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RESEARCH ARTICLE

CLIMATE INSECURITY, CARE BURDENS, AND WOMEN'S MENTAL HEALTH IN THE NORTHWEST NIGERIA: A POLITICAL ECONOMY ANALYSIS

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ABSTRACT

Climate change profoundly impacts agrarian societies, yet its gendered mental health dimensions remain critically understudied, particularly in sub-Saharan Africa. This mixed-methods study, situated in Northwest Nigeria, investigates the pathways through which climate-induced livelihood loss exacerbates unpaid care burdens and emotional distress among women in agrarian and pastoral communities. A cross-sectional survey of 500 women was conducted, supplemented by qualitative data from documentary reviews and 24 key-informant interviews analysed through qualitative policy analysis. Survey results revealed high levels of climate-induced livelihood stress, with 78.2% (n=391) reporting significant crop/livestock loss. This correlated strongly with increased care work, as 72.0% (n=360) reported spending over 6 hours daily on unpaid care during climate-stress periods. Mental health outcomes were severe: 42.0% (n=210) met criteria for probable depression (PHQ-9 ≥10), and 36.0% (n=180) for probable anxiety (GAD-7 ≥8). Regression analyses indicated that increased care burden mediated the relationship between livelihood loss and poor mental health. Qualitative findings exposed a policy vacuum where neither climate adaptation nor health policies integrate gender-responsive mental health support, constrained by patriarchal norms, resource scarcity, and a fragmented governance structure. The study concludes that effective intervention requires a political economy lens, recognizing mental health as an outcome of gendered structural inequalities amplified by ecological crisis. It advocates for policies that directly reduce and redistribute unpaid care work within climate adaptation frameworks.

Keywords: Climate change, mental health, unpaid care work, gender, political Economy, Sahel

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1.0. INTRODUCTION

The accelerating climate crisis is increasingly framed not only as an environmental and economic challenge but as a significant threat to human health and well-being (Watts et al., 2021). In the Sahelian region of West Africa, climate change manifests through increased temperature variability, prolonged droughts, and erratic rainfall patterns, severely undermining rain-fed agriculture and pastoralism—the backbone of local economies (Zougmoré, Partey, Ouédraogo, Torquebiau & Campbell , 2018). The resulting livelihood insecurity creates ripple effects across social systems, with gendered dimensions that are both profound and under-analysed (Njoka et al., 2016). Nigeria, as Africa's most populous nation and a country with a significant portion of its landmass within the vulnerable Sahel, exemplifies these challenges, particularly in its northwestern states (Eze, 2020).

The political economy of climate change reveals that its impacts are not neutral; they intersect with and exacerbate pre-existing social inequalities (Arora-Jonsson, 2011). In highly patriarchal contexts like Northwest Nigeria, gender norms dictate rigid divisions of labour. Women bear primary responsibility for unpaid care and domestic work (UCDW); including water and fuel collection, food processing, childcare, and eldercare, while often also contributing to farm labour (Oluwatusin, 2019). Climate-induced environmental degradation intensifies this labour: dwindling water sources lengthen collection journeys, deforestation complicates fuelwood gathering, and poor harvests demand more intensive food processing to stretch scant supplies (Djoudi et al., 2016). This "care burden inflation" occurs alongside potential losses in women's own income-generating activities, trapping them in a cycle of time poverty and drudgery (Rao et al., 2019).

The psychological sequelae of this compounded stress are a critical yet neglected frontier in public health. Globally, a growing body of evidence links climate change to adverse mental health outcomes, including anxiety, depression, and post-traumatic stress, often conceptualised as "ecological distress" or "solastalgia" (Albrecht et al., 2007; Cianconi et al., 2020). In agrarian communities, mental distress is intimately tied to the loss of livelihood, place-based identity, and ontological security (Ellis & Albrecht, 2017). For women, whose well-being is inextricably linked to family welfare, the anxiety of failing to meet care responsibilities amidst scarcity may constitute a unique and chronic stressor (Harper et al., 2020). However, mainstream climate adaptation and health policies in Nigeria and across West Africa rarely integrate mental health, and are seldom gendered (Urama et al., 2022). This constitutes a significant policy failure, undermining both human well-being and the effectiveness of resilience-building programmes.

Existing research on climate and gender in Nigeria has focused largely on agricultural adaptation strategies (Akinbami et al., 2019) and women's vulnerability in conflict-prone regions (Oluwatusin, 2019). Few studies explicitly connect climate stress to care burdens (Eze, 2020). Meanwhile, Nigerian mental health research has documented high prevalence rates of common mental disorders, often linked to poverty and violence (Gureje et al., 2015), but has not systematically incorporated climate or care work variables. In the Sahel, studies from Niger and Mali highlight women's increased labour post-environmental shock (Djoudi et al., 2016), but stop short of measuring mental health impacts. Globally, pioneering work in Bangladesh and Australia has begun to model the climate-care-mental health nexus (Rao et al., 2019; Harper et al., 2020), demonstrating its empirical validity. This study aims to bridge these disparate literatures within the specific political-economic context of Northwest Nigeria.

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This study aimed to critically examine the interlinked pathways between climate-induced livelihood loss, increased unpaid care burdens, and the deterioration of women's mental health in Northwest Nigeria, through a political economy analytical lens. The specific objectives of this study are: (i) to quantify the prevalence of climate-induced livelihood stress, care burden inflation, and symptoms of common mental disorders among women in agrarian/ pastoral communities in Northwest Nigeria; (ii) to analyze the statistical associations and potential mediating role of care burden between livelihood loss and mental health outcomes, to critically analyze, through qualitative policy analysis, the existing policy frameworks and governance structures that enable or hinder a gender-responsive, mental health-informed approach to climate adaptation, and to synthesize mixed-methods findings to propose integrated policy and programmatic recommendations.

The questions this study sought to answer were; what is the magnitude of association between self-reported climate-induced livelihood loss, increases in unpaid care work, and symptoms of depression and anxiety among women in the study area? How do women subjectively experience and narrate the impact of climate-driven care work intensification on their emotional and psychological well-being? And how do existing national and sub-national policies related to climate change, health, and gender address or ignore the nexus of care work and mental health, and what political-economic factors shape this (non-)response?

2.0. Conceptual and Theoretical Frameworks

The study was guided by an integrated framework combining the Feminist Political Economy of Health (Morgan, 2019) and the Ecological Model of Climate and Mental Health (Berry et al., 2018). The former directs attention to how macro-structures (global political economy, national policy), meso-institutions (community norms, governance), and micro-level relations (household gender dynamics) interact to produce gendered health inequities. The latter model posits that climate events affect mental health through direct (e.g., trauma) and indirect pathways (e.g., economic loss, displacement). We posit that the intensification of UCDW is a critical, gendered indirect pathway. This integrated framework allows us to trace how a macro-level phenomenon (climate change) is filtered through gendered economic and social structures to impact micro-level mental health outcomes.

3.0. MATERIALS AND METHODS

3.1. Study Design

This study employed a sequential explanatory mixed-methods design (Creswell & Plano Clark, 2017). Phase 1 was a community-based cross-sectional survey to establish prevalence and associations. Phase 2 was a qualitative policy analysis using a critical interpretive approach (Yanow, 2007). This design facilitates an in-depth examination of not just the content of policy, but the power dynamics, values, and contextual constraints that shape its (non-)implementation. The qualitative phase helped explain and contextualize the quantitative results.

3.2. Study Setting and Period

The study was conducted in two states in Northwest Nigeria: Kaduna and Sokoto. These states were purposively selected for their high dependence on rain-fed agriculture and pastoralism, documented vulnerability to climate variability, and patriarchal social structures. Data collection occurred between March and August 2025, encompassing the end of the dry season and the beginning of the rainy season.

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3.3. Quantitative Component

Study Population, Sample Size, and Sampling

The target population was women aged 18-60 years, primarily engaged in agriculture or pastoralism, and resident in selected rural communities for at least five years. A multistage sampling technique was used. First, four Local Government Areas (LGAs) with high climate vulnerability indices were purposively selected (two per state). Second, six communities were randomly selected from each LGA. Finally, within each community, a systematic random sampling of households was employed, interviewing one eligible woman per household.

The sample size was calculated using the formula for cross-sectional studies: $n = Z^2P(1-P)/d^2$. Assuming a 50% prevalence (P) of significant climate-related stress (for maximum variability), a 95% confidence level (Z=1.96), and a 5% margin of error (d=0.05), the minimum sample was 384. Adjusting for a 10% non-response rate, the target sample was 422. The sample size was rounded up to 500 to increase the statistical power.

Inclusion Criteria

The inclusion criteria were; Women aged ≥18; primary livelihood in farming or livestock; resident in the community ≥5 years; provided informed consent.

Exclusion Criteria

The exclusion criteria were; Women with severe cognitive impairment or acute illness precluding interview; temporary residents.

Data Collection Instruments and Validation

A structured questionnaire was administered via face-to-face interviews in Hausa. It included:

Socio-demographic and Livelihood Section: Captured age, education, household size, primary livelihood, and a 10-item scale on Climate-Induced Livelihood Stress (CILS), adapted from Eze (2020) (Cronbach's α in this study = 0.81).

Unpaid Care Work Burden (UCWB) Module: Adapted from the UNICEF Multiple Indicator Cluster Survey (MICS) on time-use. Women estimated hours spent on water, fuel, food preparation, and direct care in a typical 24-hour period during "normal" and "climate-stress" (e.g., drought, poor harvest) periods.

Mental Health Measures:

Patient Health Questionnaire-9 (PHQ-9): Screens for depression. Validated in Nigeria (Adewuya et al., 2006), with good sensitivity and specificity at a cut-off ≥10.

Generalised Anxiety Disorder-7 (GAD-7): Screens for anxiety. Validated in primary care in Nigeria (Ibrahim et al., 2019), with a cut-off ≥8. Both tools were translated and back-translated into Hausa, with cognitive interviewing to ensure cultural relevance.

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3.4. Data Analysis

Data were analysed using SPSS v.29. Descriptive statistics (frequencies, percentages, means, standard deviations) characterised the sample. Inferential statistics included Pearson's correlation to examine relationships between CILS, UCWB, PHQ-9, and GAD-7 scores. Linear regression analyses were conducted to determine predictors of mental health scores. A simple mediation analysis using the PROCESS macro (Model 4, Hayes, 2017) tested the hypothesis that increased care burden mediates the link between livelihood stress and mental health symptoms.

3.5. Qualitative Component: Policy Analysis

Design and Data Sources

A qualitative policy analysis was conducted using two primary data sources:

Documentary Review: A critical review of 15 key policy documents at national and state levels (2010-2023). These included: National Climate Change Policy & Action Plan, National Gender Policy, National Mental Health Policy, National Agricultural Resilience Plan, and relevant State-level Development Plans.

Key Informant Interviews (KIIs): 24 semi-structured interviews were conducted with purposively selected stakeholders: policymakers (Ministries of Environment, Agriculture, Women's Affairs, Health), local government officials, leaders of women's farmer cooperatives, community leaders, and mental health professionals/NGO workers.

Analysis

A critical interpretive analysis (Yanow, 2007) was applied. Documents and interview transcripts were coded iteratively using NVivo 12. Analysis focused on: a) Problem representation: How are climate vulnerability, gender, and health framed? b) Policy silences: What issues (e.g., care work, mental health) are absent? c) Instruments & assumptions: What solutions are proposed and what gendered assumptions underpin them? d) Political and institutional constraints: What barriers to implementation are cited?

Ethical Considerations

The study procedures were reviewed and approved by the Health Research Ethic Committee of Ahmadu Bello University Teaching Hospital, Shika-Zaria (Ref: ABUTHZ/HREC/C57/2025). All participants provided written informed consent. Data were anonymised and stored securely.

4.0. PRESENTATION OF RESULTS AND DISCUSSIONS

4.1. Presentation of Results

4.1.1. Quantitative Findings

A total of 500 women completed the survey (response rate 100%). The mean age was 35.4 years (SD=9.2). The majority had no formal education (68.2%, n=341) and were married (89.2%, n=446). Households were large (mean size=7.8, SD=2.4), and 84.4% (n=422) relied solely on small-scale farming, with a further 12.2% (n=61) engaged in agro-pastoralism. The sample was drawn almost entirely from a Hausa-Fulani ethnic background (97.0%, n=485), reflecting the predominant demographics of the study region. Most women (72.4%, n=362) lived in households with a monthly income equivalent to less than 25,000 Nigerian Naira (approx. 30 USD), indicating widespread poverty.

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Table 2 presents the core findings related to the study variables. A high proportion of women (78.2%, n=391) reported experiencing significant climate-induced livelihood stress (CILS score >15). This was strongly associated with a reported increase in daily unpaid care work (UCW) during periods of climate stress (e.g., drought, poor harvests), with 72.0% (n=360) spending over six hours per day on UCW. The mean increase from a "normal" period was +3.2 hours (SD=1.4). Mental health symptoms were prevalent, with 42.0% (n=210) screening positive for probable depression (PHQ-9 ≥10) and 36.0% (n=180) for probable anxiety (GAD-7 ≥8).

Pearson correlations revealed significant positive correlations between CILS score and UCWB increase ($r = .62$, $p < .001$), between CILS and PHQ-9 score ($r = .58$, $p < .001$), and between UCWB increase and PHQ-9 score ($r = .65$, $p < .001$). Similar patterns were observed for GAD-7. In linear regression, controlling for age and education, both CILS ($\beta = .32$, $p < .001$) and UCWB increase ($\beta = .41$, $p < .001$) were significant independent predictors of PHQ-9 score (Model $R^2 = .47$). The mediation analysis confirmed a significant partial mediation effect. The total effect of CILS on PHQ-9 was significant ($c = .55$, $p < .001$). When UCWB increase was added as a mediator, the direct effect remained significant ($c' = .28$, $p < .001$), and the indirect effect through UCWB was also significant ($ab = .27$, bootstrapped 95% CI [.18, .37]). This indicates that a significant portion of the impact of livelihood stress on depression symptoms operates through the mechanism of increased care burden.

Table 3 presents the bivariate correlation matrix for the key continuous study variables. Pearson correlations revealed significant positive correlations between Climate-Induced Livelihood Stress (CILS) score and the increase in Unpaid Care Work Burden (UCWB) ($r = .62$, $p < .001$), between CILS and depression (PHQ-9) score ($r = .58$, $p < .001$), and between UCWB increase and PHQ-9 score ($r = .65$, $p < .001$). Similar strong positive correlations were observed between all three variables and anxiety (GAD-7) scores.

Two separate hierarchical linear regression analyses were conducted to predict depression (PHQ-9) and anxiety (GAD-7) scores, controlling for key socio-demographic variables (age and education level). Table 4 summarizes the results for the final model predicting PHQ-9 scores. In Step 1, age and education accounted for 4% of the variance. After entering CILS score and UCWB increase in Step 2, the total explained variance increased to 47%. Both CILS ($\beta = .32$, $p < .001$) and UCWB increase ($\beta = .41$, $p < .001$) were significant independent predictors of higher depression scores. The pattern of results for GAD-7 scores was nearly identical (Final Model: $R^2 = .43$, CILS $\beta = .29$, $p < .001$, UCWB increase $\beta = .38$, $p < .001$).

To formally test the hypothesis that the increase in unpaid care work mediates the relationship between climate-induced livelihood stress and poor mental health, a simple mediation analysis was conducted using the PROCESS macro (Model 4, Hayes, 2017) with 5,000 bootstrap samples. The analysis, with PHQ-9 as the outcome variable, confirmed a significant partial mediation effect (Figure 1). The total effect of CILS on PHQ-9 was significant ($c = 0.55$, $p < .001$). When UCWB increase was added as a mediator, the direct effect of CILS on PHQ-9 remained significant ($c' = 0.28$, $p < .001$). The indirect effect of CILS on PHQ-9 through UCWB increase was also significant ($ab = 0.27$, bootstrapped 95% CI [0.18, 0.37]). This indicates that a substantial portion (approximately 49%) of the total impact of livelihood stress on depression symptoms operates through the mechanism of

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increased care burden. A parallel mediation model with GAD-7 as the outcome yielded a nearly identical indirect effect (ab = 0.23, 95% CI [0.16, 0.32]).

4.1.2. Qualitative Findings

The Lived Experience: "The Work Has No End"

KIIs and open-ended responses painted a vivid picture of the nexus. A women's cooperative leader stated: "When the rains fail, the men go to the city or sit idle. For us, the work triples. We walk 10 kilometres for dirty water, spend hours pounding tough, wild grains, watch children cry from hunger, and still must please our husbands. The worry eats you from inside." This narrative of relentless, anxiety-provoking labour was universal.

Policy Analysis: Systemic Silences and Structural Barriers

Documentary analysis revealed a stark disconnect. Climate policies (e.g., Nigeria's National Climate Change Policy) framed adaptation in techno-economic terms (improved seeds, irrigation) with only token mentions of "gender mainstreaming". The National Mental Health Policy (2013) made no reference to climate or environmental determinants. The National Gender Policy mentioned care work but proposed no concrete measures for its reduction within climate contexts. KIIs with policymakers revealed this gap stems from fragmented governance. An environment ministry official noted: "My mandate is emission reduction and drought monitoring. Women's work and mental health are for other ministries". A health official conceded: "our mental health focus is on severe disorders, not the stress of daily life. We lack resources and see it as a social, not medical, issue." Critical interpretive analysis identified underlying power dynamics: the de-politicization of care work, the biomedical dominance in health which excludes social determinants, and the masculine orientation of both agricultural extension and environmental planning.

Critical interpretive analysis identified underlying power dynamics: the de-politicization of care work, the biomedical dominance in health which excludes social determinants, and the masculine orientation of both agricultural extension and environmental planning.

The demographic attributes of the participants are quantitatively assessed using percentages and mean and the results summarized in Table 1 differ based on the indicators. Similarly, the climate stress, care burden and mental care indicators are descriptively evaluated using simple percentages and mean and the results presented in Table 2. On the contrary, the inferential statistical models are employed as surrogate for determining the correlations and variations between and among distinct indicators and the results are sequentially summarized in Tables 3 and 4 for easy perusal and comparison.

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Table 1: Socio-demographic Characteristics of Participants (N = 500)

Characteristic	Category	Frequency (n)	Percentage (%)	Mean (SD)
Age (years)	18–29	152	30.4	35.4 (9.2)
	30–39	185	37.0	
	40–49	122	24.4	
	50–60	41	8.2	
Educational Attainment	No Formal Education	341	68.2	
	Qur'anic School Only	93	18.6	
	Primary Education	53	10.6	
	Secondary or Higher	13	2.6	
Marital Status	Married	446	89.2	
	Widowed	38	7.6	
	Divorced/Separated	16	3.2	
Household Size	1–4 members	66	13.2	7.8 (2.4)
	5–8 members	293	58.6	
	9+ members	141	28.2	
Primary Livelihood	Crop Farming Only	422	84.4	
	Agro-Pastoralism	61	12.2	
	Livestock Rearing	17	3.4	
Ethnicity	Hausa-Fulani	485	97.0	
	Other	15	3.0	
Estimated Monthly Household Income (NGN)	< 25,000	362	72.4	
	25,000 – 50,000	111	22.2	
	> 50,000	27	5.4	

Note: *NGN = Nigerian Naira. At time of study, 25,000 NGN ≈ 30 USD.*

Table 2: Prevalence of Climate Stress, Care Burden, and Mental Health Symptoms

Variable	Category / Measure	Frequency (n)	Percentage (%) / Mean (SD)
Climate-Induced Livelihood Stress (CILS)	High Stress (Score > 15)	391	78.2
	Moderate/Low Stress	109	21.8
Unpaid Care Work (Climate-Stress Period)	> 6 hours per day	360	72.0
	Increase from "normal" period (mean hrs)	—	+3.2 hrs (1.4)
Probable Depression (PHQ-9 ≥ 10)	Positive Screen	177	42.0
	Mean PHQ-9 Score	—	9.8 (5.6)
Probable Anxiety (GAD-7 ≥ 8)	Positive Screen	180	36.0
	Mean GAD-7 Score	—	8.1 (4.9)

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Table 3: Bivariate Correlations between Key Study Variables

Variable	1	2	3	4
1. Climate-Induced Livelihood Stress (CILS)	1			
2. Unpaid Care Work Burden Increase (UCWB)	.62***	1		
3. Depression (PHQ-9) Score	.58***	.65***	1	
4. Anxiety (GAD-7) Score	.54***	.61***	.79***	1

Note. *All correlations are Pearson's r. **p < .001. CILS = Climate-Induced Livelihood Stress; UCWB = Unpaid Care Work Burden; PHQ-9 = Patient Health Questionnaire-9; GAD-7 = Generalised Anxiety Disorder-7.*

Table 4: Hierarchical Linear Regression Predicting Depression (PHQ-9) Scores

Predictor	B	SE B	β	t	p
Step 1 (R^2 = .04)					
Constant	10.12	1.05	—	9.64	< .001
Age	−0.02	0.03	−0.03	−0.67	.505
Education Level	−1.15	0.41	−.013	−2.81	.005
Step 2 (ΔR^2 = .43*)					
Constant	0.87	0.85	—	1.02	.308
Age	0.01	0.02	.02	0.45	.653
Education Level	−0.41	0.31	−.05	−1.32	.187
CILS Score	0.28	0.04	.32	7.00	< .001
UCWB Increase	1.64	0.17	.41	9.65	< .001

Note: *B = unstandardised coefficient; SE B = standard error; β = standardised coefficient. Final Model: F(4, 417) = 92.56, p < .001, R^2 = .47, Adjusted R^2 = .47. **p < .001.*

Table 5: Summary of Key Barriers to Implementing Gender-Responsive Mental Health Care in Climate Policy

Level	Barrier	Illustrative Quote / Evidence
Political & Ideological	Patriarchal norms devaluing care work	"Reducing women's work is not a priority; it is their natural duty." (Community Leader, KII)
	Biomedical model of health dominance	Policy documents frame mental health as individualised illness, not a societal outcome.
Institutional & Governance	Ministry silos and poor coordination	No joint planning between Environment, Women's Affairs, and Health ministries.
	Absence of gender-responsive budgeting	Climate adaptation budgets have no line items for care infrastructure (water, energy).
Resource & Capacity	Severe underfunding of mental health	<1% of health budget allocated to mental health nationally (Document Review).
	Lack of gendered data and monitoring	No time-use surveys integrated into climate vulnerability assessments.

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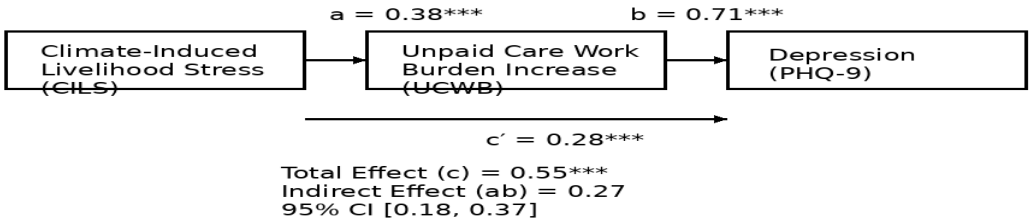

Figure 1. Mediation Model of Climate-Induced Livelihoo

4.3. DISCUSSIONS

This study provides robust empirical evidence from Northwest Nigeria confirming that climate-induced livelihood stress is significantly associated with poorer mental health among women, and that this relationship is partially mediated by the intensification of unpaid care work. The high prevalence of probable depression (42.0 percent) and anxiety (36.0 percent) far exceeds national estimates for common mental disorders in Nigeria, which range from 12 – 25 percent (Gureje et al., 2015), underscoring the acute vulnerability of this population. Our finding that over 70 percent of women reported care work exceeding 6 hours daily during climate stress aligns with qualitative studies from the Sahel (Djoudi et al., 2016) and South Asia (Rao et al., 2019), pointing to a global pattern of gendered time poverty triggered by environmental change.

The mediation pathway identified quantitatively and elaborated qualitatively; where livelihood loss translates into increased drudgery and anxiety about fulfilling care responsibilities, offers a crucial refinement to the Ecological Model of Climate and Mental Health (Berry et al., 2018). It specifies a key, socially patterned indirect pathway. This moves beyond framing mental distress as solely a reaction to economic loss, highlighting it as a consequence of the gendered experience of that loss, rooted in unequal distributions of labour and concern. This resonates with Harper et al.'s (2020) concept of "family care worry" as a unique climate-related stressor for women.

Our policy analysis reveals a profound structural failure. The near-total silence on mental health and care work within Nigerian climate and gender policies mirrors findings from across Africa (Urama et al., 2022). This is not merely an oversight but a function of a political economy that externalises the costs of social reproduction onto women and households (Morgan, 2019). As our critical analysis showed, policy remains locked in sectoral silos, reinforcing a dichotomy between the "productive" economy (targeted by climate interventions) and the "reproductive" economy (rendered invisible). This echoes Arora-Jonsson's (2011) critique of how technocratic climate solutions often reinforce existing gender hierarchies.

The barriers identified; patriarchal norms, institutional fragmentation, and resource scarcity, are consistent with challenges to gender mainstreaming documented in Kenya's climate policy (Njoka et al., 2016) and Ghana's health policy (Yaya et al., 2019). However, the specific intersection with mental health adds a layer of complexity, demanding engagement with deeply stigmatized health

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issues within under-resourced systems. Our study suggests that without addressing the fundamental political-economic drivers; the unequal distribution of care and the lack of value afforded to mental well-being, piecemeal interventions will fail.

This study is not without some limitations. The cross-sectional design limits causal inference. The reliance on self-report for care work hours is subject to recall bias, though the focus on comparative change (normal vs. stress periods) mitigates this. The study's focus on one region of Nigeria may limit generalizability to other contexts, though the theoretical framework is widely applicable.

5.0. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

This study demonstrates that the climate crisis is a mental health crisis for women in agrarian Northwest Nigeria, intricately channeled through the inflation of their unpaid care burdens. A political economy analysis exposes this outcome as structurally produced by policy silences and patriarchal norms.

5.2. Recommendations

Based on our findings above, we recommend the following; 1) there is need to revise Nigeria's National Climate Change Policy and State Action Plans to explicitly include "reduction and redistribution of unpaid care work" as a key adaptation indicator, linked to investments in water, renewable energy, and childcare infrastructure, 2) mainstream mental health promotion into climate adaptation and social protection programmes, training frontline agricultural and health extension workers in community-based psychosocial support, 3) fund longitudinal studies on the climate-care-mental health nexus and incorporate time-use modules into national demographic and climate vulnerability surveys, and 4) support women's collectives to advocate for care-responsive resilience planning and to lead community-based care solutions.

Addressing the mental health toll of climate change requires moving beyond technical fixes to challenge the gendered power relations that make women's bodies, time, and minds the shock absorbers of ecological breakdown.

Authors' Contributions

AAY, ZA, SMB, AIA, and BAY conceptualized and designed the study. AAY, ZA, SMB, AIA, and BAY were involved in data collection and analysis. AAY, ZA, SMB, AIA, and BAY drafted and revised the manuscript. All authors critically reviewed for intellectual content, approved the final version, and agreed to be accountable for all aspects of the work.

Availability of Research Data

Data are available upon reasonable request from the corresponding author.

Conflict of Interest

The authors declare no that conflict of interest exist in this manuscript.

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