by its weather bureau. They see them as natural changes in weather patterns. Nonetheless, in adapting to these climate hazards, they

employ various mechanisms, including seeking help, maintaining a positive mindset, and enhancing their own sense of preparedness. These mechanisms are related to the broader climate change adaptation literature in the agricultural sector (Ravago et al., 2016). For example, as reported above, farmers seek the help of the DA to adapt to the impacts of floods. They benefit from input, financial subsidies, and technical assistance from the DA. In the literature, these are referred to as institutional adaptations or forms of adaptation that can only be provided by a third party, such as the government. Institutional adaptations have been shown to increase the adaptive capacity of agricultural communities worldwide (Khan et al., 2020; Mahmood et al., 2021; Ghimire et al., 2022). Another finding that we wish to highlight is the act of seeking help from God. This finding contributes to the growing literature on the relevance of spirituality in adapting to climate change impacts (Henning-Smith et al., 2021; van Denend et al., 2022).

Several challenges were identified in adapting to the impacts of climate change at the two sites. They, too, relate to the broader literature on climate change adaptation. For example, the concept of non-climatic stressors applies readily to the findings related to the budget issues in Calumpit and the infrastructural development in Bulakan (Kogo et al., 2020; Manalo et al., 2020). Non-climatic stressors are not necessarily related to climate or any natural phenomenon, yet they constrain adaptation to the impacts of climate change. Manalo et al. (2020) explained how these non-climatic stressors hinder climate change adaptation in the Philippines. For example, the TPLEX, an expressway built in the country, has caused rice-farming communities in Tarlac to be submerged in water for a prolonged period of time, which significantly affects agricultural productivity in the area—consequently, poor productivity results in reduced adaptive capacity for farmers. The literature on climate justice aligns well with the findings of this research (Akther, 2025; Gomes et al., 2024; See et al., 2023). For example, this current study reported on the difficulties in livelihood transition, especially among older farmers whose rice fields have been affected by climate change impacts. The water distribution issues, especially in times of drought, are climate justice issues among farmers, as they cannot continue with their rice cultivation due to low prioritization given to agriculture in times of crises.

Going back to the framework of this research, it can be said that the combination of the biological (e.g., physical pain, sleep disturbances), psychological (e.g., perceptions, feelings of worry and anxiety), social (e.g., interpersonal conflicts), and spiritual (e.g., spiritual or religious beliefs and practices) shape the farmers' overall approach—or sanity if that could be mentioned—in dealing with climate change impacts. For context, the Philippines can be considered a climate-battered country, with an average of 20 typhoons annually, some of which cause severe damage to livelihoods across the country. Hence, to even have a positive mental outlook, as most farmers in this study have demonstrated, should be a subject of further inquiry. There is limited evidence on the biological aspects of the framework from this study.

The view that the belief in a Supreme Being, which in the context of this research refers to the belief in God, prevents farmers from performing necessary agronomic practices to help them cope (Jellason et al., 2020) is not supported in this study. From our findings, there is no evidence along this line. What we saw was that farmers were doing every single intervention that they knew. For context, the farmers are ably assisted by their respective municipal agriculture offices in pursuing adaptive mechanisms. It is just the case that situations, natural or artificial, have made it

difficult for them to adapt. Their faith in God gives them the strength to remain in the right frame of mind to continue with their farming venture, no matter what.

Considering the manifold of various environmental and social stressors that farmers in Bulakan face, the findings align with the view that those who accept the situation are less likely to suffer from emotional distress (Acharibasam et al., 2018; Gunn et al., 2021). In both sites, amid all the damage to their livelihoods, farmers say, “Life is like that,” “do better next time,” and then they move on with life.

Despite this, we argue that these high coping abilities should not be seen as an excuse for farmers to face all challenges alone. From this research, we note various mental health issues such as worry, nervousness, and sleep deprivation. Perhaps, farmers have developed ways to cope over the years, but the fact remains that they deserve a better life, which could be achieved by having adaptive mechanisms in place. Our findings also highlight the need to end the glorification of male machismo in addressing climate change impacts.

We argue that farmers’ mental health issues are due to the difficulties they experience in dealing with climate change impacts. In fact, from the interviews, farmers mentioned that if they were assisted appropriately to adapt, there would be less worry on their part. Farmers stress themselves, thinking about how to pay off their loans, the overall crop stand in times of typhoons, the overall reduction in their income, and its impact on meeting the needs of their families. From the presentation of results above, farmers complain of highly bureaucratic processes in adapting to drought, for example, in availing themselves of crop insurance. In contrast, for some farmers who have alternative sources of livelihood, these fears and worries about climate change impacts seem to have been effectively managed. The point being made is that enhancing farmers’ adaptive capacity to climate change impacts would help them manage mental health issues more effectively. Thus, it leads to making more institutional adaptations available.

Farmers' mechanisms revolve around evasion, keeping a positive mindset, and relying on social support. These mechanisms compare with what is reported in the literature (e.g., Vayro et al., 2022). The framework pertains to the social aspect, which emphasizes the importance of social networks and relationships in promoting well-being. In this research, we took a step further to inquire about farmers’ access to these services. We found that farmers were unaware of the mental health services available for the general population in their respective towns. Perhaps this is the part on which the discourse should be built. How could these facilities be better promoted to their intended users? What mechanisms could be employed to minimize, if not eradicate, the stigma of visiting these facilities? Is there a chance that a mental health service package could be made specifically for farmers?

Moving forward, it is highly recommended that quantitative studies be conducted in the future to give flesh to the issues of interest that emerged from this inquiry. The strength of this study lies in its ability to identify mental health issues related to climate change impacts in rice-farming communities. What it was not able to do was to determine the extent to which these issues are happening. While the framework used in this study is robust, it would be beneficial if future inquiries aimed to develop frameworks that are better equipped to unpack local or even hyperlocal realities. This is important given that it is known that climate change impacts are socially differentiated. Additionally, we recommend conducting an inquiry into the effectiveness of information and communication technologies in helping farmers

cope with the impacts of climate change. Intuitively, this is an interesting area of research that was not covered by this current study.

6.0 Conclusion

Overall, and with respect to the framework, this paper cogently shows that farmers' experiences of climate change impacts and the challenges they face in dealing with those impacts have coalesced to cause them to suffer from various mental health issues. There is evidence of worry, fear, sadness, and poor quality of sleep resulting from thinking about the impacts of climate change on their livelihood and overall ability to provide.

This research joins the emerging literature on the impacts of climate change on farmers' mental health. Through this study, we have made a significant contribution by conducting research in an LMIC country, the Philippines, which is underrepresented in this discourse. We also argue that it is high time to employ a systemic and holistic approach to address this issue, rather than operating in silos. As shown in this study, addressing various climate change impacts, such as drought and flooding, requires a holistic and systemic approach due to the multiplicity of its dimensions.

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