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Rippling Tides: Understanding Climate Change Impacts, Gender Roles, Communication and Family Dynamics in Indonesian Coastal Communities

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Abstract

This study examines the perceptions of climate change, division of gender roles, verbal affection, and verbal violence within husband-wife dynamics in coastal fishing families in Indonesia. Employing quantitative research, we conducted purposive sampling involving 456 fishing families across three northern and southern coastal communities in West Java Province, Indonesia. The study utilized independent t-tests and Pearson's correlation to analyze the statistical relationships among continuous variables. Our findings indicate that families on the North Coast experience the impacts of climate change more prominently than those on the South Coast. However, the consequences of these impacts appear more pronounced in the South. Husband-wife cooperation in domestic, public, and social activities is more prevalent on the South Coast compared to the North. A complex interplay is observed between verbal affection, verbal violence, education, and family size in shaping household interactions. In the South, exhibition of verbal affection by the women correlates with their perception of the impacts of climate change, while verbal violence is associated with their years of education and number of children. In the North, exhibition of verbal violence by the women correlates with the number of children, and verbal affection influences their perception of climate change. The division of roles between husband and wife in the domestic sector in the northern region is characterized by verbal affection, while the public sector in the southern region exhibits a significantly positive relationship with verbal violence. This study suggests that regional differences in role divisions within households are associated with distinct emotional dynamics.

Keywords: *climate change; gender roles; verbal affection-verbal violence; West Java-Indonesia fishing families.*

Introduction

Climate change Climate change has profound impacts on coastal areas (Leitch 2023), affecting the lives of small-scale fishermen with reduced catches and unpredictable weather (Galappaththi et al. 2021). Additionally, it brings about larger sea waves and unpredictable peak catch seasons, making the yields uncertain for fishermen (Yanfika et al. 2021). Climate change can also exacerbate health issues, nutrition challenges (Swinburn et al. 2019), and social well-being through aspects such as care, cooperation, and solidarity (Ivanova and Büchs 2022) . Fishing communities, in general, face

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vulnerabilities linked to low formal education, poor health (Hjorthen et al. 2022) (Das, Majumder, and Sharma 2023), large family sizes (d'Armengol et al. 2018), and impoverished female-headed households (Ngarava et al. 2022).

Indonesia, being an archipelagic nation with two-thirds of its territory consisting of seas, relies heavily on fishing as a crucial livelihood for coastal communities. West Java Province encompasses two distinct coastal regions. The southern coast features a steep seabed profile and large waves, directly facing the Indian Ocean. In contrast, the northern coast has a muddy sand seabed topography, lacks significant waves, and borders the Java Sea directly (Mahatmawati, Efendy, and Siswanto 2009).

Over the past three years, the number of fishermen in West Java has seen a decline. In 2019, there were 91,805 individuals, which decreased to 63,989 in 2021, reflecting an annual decrease of 16.51% ([KKP] Marine and Fisheries Ministry 2022). Consequently, climate change significantly impacts fishing families that rely on nature for their livelihoods, resulting in decreased catches and a subsequent decline in fishermen's income ([WALHI] Indonesian Forum for the Environment 2022). There is a suspicion that climate change influences family income (Jalal et al. 2021), with the husband's income decreasing and the wife's independence impacting communication patterns within the family. This shift in dynamics may lead to conflicts, quarrels, and an increased risk of divorce (Amri, Adnan, and Fitri 2022).

On the other hand, wives of fishermen play a crucial role in contributing to the family economy by actively participating in income-generating activities alongside their husbands (Nadhifah, Puspitawati, and Defina 2021) (Amanah et al. 2013). These activities involve selling fish, processing catches, and preparing supplies for their husbands (Fesanrey, Umasugi, and Umanail 2020; Purwanto, Rusdarti, and Prasetyo 2020); Vervaele 2014). Other studies indicate a division of roles between husband and wife in coastal families, where men returning from the sea need rest while women engage in cleaning, fish processing, and ongoing household tasks. However, in the case of substantial catches, husbands and wives collaborate in cleaning and processing the fish together (Torell et al. 2021).

The lives of fishermen at sea are precarious and challenging, illustrating the characteristics of fishermen as active, adventurous, aggressive, brave (Pollnac and Poggie 2008), and expressive (Pollnac 1988). This uniqueness in work patterns and lifestyles among fishing families leads to limited time for husbands to interact or communicate with their wives and children. Fishermen's irregular and uncertain working hours, heavily influenced by climatic conditions, contribute to this challenge in coastal areas of Indonesia. This lack of time for family interactions is supported by research on fishing families in Purwerejo (south coast of Java), revealing minimal time for communication and interaction within families (Hidayati et al. 2021).

Communication within families generally exhibits various patterns influenced by socio-cultural conditions and family backgrounds (Holmes et al. 2013). Families with effective communication tend to experience better health, happiness, harmony, and overall quality of life, both mentally and physically (Ho et al. 2018). Hence, effective communication is crucial for fostering positive relationships within the family (Dewall, Anderson, and Bushman 2011) (Manurung, Victoriana, and Amadeus 2021).Verbal and nonverbal communication, particularly that which is commanding or threatening, can be detrimental to family dynamics (Arkandito et al. 2016). Moreover, verbal, and nonverbal communication plays a crucial role in shaping children's self-concepts (Wicaksono and Novianti 2021). Verbal communication involves language as a tool, producing spoken or written words, and is effective as long as interacting parties understand the language used (Parianto and Marisa 2022). Verbal communication encompasses both verbal violence and affection. Verbal violence includes attacks on the other party's self-concept through insults, character attacks, harsh taunts, and the use of derogatory language (Hocker and

Wilmot 2018), while verbal affection represents positive communication expressed through kind words, attention, and responsibility (Polcari et al. 2014).

In reality, verbal communication between wives and husbands can vary among families. Wives tend to employ a more hostile communication style with language carrying negative connotations, while husbands often adopt a withdrawn style, such as silence (Krivickas et al. 2010). However, research by (Jastrzebska-Szklarska 2002) and (Barata et al. 2005) suggests otherwise. Husbands are inclined to engage in conversational practices that are derogatory toward their partners, including swearing and cursing, using derogatory regional language to belittle their wives. Studies indicate that husbands may utilize verbal insults, undermining self-esteem, controlling behaviors, disrespectful conduct, and threats towards their wives (Barata et al. 2005).

Verbal violence within families is not exclusive to other countries and occurs in Indonesia as well. Instances include husbands scolding, cursing, using derogatory terms (such as calling their wife a dog), insulting, and engaging in threatening behavior (threatening consequences if the victim tries to leave or report the violence). Such actions can result in feelings of shame, low self-esteem, disappointment, lack of respect for the husband, and suppressed anger in wives (Tubalawony, Daulima, and Susanti 2019). According to ([National Commission on Violence Against Women] 2023) complaint data for 2022, women predominantly face psychological violence (2,083 cases/35.72%). In personal contexts, the most common form of violence against women is psychological (1,494 cases), including psychological violence against wives and daughters [37]. Ministry data (Ministry of Women's Empowerment and Child Protection) for 2023 recorded 3,627 cases of violence within households, including 1,910 cases of psychological violence ([KPPA] The Ministry of Women’s Empowerment and Child Protection 2023). Examples of psychological violence experienced by wives in Indonesia include yelling, negative statements, and being ignore(Yurni 2019).

Research on perceptions of climate change and its impact on the division of roles between husband and wife, verbal affection, and verbal violence within fishing families in Indonesia is limited and lacks insight. In light of this, the objectives of this research are as follows:

1. Analyze differences in family characteristics, perceptions of climate change, division of roles between husband and wife, and the use of verbal affection-verbal violence in fishing families in the northern and southern coastal areas of West Java.

2. Analyze the relationship between family characteristics, perceptions of climate change, division of roles between husband and wife, and the use of verbal affection - verbal violence in fishing families in the northern and southern coastal areas of West Java.

Climate change and the Intimate Partner Violence IPV Theory

Climate change is a catalyst for violence throughout the world (Munala et al. 2023). These conditions create increasingly intensive resource competition (Mavrakou et al. 2022). Climate change impacts are not limited to environmental degradation but also extend to social and economic spheres, influencing human behaviour and exacerbating existing vulnerabilities. The scarcity of resources such as water and arable land due to changing weather patterns intensifies competition, leading to conflicts within communities. In some regions, reports have shown a correlation between severe weather events and an increase in intimate partner violence, suggesting a direct link between environmental stressors and interpersonal violence.

Moreover, women and girls often bear the brunt of climate change-induced violence, facing increased risks of abuse and exploitation following disasters (Mavrakou et al. 2022). The breakdown of social structures and support systems in the aftermath of extreme weather events leaves them more vulnerable to gender-based violence and

exploitation. Economic strain resulting from disrupted livelihoods further exacerbates these vulnerabilities, as men may resort to violence as a means of asserting control or coping with stress in the face of dwindling resources (Mavrakou et al. 2022).

The connection between climate change and violence is multifaceted and complex, influenced by a range of social, economic, and environmental factors (Camey et al., 2020). In agricultural settings, where communities rely heavily on natural resources for their livelihoods, the loss of crops or livestock due to extreme weather events can lead to feelings of insecurity and anxiety among men unable to provide for their families (Munala et al. 2023). This sense of inadequacy and loss of status may contribute to increased tensions within households, potentially leading to instances of intimate partner violence (Whittenbury, 2012).

The impact of climate change on violence extends beyond individual households to entire communities and regions. Disasters like Hurricane Katrina and Cyclone Pam have demonstrated the widespread social disruption and increased risk of violence associated with extreme weather events. In the aftermath of such disasters, communities face not only physical destruction but also the psychological and social toll of displacement, loss, and uncertainty, creating fertile ground for heightened tensions and conflict (Anastario 2009).

Building upon Munala et al. 2023, which established connections between climate change, severe weather events, and intimate partner violence, this study endeavours to extend the analysis by incorporating a broader spectrum of influencing factors. In addition to exploring the well-established components of climate stressors, gender inequalities, and power dynamics, this research seeks to delve deeper into individual factors such as levels of education, religious beliefs, and perceptions of climate change. Furthermore, it aims to investigate household dynamics including family size and the interplay between spouses. By comprehensively examining these variables, the study aims to provide a more nuanced understanding of the complex interactions shaping intimate partner violence within the context of environmental changes and social dynamics. The framework, shown in Figure 1, guides this research and the interconnectedness of climate change and violence.

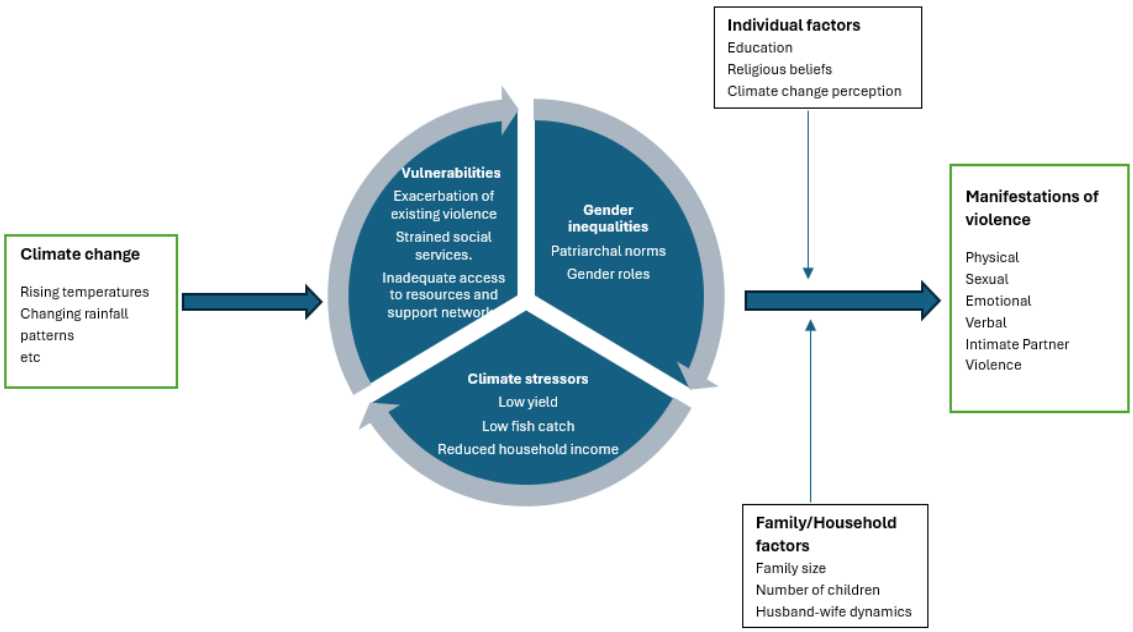

Figure 1. Adapted from Munala et al. 2023

Method

Research Design, Time, and Location

This research was conducted on both the North and South coasts of West Java, Indonesia, utilizing a quantitative approach and a survey method from September to October 2023. The research methodologies underwent Institutional review and received approval from the Human Research Ethics Committee of Bogor Agricultural University (IPB University) under No. 1058/IT3.KEPMSM-IPB/SK/2023. The selection of West Java Province as the research location is justified based on its significant population of fishermen and a high incidence of natural disasters such as landslides (613 cases), and extreme weather (478 events), making it a relevant area for studying the impacts of climate change. Six communities, namely Subang, Indramayu, and Cirebon representing the north coast, and the Sukabumi, Garut, and Pangandaran regencies representing the south coast, were randomly selected without replacement (Figure 1). The number of fishermen at sea is correlated with family welfare indicators, including the poverty depth index, Gini ratio, and family integrity/divorced families (Table 1).

Table 1 Number of sea fishermen and family welfare in 6 regencies in the northern and southern coastal areas of West Java

Regency	Number of Fishermen	Poverty depth index	Gini Ratio	Divorce rate
North Coast				
Subang	2.861	1.93	0.360	3.973
Indramayu	40.655	2.46	0.300	8.026
Cirebon	10.779	1.94	0.355	7.112
South Coast				
Sukabumi	7.143	1.04	0.309	2.694
Garut	3.623	1.40	0.302	5.509
Pangandaran	7.000	1.25	0.294	n.a.

Source: Extracted from open data jabar (BPS 2021) ([Jabar] 2016) ([Jabar] 2021)([BPS-Jabar] 2023)

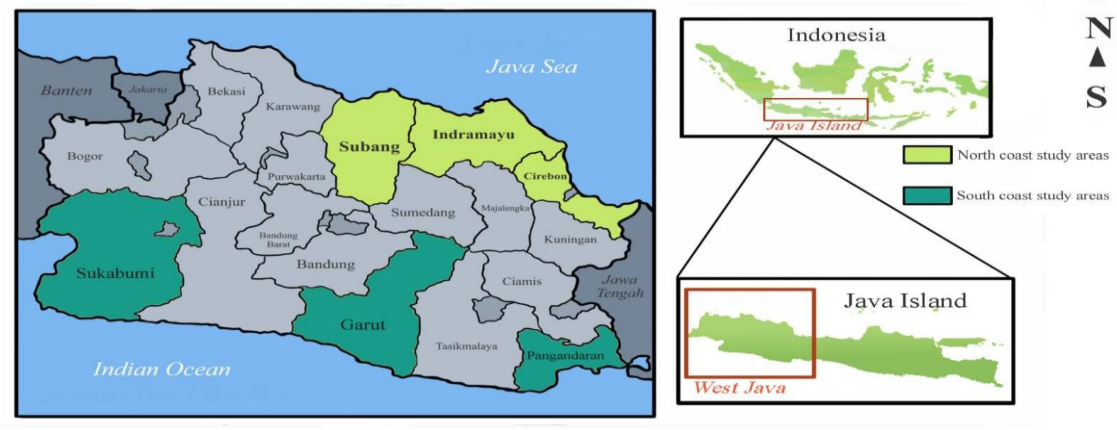

Figure 1. Map of research locations

Research Sampling

The study's population comprised fishing families in the coastal areas of West Java Province. The intentional selection of northern coastal areas (Indramayu, Cirebon, and

Subang) and southern coastal areas (Sukabumi, Pangandaran, and Garut) through purposive sampling aimed to capture the diversity and characteristics of both northern and southern coastal communities in West Java. Fishing families were chosen based on the social structure of the fishing community, distinguishing between owner fishermen and fishermen. The specific criterion for this research was fishing families with a complete family structure (not divorced). Research respondents per location included 76 fishermen's wives, totaling 228 respondents in both the north and south coastal areas, resulting in 456 fishermen's wives.

Data Collection

Primary data, encompassing family characteristics, perceptions of climate change, division of roles between husband and wife (gender cooperation), and verbal affection and violence between husband and wife, were collected through interviews with fishermen's wives using a research questionnaire.

Measurement of Variables

Family characteristics included age, employment, education, income, number of children, and the health status of the respondents. The climate change perception variable was measured using an instrument developed by researchers containing seven question indicators related to perceived climate change in the last two years and six questions regarding the specific impacts felt related to climate change. Answer choices used a two-point Guttman scale: 1=yes and 0=no. The Cronbach's alpha value was 0.590.

Furthermore, the instrument for measuring the variable division of husband-wife roles was developed by researchers based on the instrument "The Division of Family Roles" (Ericksen, Yancey, and Ericksen 1979). The variable for dividing the roles of husband and wife in gender perception was divided into three dimensions: household (domestic), public, and social roles in fishing families (Nadhifah et al. 2021). The instrument consists of 13 question indicators: domestic=7 indicators, public=4 indicators, and social=2 indicators. Answer choices used a Likert scale of one to six: 1=only wife, 2=mainly wife, 3=shared between husband and wife, 4=mainly husband, 5=only husband, and 6=other. The reliability test results showed Cronbach’s alpha of 0.609.

The verbal use variable in the family consisted of verbal affection and violence. The use of verbal affection and violence includes verbal use carried out by wives for husbands and husbands for wives. This variable instrument was modified from Polcari et al. (2014) and Jeong et al. (2015) with six indicators of verbal violence and four indicators of verbal affection. Answer choices used a Likert scale of one to three: 1=never, 2=sometimes, and 3=often. The reliability test results showed a Cronbach's alpha of 0.745.

Processing and analysis of data

The primary data obtained from the survey were processed using Microsoft Excel and analyzed using the Statistical Package for Social Science (SPSS) version 25.0. For each variable dimension, a score was assigned, summed, and calculated composite, then transformed into an index. For the climate change perception variable, the answer "yes" was given a score of one (1), and the answer "no" was given a score of zero (0). The higher the perception score, the more significant climate change felt by the respondent. Then, the variable for dividing the roles of husband and wife in gender perception received a score of one (1) for the answer choices "only husband" and "only wife," a score of two (2) for especially the wife and especially the husband, and a score of three (3) for divided between husband and wife. Other responses were assigned a score of zero. The higher the total score, the higher the collaboration between husband and wife in carrying out activities. Furthermore, the verbal use variable assigned a score of zero for the answer choice "never," one for "sometimes," and two for "often." This means that the higher the score, the greater the tendency to use verbal cues (affection or violence).

Subsequently, the processed data were analyzed using descriptive analysis, independent t-tests, and Pearson correlation analysis. Descriptive data analysis was performed to identify the images related to the distribution of all variables. Different tests were conducted to analyze the differences in the variables between the north and south coasts. Subsequently, correlation analysis was performed to analyze the relationship between each variable.

Results

Family Characteristics

The results of the descriptive analysis in Table 2 show that the respondents' families had an average of two children. The majority of the housewives were aged 21–40 years. Most housewives had formal education of up to six years or the equivalent of completing elementary school. Some women had pursued higher education up to university level in the southern coastal region, but none in the northern coastal region. More than half of the housewives had no income as they held the primary status of housewives (IRT). However, four out of 100 these women still earned income from side jobs such as working as a fish seller, fish processing (shredded meat, crackers, salted fish), and operating a stall. Almost all wives were physically healthy in the central and southern coasts.

Table 2 Distribution of respondents based on number of children, characteristics of wives and husbands in the northern and southern coastal areas

Family Characteristics	North	South	Total
Number of children			
1	20.6	11.8	16.2
2	39.5	45.6	42.5
3	29.8	26.8	28.3
4	7.9	11.0	9.4
5	1.3	3.1	2.2
6	0.4	0.4	0.4
7	0.4	1.3	0.9
Total	100.0	100.0	100.0
Wife Characteristics			
Age			
21 – 40	61.8	72.4	67.1
41 – 60	38.2	27.2	32.7
> 60	0.0	0.4	0.2
Total	100.0	100.0	100.0
Work			
Housewife	58.3	71.9	65.1
Fish seller	6.6	1.8	4.2
Trader	19.33	20.2	19.7
Fish processor	11.8	1.3	6.6

Family Characteristics	North	South	Total
Other	3.9	4.8	4.4
Total	100.0	100.0	100.0
Education			
No school	1.3	0.4	0.9
Elementary school	22.4	11.4	16.9
Completed elementary school	39.0	34.6	36.8
Junior high school	3.1	2.6	2.9
Completed middle school	22.4	31.1	26.8
Senior high school	0.9	0.4	0.7
Completed high school	11.0	18.4	14.7
College	0.0	0.8	0.4
Total	100.0	100.0	100.0
Income			
IDR 0	53.9	68.0	61.0
IDR 1 - Rp1.000.000	9.6	7.9	8.8
IDR 1.000.001 – IDR5.000.000	25.0	17.5	21.3
IDR5.000.001 – IDR10.000.000	8.8	4.4	6.6
> IDR10.000.001	2.6	2.2	2.4
Total	100.0	100.0	100.0
Health Status			
Healthy	94.7	86.0	90.4
Sick	5.3	14.0	9.6
Total	100.0	100.0	100.0
Husband Characteristics			
Age			
23 – 40	51.3	47.4	49.3
41 – 60	47.8	50.0	48.9
> 60	0.9	2.6	1.8
Total	100.0	100.0	100.0
Work			
Labor fishermen/boat crew	58.8	65.8	62.3
Fisherman owner/skipper	41.2	34.2	37.7
Total	100.0	100.0	100.0
Education			

Family Characteristics	North	South	Total
No school	2.2	0.9	1.5
Elementary school	36.8	8.8	22.8
Completed elementary school	43.9	45.6	44.7
Junior high school	0.9	4.8	2.9
Completed middle school	10.5	27.2	18.9
Senior high school	0.9	0.4	0.7
Completed high school	4.8	11.8	8.3
College	0.0	0.4	0.2
Total	100.0	100.0	100.0
Income			
≤ IDR 1.000.000	2.2	3.9	3.1
IDR 1.000.001 – IDR 2.000.000	12.3	20.6	16.4
IDR 2.000.001 – IDR 3.000.000	9.2	14.9	12.1
IDR 3.000.001 – IDR 4.000.000	10.1	5.3	7.7
IDR 4.000.001 – IDR 5.000.000	7.0	9.6	8.3
> IDR 5.000.000	59.2	45.6	52.4
Total	100.0	100.0	100.0
Health Status			
Healthy	96.1	88.2	92.1
Sick	3.9	11.8	7.9
Total	100.0	100.0	100.0

Half of the interviewed men (husbands) were aged 23–40 years. Almost two-thirds of the husbands work as laborers/crew members to fishermen, while the remaining one third are actual fulltime fishermen. Approximately half of them have formal education of up to six years, or the equivalent of completing elementary school, and have good health conditions in the last three months. Also, nearly 20% of them have incomes between 0-2 million, less than IDR 1 million (4.6%), and 1-2 million (19.7%). Additionally, it was discovered that more than half of the fishermen owned boats (72.1%) (Table 3).

Table 3 Distribution of family income by type of fisherman

Income	Fisherman owner/skipper	Labor fishermen/boat crew	Total
≤ IDR 1.000.000	0.6	4.6	3.1
IDR 1.000.001 – IDR 2.000.000	11.0	19.7	16.4
IDR 2.000.001 – IDR 3.000.000	4.7	16.5	12.1
IDR 3.000.001 – IDR 4.000.000	4.7	9.5	7.7
IDR 4.000.001 – IDR 5.000.000	7.0	9.2	8.3
> IDR 5.000.000	72.1	40.5	52.4

Income	Fisherman owner/skipper	Labor fishermen/boat crew	Total
Total	100.0	100.0	100.0

Climate Change Perception of Housewives and its Impacts

Table 4 shows significant differences between housewives' perceptions of climate change in the northern and southern coastal areas, in that the while the housewives in the northern coastal region scored perception index of 72.7, in the southern coastal region, it is 63.03. In more detail, housewives in the northern coastal areas perceive climate change through increasing air temperatures, drought or long dry spells, and flooding. On the other hand, unpredictable rainfall patterns, strong winds blow more often, and waves/tidal waves are the main indicators of perception for housewives in the southern coastal areas.

The regional disparity in how housewives perceive climate change impact was minimal, with a coefficient of 0.068. This suggests that there is no statistically significant difference in how these women in the northern and southern coastal areas perceive the impact of climate change. However, despite this lack of statistical significance, housewives in the South generally feel a more pronounced impact compared to their counterparts in the North. Specifically, housewives in both regions believe that climate change does not significantly affect various indicators such as meeting daily living needs, disrupting children's education, obtaining clean water, and asset loss. It is noted that the perception of climate change does not differ significantly between the two regions, yet wives in the South perceive greater impacts, including heightened susceptibility to illness and a reduction in income by $0,000.

In summary, while there may not be a statistically significant distinction in perceptions between the northern and southern coastal areas, housewives in the southern region express a stronger sense of the impacts of climate change, such as increased susceptibility to illness and reduced family income. The lack of significant differences in climate change perceptions may not align with the observed disparities in the experienced changes, including altered rain patterns, higher air temperatures, stronger winds, and tidal waves, as detailed in Table 4. Despite the overall similarity in climate change perceptions, wives in the North generally encounter more climate-related changes, whereas those in the South bear a more substantial impact on their family's economic well-being.

Table 4 Independent t-test of differences in wives' perceptions of climate change and its impacts based on northern and southern coastal areas

Variables/Dimensions Indicator	North (Mean)	South (Mean))	p-value
Housewives' Perception of Climate Change			
Rainfall increases	0.55	0.54	0.779
Rain patterns are unpredictable	0.85	0.92	0.020*
Increased air temperature	0.92	0.75	0.000*
Strong winds blow more often	0.75	0.84	0.027*
Drought/drought is longer	0.56	0.38	0.000*
Waves/tidal waves are higher	0.69	0.78	0.034*
Flood	0.78	0.21	0.000*
Wife's Perception Score on the impact of climate change	5.09	4.41	0.000*

Variables/Dimensions Indicator	North (Mean)	South (Mean))	p-value
Mean ± Std deviation (Index)	72.74 ± 20.18	63.03 ± 20.67	0.000*
Min-Max (Index)	14.28-100.00	14.28-100.00	
Housewives' Perception of the impact climate change			
It's easier to get sick	0.51	0.73	0.000*
Reduced income	0.79	0.91	0.000*
Difficulty meeting daily living needs	0.54	0.54	0.925
Disrupting children's education	0.44	0.48	0.453
It's difficult to get clean water	0.16	0.11	0.074
Loss of assets	0.42	0.36	0.179
Wife's Perception Score on the impact of climate change	2.86	3.11	0,068
Mean ± Std deviation (Index)	47.58 ± 26.13	51.82 ± 23.31	0.068
Min-Max (Index)	0.00-100.00	0.00-100.00	

Note: 0= no; 1= yes

Role Divid between Spouses

In this study, the roles assumed by husbands and wives are categorized into three dimensions: domestic, public, and social (refer to Table 5). The analysis of role division between spouses reveals that higher scores signify increased collaboration in family-related tasks across the three dimensions (domestic, public, and social). Notably, a significant distinction exists in the division of roles between husbands and wives in the northern and southern coastal areas ($p = 0.000$).

In the southern coastal region, there is a higher level of cooperation in role division, with an average score of 15.85, compared to the northern coastal region, which has an average score of 14.21. Examining the domestic dimension specifically, notable differences emerge in role division between husbands and wives in the northern and southern coastal areas. The average division of roles in the domestic sector in the northern coastal region is 8.32, whereas in the southern coastal region, it is 9.45. This discrepancy indicates lesser collaboration in domestic role division in the northern coastal region compared to the southern coastal region. While roles related to shopping and repairing household facilities are similar in both regions, significant differences are observed in tasks such as cooking, cleaning, washing clothes, drying clothes, and ironing clothes, where the average cooperation value is higher in the southern coastal area.

Regarding the public sector, no significant difference is found in the division of roles between husbands and wives in the northern and southern coastal areas ($p = 0.708$). However, specific tasks within the public sector, such as processing fish catches for sale and preparing for fishing, exhibit significant differences. In the northern coastal region, there is greater cooperation between husband and wife in processing caught fish for sale, with an average score of 0.80, compared to the southern coastal region, where the average is 0.62. On the other hand, preparation for going to sea shows less cooperation in the northern coastal region compared to the southern coastal region. Minimal differences are noted in tasks related to earning a living in non-fisheries fields and selling fish catches between the two coastal areas.

In the social sector, a significant difference is identified in the division of roles between husbands and wives in the northern and southern coastal areas ($p = 0.000$). The level of

cooperation in the social sector is lower in the northern coastal region compared to the southern coastal region. While no significant difference is observed in roles related to serving as administrators in social organizations between the two regions (p = 0.745), significant differences emerge in indicators of involvement in social activities. The average cooperation score for the southern coastal region (2.74) exceeds that of the northern region (2.15).

Table 5 Mean values and independent difference tests for the distribution of husband-wife roles based on the northern and southern coastal areas

Variables/Dimensions Indicator	North (Mean)	South (Mean))	p-value
Division of Roles between spouses			
Domestic			
Shopping	1.25	1.33	0.156
Repairs to household facilities (roof repairs, dead water pump)	1.00	1.09	0.145
Cook	1.25	1.39	0.020*
Cleaning the house (garden, bathroom, inside the house)	1.41	1.60	0.019*
Washing clothes	1.18	1.42	0.000*
Drying clothes	1.18	1.39	0.002*
Ironing clothes	1.06	1.23	0.002*
Average Score on the Division of Domestic Husband-Wife Roles	8.32	9.45	0.000*
Public			
Making a living in other fields (non-fishing)	0.92	0.89	0.718
Processing fish catches for sale	0.80	0.62	0.010*
Preparing for fishing	1.18	1.43	0.008*
Selling fish catches	0.83	0.72	0.094
Average Public Husband-Wife Role Division Score	3.74	3.66	0.708
Social			
Get involved in social activities	1.54	2.15	0.000*
Involved as an administrator in social organizations	0.61	0.59	0.745
Average Score on the Division of Social Roles of Husband and Wife	2.15	2.74	0.000*
Average Total Score for Division of Husband-Wife Roles	14.21	15.85	0.000*

Note: respondent's answer scale = 0-3 indicating 0= no one plays the role, 1= only wife/only husband, 2= mainly wife/mainly husband, and 3= divided between husband and wife.

Verbal Communication between Spouses

The variables for the intended communication in this study are categorized into two dimensions: verbal violence (from wives to husbands and vice versa) and verbal affection (from wives to husbands and vice versa) (Table 6).

Firstly, the regional differences in verbal violence from wives to husbands have a p-value of 0.001, indicating a substantial distinction between the northern and southern coastal areas. The average index value of verbal violence from wives to husbands in the northern coastal region is 21.63, whereas in the southern coastal region, it is 15.57. This suggests a higher level of verbal violence from wives to husbands in the northern coastal region compared to the southern coastal region.

Furthermore, the regional variations in verbal violence from husbands to wives have a p-value of 0.019, implying a significant disparity between the northern and southern coastal areas. The mean index value of verbal violence from husbands to wives in the northern coastal region is 16.92, while in the southern coastal region, it is 13.08. This indicates a higher incidence of verbal violence from husbands to wives in the northern coastal region compared to the southern coastal region. Examining specific indicators in detail, such as scolding with offensive words, insulting the partner (calling names, humiliating), criticizing the partner, and raising one's voice/yelling at the partner, there are no significant differences between the northern and southern coastal areas. However, the indicator of threatening harm to the partner and blaming the partner for things they have not done illustrates a substantial variance between the northern and southern coastal areas, with the average score in the northern coastal region being higher.

Similarly, the regional differences in verbal affection from wives to husbands have a p-value of 0.006, indicating a significant distinction between the northern and southern coastal areas. The average index value of verbal affection from wives to husbands in the northern coastal region is 66.68, whereas in the southern coastal region, it is 60.30. This demonstrates a higher level of verbal affection from wives to husbands in the northern coastal region compared to the southern coastal region.

Lastly, the regional differences in verbal affection from husbands to wives have a p-value of 0.000, signifying a significant variation between the northern and southern coastal areas. The average index value of verbal affection from husbands to wives in the northern coastal region is 70.66, while in the southern coastal region, it is 62.28. This indicates a higher occurrence of verbal affection from husbands to wives in the northern coastal region compared to the southern coastal region. Examining specific indicators in detail, such as speaking softly to the partner, there are no significant differences between the northern and southern coastal areas. However, indicators such as expressing love to the partner, complimenting the partner, and calling the partner by endearing names show a significant difference between the northern and southern coastal areas, with the average score in the northern coastal region being higher.

Table 6 Independent Difference Test T Test Verbal Violence and Verbal Affection of Husband and Wife Based on North and South Coastal Regions

Variables/Dimensions Indicator	North (Mean)	South (Mean))	p-value
Verbal Violence from Wife to Husband			
Scolding your partner with bad words	1.44	1.33	0.060
Insulting your partner	1.11	1.06	0.117
Threatening the partner that he will hurt	1.09	1.02	0.005*
Blaming your partner for things you	1.60	1.40	0.004*

Variables/Dimensions Indicator	North (Mean)	South (Mean))	p-value
didn't do			
Criticize your partner	1.71	1.64	0.360
Raising your voice/shouting at your partner	1.64	1.41	0.001*
Verbal Violence Score of Wife to Husband	8.60	7.87	0.001*
Mean ± Std deviation (Index)	21.63±21.80	15.57±17.36	0.001*
Min-Max (Index)	0.00-100.00	0.00-100.00	
Verbal Violence from Husband to Wife			
Scolding your partner with bad words	1.32	1.25	0.167
Insulting partner (calling bad names, humiliating).	1.11	1.06	0.135
Threatening the partner that he will hurt.	1.08	1.02	0.018*
Blaming your partner for things you didn't do.	1.49	1.34	0.015*
Criticize your partner.	1.62	1.56	0.365
Raising your voice/shouting at your partner.	1.41	1.33	0.206
Husband to Wife Verbal Violence Score	8.03	7.57	0.019*
Mean ± Std deviation (Index)	16.92±19.32	13.08±15.30	0.019*
Min-Max (Index)	0.00-100.00	0.00-100.00	
Verbal Affection from Wife to Husband			
Express love to your partner.	2.22	2.12	0.161
Give compliments to your partner.	2.29	2.18	0.141
Speak to your partner gently.	2.61	2.64	0.577
Call your partner by their favorite name.	2.23	1.88	0.000*
Verbal Score of Wife's Affection for Husband	9.35	8.82	0.006*
Mean ± Std deviation (Index)	66.88±25.78	60.30±25.04	0.006*
Min-Max (Index)	0.00-100.00	0.00-100.00	
Verbal Affection from Husband to Wife			
Express love to your partner	2.35	2.18	0.022*
Give compliments to your partner.	2.42	2.28	0.041*
Speak to your partner gently.	2.66	2.65	0.810
Call your partner by their favorite name.	2.22	1.88	0.000*
Verbal Score of Husband's Affection for Wife	9.65	8.98	0.000*

Variables/Dimensions Indicator	North (Mean)	South (Mean))	p-value
Mean ± Std deviation (Index)	70.66±24.74	62.28±25.73	0.000*
Min-Max (Index)	0.00-100.00	0.00-100.00	

Note: value 1 = never, 2 = sometimes, 3 = often

Results on Table 7 show that more than three-quarters of respondents (77.2%) interviewed in both the northern (76.3) and southern coastal areas (78.1) communicated only in regional languages as their daily language. These regional languages are diverse and included Javanese, Cirebon Javanese, and Indramayu Javanese, in the northern coastal region with Javanese (73.2%) being the most significant. In the southern coastal region, the regional languages used included Javanese Indramayu, Javanese Sundanese, Sundanese, and Sundanese Manado, with the most significant being Sundanese (94.3%).

Table 7 Distribution of language use (%) in husband-wife communication based on northern and southern coastal areas

Communication	Percentage		Total Average
	North	South	
Language used			
Indonesian only	1.3	0.9	1.1
Regional language only	76.3	78.1	77.2
Indonesian and regional languages	22.4	21.1	21.70
Total	100.0	100.0	100.0
Regional language used			
Java	73.2	0	36.6
Java, Cirebon	16.2	0	8.1
Indramayu Java	7.9	0.4	4.15
Java and Sundanese	0	4.8	2.4
Sunda	0	94.3	47.15
Sundanese Manado	0	0.4	0.2
Indramayu	0.4	0	0.2
Do not use regional languages	2.2	0	1.1
Total	100.0	100.0	100.0

Relationship Between Spousal Characteristics, Climate Change Perceptions and Impacts, Role Allocation, and Verbal Communication

Based on Table 8, the results of the Pearson and Chi-Square correlation tests between characteristics (Wife's Age, Wife's Years of Education, Husband's Years of Education, Wife's Job, Husband's Job, Total Family Income, and Number of Children) and the Independent variable Mother's Perception of Climate (Dimensions Climate Change and its Impact) and the Division of Roles of Husband and Wife (Domestic, Public, and Social) with husband and wife verbal variables (Verbal Violence and Affection) can be seen. The results showed that the duration of education of wives in the southern coastal region was significantly positively related to verbal violence (r=0.184). This means that wives with higher levels of education have a higher tendency to commit verbal violence.

Furthermore, the number of children in the northern coastal region (r=-0.106) and southern coastal region (r=-0.184) had a significant negative relationship with verbal violence. This means that the more children a mother has, the more verbal violence in the northern and southern regions decreases. Regarding the variable of mother's perception of climate, mother's perception of climate change in the northern coastal region is significantly positively related to verbal affection (r=0.102). This means that the higher the mother's perception of climate change in the northern coastal region, the higher the tendency to express verbal affection. Wife' perception of the impact of climate change in the southern coastal region had a very significant positive relationship with verbal affection (r=0.174). This means that the higher the mother's perception of the impact of climate change on the southern coastal region, the higher the mother's tendency to express verbal affection. Finally, regarding the role division variable, the results show that the division of roles between husband and wife in the domestic sector in the northern region has a significantly positive relationship with verbal affection (0.095). This means that the higher the cooperative role played by wives and husbands in the domestic sector in the northern region, the higher the mothers' tendency to express verbal affection. In addition, the division of roles between husband and wife in the public sector in the southern region has a significant positive relationship with verbal violence (0.212). This means that the higher the cooperative role played by wives and husbands in the southern region, the higher is the mother's tendency to commit verbal violence.

Table 8 Value of the relationship between family characteristics, perceptions of climate change and its impacts, and division of roles with verbal violence between husband and wife on the North and South coasts.

Characteristics – Independent Variables	Correlation coefficient			
	Verbal Violence		Verbal Affection	
	North	South	North	South
Wife's Age (years)	-0.007	-0.026	-0.063	0.007
Wife's Education Length (years)	0.071	0.183**	-0.048	-0.063
Husband's Education Length (years)	0.013	0.129	-0.040	0.031
Wife's Occupation (0= housewife, 1=working mother)	0.068	0.075	-0.070	-0.077
Husband's Occupation (0=fisherman crew, 1=fisherman ship owner)	0.018	0.075	-0.026	-0.066
Total Family Income (Rp per month)	0.072	0.045	-0.004	-0.073
Number of children	-0.106*	-0.148*	0.045	-0.008
Change (Index)	0.015	0.027	0.102*	-0.008
Impact (Index)	-0.038	-0.029	0.071	0.174**
Domestic (Index)	-0.051	-0.064	0.095*	0.129
Public (Index)	0.095	0.212**	-0.003	-0.029
Social (Index)	-0.013	0.075	-0.071	-0.017

Note: * significant at p<0.05; **significant at p<0.01

Discussion

Most fishing families consist of small households with two children, primarily in the productive age range of 21-40 years. In different regions of the world, age distribution of

fishermen. For instance, in Greece, fishermen are generally older men(Tzanatos et al. 2006). The educational levels of fishermen and their wives are traditionally known to be low, but there have been improvements. The low education level observed in families residing in coastal villages and working as fishermen is consistent with findings in other coastal areas such as Norway (Hjorthen et al. 2022), Greece (Tzanatos et al. 2006) , and West Bengal, India (Das et al. 2023). The low education level of wives has a positive causal effect on the husbands' education (Barban et al. 2021) , meaning that an increase in the husband's education level correlates with an increase in the wife's education level. The majority of fishermen under 50 years old have received only primary education, and a significant number have no formal education (Begum et al. 2022) . The low education level of fishermen in West Java is similar to that in other regions such as Bangka Belitung (Karimah and Puspitawati 2020) and Semarang (van de Haterd et al. 2021), where a higher proportion are elementary school graduates. Husbands are often engaged in fishing as laborers, while wives typically work as homemakers. Wives' income is generally lower than that of their husbands in both the northern and southern coastal areas, with over half of them having no income. Income disparities between husbands and wives are observed in various coastal areas, including the northern coastal communities of Java Island and the Semarang region (van de Haterd et al. 2021).

The experience of climate change differs significantly between the wives of fishermen in the northern and southern coastal areas of West Java. Wives in the northern coastal areas feel the impacts more intensely due to increasing air temperatures, prolonged droughts, and flooding. The consequences of climate change in the northern coastal region include difficulties in meeting daily living needs, disruptions in children's education, challenges in accessing clean water, frequent illnesses, and loss of assets. Research by Triana and Hidayah (2020) has indicated that almost all northern coastal areas experience the impact of tidal floods, leading to disruptions in livelihoods, the spread of diseases, and material losses. Coastal communities in the north, such as Semarang, feel the effects of climate change, including floods and changes in rainfall patterns impacting family health (van de Haterd et al. 2021). In contrast, wives in the southern coastal areas perceive climate change as being caused by unpredictable rain patterns, more frequent strong winds, and higher waves/tidal waves. These large sea waves are also common in Tanggamus, Lampung, and the Sumatra Islands (Yanfika et al. 2021).

The overall impacts of climate change on wives in both the northern and southern coastal areas include difficulties in meeting daily living needs, disruptions in children's education, challenges in accessing clean water, frequent illnesses, and loss of assets. However, wives in the southern coastal region report feeling sicker and having lower incomes than those in the northern coastal region. In the north, coastal areas like Subang experience changes in coastlines and flooding, particularly in the Blanakan District. One of the rivers flowing through this area is the Blanakan River, which passes through Blanakan Village (Suhardi et al. 2020). In the southern coastal area of West Java, such as Pangandaran, climate change manifests as rising sea levels, impacting the damage or loss of parts of residential areas (Dasanto et al. 2022). This contrasts with the impact of climate change on wives in the Abrolhos Islands in Australia, where families are no longer raised on the islands, but have relocated to the mainland in Geraldton. In many cases, men now work away from the islands, leading to women becoming single parents, particularly in the fly-in and fly-out mining industries (Shaw, Stocker, and Noble 2015). This situation results in difficulties in meeting basic needs and accessing clean water (Beier, Brzoska, and Khan 2015).

The division of gender roles (husband and wife) into three domains (domestic, public, and social) still results in low achievements, with domestic roles having the lowest achievements. Husbands' participation in domestic tasks such as cooking, washing, drying, and ironing clothes requires improvement, partly due to husbands spending most of their time at sea. Additionally, research shows that men are primarily engaged in

outdoor work, such as fishing, while women are responsible for household chores, childcare, and caring for the elderly (Grubbström 2012). The wife typically takes on the role of the housewife, managing all family needs (Çineli and Mugiyama 2023). There is also a perception that women lead inside the home, while men lead outside the home (Cheng and Sheng 2023; Chen and Hu 2021).

Similarly, the division of roles between husbands and wives in the public sector generally results in men playing more prominent roles in both the northern and southern coastal areas. This is often attributed to the traditional concept that husbands are the primary breadwinners responsible for earning a living (Bowman 2023). The existence of several aspects of hegemonic masculinity, such as physicality, toughness, and sea endurance, reinforces the dominant role of men in the fishing industry (Gustavsson and Riley 2020). Despite the dominant role of husbands in the public sphere, there is still cooperation between husbands and wives in various aspects of the fishing industry, including fishing preparation activities and catch sales. Wives may also play a dominant role in selling the fish caught in the southern coastal region. Women, both wives and children of fishermen, are involved in the fishing sector with various forms of involvement, some of which are paid tasks, while others are unpaid (Gustavsson 2022), such as the wife preparing the fishing process, buying diesel fuel, and preparing the husband's bait and clothes (Szaboova, Gustavsson, and Turner 2022). The wife may also help the husband catch crabs (Sihotang 2019). In several countries with various cultures, there are some cultures where female fishermen are already involved in fishing. For example, in Australia, women and their children are involved in shellfish fishing in shallow seas (Pollnac 1988).

Social cooperation is evident in both the northern and southern coastal areas, with husbands needing to be more involved than wives. Husbands and wives are involved as administrators in social organizations, and wives also participate in social activities, increasing community understanding through educational programs(Shaw et al. 2015).

Communication styles differ between the wives of fishing families in the north and the south. Families in the northern part are more expressive, showing affection and anger. However, the average index of violence between wives towards their husbands is higher than that between husbands towards their wives. These results align with research showing that women tend to experience a higher number of negative and positive emotions than men and are more emotionally expressive, particularly in expressing negative emotions(Sprecher and Sedikides 1993). Research by Notarius and Johnson (1982) also indicates that wives' speech can be more damaging than that of husbands. On the other hand, the average index of verbal affection from husbands to wives is higher than that from wives to husbands.

Language differences are also noted, with almost two-thirds of fishing families in the northern part speaking Javanese, while those in the southern coastal region generally speak Sundanese. This linguistic distinction often aligns with ethnicity, as northern people are mostly Javanese, and southern people are generally Sundanese. Javanese culture emphasizes emotional control, and expressions of anger are usually silent, with only a few instances of verbal and negative expressions (Zuhdi and Nuqul 2022). However, husbands' influence on their wives' anger may occur when husbands cannot fulfill their wives' needs (Musthafawi et al. 2017). The research also indicates that wives with higher education levels are more likely to engage in verbal violence. Higher education levels in wives are associated with lower marital quality (Herawati et al. 2018).

The study further explores the relationship between family characteristics and verbal affection and violence in the North and South of West Java, Indonesia. In the northern region, the number of children in a family is negatively related to verbal violence, meaning that families with more children experience lower verbal violence between spouses. This finding contrasts with some previous research (Rizkillah, Krisnatuti, and Herawati 2021), which suggested that more children in a family worsen the interaction

between husband and wife. However, it is supported by other studies (Taufiiqoh 2023), indicating that more children in a family can enhance the interaction between spouses. Additionally, couples with children are reported to experience higher levels of happiness, positive emotions, and meaning in life (Nelson et al. 2013).

The perception of climate change and its impact on wives (as mothers) is related to verbal affection and violence. In the north, wives' perceptions of climate change are positively related to verbal affection, suggesting that those who perceive climate change are more verbally affectionate. In the south, wives' perceptions of the impact of climate change are positively related to verbal affection, indicating that those who perceive greater impacts of climate change are more verbally affectionate. The impact wives feel is that their children may get sick quickly due to climate change, prompting mothers to express love verbally. This aligns with the idea that climate change and its associated disasters have a significant impact on children (Kousky 2016).

The division of roles between husbands and wives in the domestic and public sectors is related to verbal affection and violence. In the northern region, the division of roles in the domestic sector is positively related to verbal affection, suggesting that when husbands support wives in household tasks, wives are happier and express more verbal affection. This aligns with the notion that wives who receive support from their partners in the household sector experience higher marital happiness (Piña and Bengtson 1993). In the southern region, the division of roles in the public sector is positively related to verbal violence, indicating that more equal divisions of tasks in the public sector are associated with higher verbal violence. This result is consistent with other research showing that work and family conflict can increase stress and hostility in marriage, reducing warmth and support between spouses (Matthews, Conger, and Wickrama 1996) . Work-related conflicts can also lead to marital dissatisfaction and divorce (Burch 2020).

In summary, the research in West Java highlights various aspects of the lives of fishing families, including educational levels, the impact of climate change, gender roles, communication styles, and the relationship between family characteristics and verbal affection and violence. The findings provide valuable insights into the challenges faced by these communities and the complex interplay of factors influencing family dynamics and well-being.

Limitations

This study did not delve further into examining the influence or impact of verbal violence perpetrated by husbands towards wives or vice versa, including its consequences for children, the mental health of spouses, and whether it leads to physical violence in the relationship. Additionally, a notable limitation of this research is the lack of an in-depth exploration of coping strategies in the face of climate change. Consequently, further research could investigate the impacts of verbal violence from wives to husbands and vice versa, as well as explore the coping strategies employed by fishing families in response to climate change.

Conclusions and Suggestions

There are differences in the characteristics of fishing families, perceptions and impacts of climate change, division of roles between husband and wife, and verbal expressions between fishermen in the North and South of West Java Province, Indonesia. In general, the socio-demographics of fishermen in West Java still have low education levels, income, and cooperation in dividing the roles of husbands and wives, and verbal violence is still often carried out by wives against husbands and husbands against wives. Furthermore, not all family characteristics are related to verbal affection and verbal

violence. Family characteristics associated with verbal violence included the number of children (in the North and South) and education (only in the south). Perceptions of climate change are related to verbal affection in the north, while the impact of climate change is related to verbal affection in the south. The division of roles between husband and wife in the domestic realm is related to verbal affection in the north. The division of roles between husbands and wives is related to verbal violence in the south.

There are differences in climate change and the impacts felt by fishermen between the North and South, so education is needed on strategies for dealing with climate change and its impacts. Furthermore, counseling regarding husbands' and wives' verbal communication is needed for verbal affection and violence, which are related to the number of children, education, and division of roles between husband and wife. These findings underscore the significance of understanding regional variations in socioeconomic, environmental, and social factors that shape family dynamics and relationships. It is important to consider these variations when designing policies or interventions that address issues related to education, income, climate change, and gender in these regions. Further research is required to explore the underlying causes and implications of these regional differences.

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