

# Impact of Yearly Flood Disaster Management during Pandemic COVID-19 based on Mother's Resilience Model Focusing on Family Centred Empowerment to Strengthen Resilience of Villagers in Lamongan during Disaster

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## ABSTRACT

**Introduction:** Indonesia is susceptible to disaster. The disaster triggers all aspects of humanity, such as psychology and physical well-being. Resilience is critical to help the community facing the impact of the disaster, especially mothers as the core of the family. So, we need to improve mothers' resilience when facing the impact of flood disasters. **Methods:** This research method used explanatory research with a cross-sectional approach. The population of this research were 121 mothers who lived in a village based on a calculation by the Rule of Thumb. Data analysis used SEM-PLS. **Results:** Most of the respondents had good knowledge, which was 106 mothers (87.6%). Most of the respondents had very high filial values in the care indicator (71%) and in the respect (50.4%). About 49 mothers (40.5%) had low resilience and 90 mothers (74.4%) had moderate family appraisal scores. Among some of the respondents, 81 (66.4%) had moderate family resilience scores, 56 mothers (46.32%) had an adequate coping strategy. There were 36.4% who stated that reinforcement, facilities, and support from health workers were good. It is known that most family types (64) were nuclear families (52.9%), most mothers had 1-2 children (77.7%), and lived in a house with one household (55.4%). **Conclusion:** Based on the results of the study, it can be concluded that family appraisals and filial value can affect the level of resilience of mothers in overcoming the impact of flood disasters.

**Keywords:** COVID-19; Family Centred Empowerment; Family Resilience Model; Mother; Resilience

## INTRODUCTION

Indonesia is very vulnerable to disasters according to the confluence of four active plates, resulting in high natural activities including natural disaster that can cause human, material, economic, or environmental damage (Nugraheni & Suyatna, 2020). Flood disaster is still a trend of natural disasters in Indonesia (BNPB, 2022). Floods are a crucial disaster to be alert about, one of which is because it has a high stressor level that can reduce resilience (Sriyono, Nursalam & Hamzah, 2020). Personal factor such as attitude significantly correlate with community mitigation in the face of flood disasters (Suroso, Fitri, & Hayati, 2020).

Apart from floods, Indonesia is also affected by the COVID-19 outbreak. The high number of cases of COVID-19 in Indonesia has also caused the management of natural disasters to become distracted and more focused on handling COVID-19 (Dewi, Qona'ah & Alfaruq, 2023).

Resilience is needed to face the impacts of disasters. Resilience is an important component of individuals. Resilience can be defined as a universal capacity that makes individuals or communities minimize or avoid negative impacts from harmful events, so it can be defined as the ability to face and cope with stressful events (Alameddine *et al.*, 2021). Resilience has a role in balancing coping and stress levels. Adaptive coping strategies at risk of disaster preparedness are a priority for every vulnerable community (Sriyono, Nursalam & Hamzah, 2020).

Individual resilience has four sources. This is because resilience is an active interaction process between individuals and their surroundings. The sources are confidence, social support, purposefulness, and adaptability.

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Confidence means building up individual trust in themselves with the display of realistic and positive behavior towards themselves. Social support means the ability to build strong and supportive relationships, mentally or emotionally, and can help to learn and to seek help. Purposefulness is the ability to build clear goals and values. Adaptability is the ability to build one self so that a person can adapt to the surroundings, flex approaches, and develop new ideas when solving problems (Raza *et al.*, 2022).

Every woman has the capability more than the men in terms of facing disaster. These abilities will not be revealed when they were in a shelter. These traits were built up by social construct, family, and community, making the image of women more attached to their character, which is caring, protecting, preserving, and being diligent, along with being helpful towards their family through the crisis caused by a disaster (Ayeb-Karlsson, 2020). Resilience level is also influenced by gender. Even women are known as more vulnerable and neglected in disaster prevention planning, but women have more amazing strength in difficult times such as floods. The best way to increase resilience is to increase the resilience of vulnerable communities, such as women (Rouhanizadeh & Kermanshachi, 2021).

## METHODOLOGY

This research method used explanatory research with a cross-sectional approach. The population of this research were mothers who lived in Sukorejo Village, Karang Binangun District, Lamongan, Indonesia. The research sample based on the inclusion criteria were mothers aged 20-60 years who were able to read and write and did not have physical disabilities. While the exclusion criteria were mothers as a vulnerable group (pregnant women, mothers with chronic diseases, and elderly mothers). The calculation of sample size used the rule of thumb because in this study there were 5–10 measured variables. From these calculations, 121 respondents were found to have fulfilled this research criteria. They were asked to fill up the questionnaires.

The data collection process was assisted by enumerators from Sukorejo Village, Karangbinangun District and Lamongan Regency. Enumerators were selected based on their ability to communicate and their understanding of the local area. Furthermore, the researchers also conducted a briefing with the enumerators to explain about the research. Data analysis was done using SEM-PLS to find out Mother's Resilience Model facing yearly flood disaster impact in pandemic COVID-19 based on family centred empowerment and family resilience model as means to strengthen resilient villagers of disaster in Lamongan.

## Ethical Consideration

This research study ethical test from the Health Research Ethics Committee (KEPK) of the Faculty of Nursing, Airlangga University on 12<sup>th</sup> January 2022, with ethical approval number 2413-KEPK.

## RESULTS

**Table 1: Mother's Characteristics of in Sukorejo Village, Karang Binangun District, Lamongan**

| Respondent's Characteristics    |                                    | <i>f(x)</i> | %     |
|---------------------------------|------------------------------------|-------------|-------|
| <b>Age</b>                      | 20-30                              | 23 people   | 19.0% |
|                                 | 31-40                              | 57 people   | 47.1% |
|                                 | 41-60                              | 41 people   | 33.9% |
|                                 | <b>Total</b>                       | 121 people  | 100%  |
| <b>Respondents' Educational</b> | Had not finished elementary school | 1 people    | 0.8%  |
|                                 | Elementary school                  | 6 people    | 5%    |
|                                 | Junior high school                 | 28 Orang    | 23.1% |
|                                 | Senior high school                 | 67 Orang    | 55.4% |
|                                 | Bachelor                           | 19 people   | 15.7% |
| <b>Total</b>                    | 121 people                         | 100%        |       |
| <b>Respondents' Job</b>         | Civil servant                      | 2 people    | 1.7%  |
|                                 | Private company                    | 11 people   | 9.1%  |
|                                 | Entrepreneur                       | 10 people   | 8.3%  |
|                                 | Housewife                          | 96 people   | 79.3% |
|                                 | Other                              | 2 people    | 1.7%  |
| <b>Total</b>                    | 121 Orang                          | 100%        |       |
| <b>Marital Status</b>           | Marriage                           | 117 Orang   | 96.7% |
|                                 | Divorce                            | 4 Orang     | 3.3%  |
|                                 | <b>Total</b>                       | 121 Orang   | 100%  |

The demographic data above showed that most of the respondents were of the age 31-40 with 57 individuals (47.1%) from a total of 121 people. The educational status of respondents was senior high school at the majority (67 people or 55.8%). A total of 96 individuals (79.3%) were housewives and more than half of the respondents 117 people (96.7%) were married.

**Table 2: Mother's Knowledge Level of Annual Flood Management**

| Measured Variable  | Category     | Frequency | Percentage |
|--------------------|--------------|-----------|------------|
| Mother's Knowledge | Very less    | 0         | 0%         |
|                    | Poor         | 3         | 2.5%       |
|                    | Adequate     | 12        | 9.9%       |
|                    | Good         | 106       | 87.6%      |
|                    | <b>Total</b> | 121       | 100%       |

Based on the percentage of mothers' knowledge variable mostly had a good score, with a total of 106 mothers (87.6%) and an adequate score of 12 mothers (9.9%). However, there were still mothers who had poor knowledge value, which was 3 mothers (2.5%). These results indicated that most of the respondents had good knowledge.

**Table 3: Respondent's Filial Value**

| Measured variable | Indicators     | Categories   | Frequency | Percentage |
|-------------------|----------------|--------------|-----------|------------|
| Filial Value      | Responsibility | Very Low     | 23        | 19%        |
|                   |                | Low          | 28        | 23.1%      |
|                   |                | High         | 39        | 32.2%      |
|                   |                | Very High    | 31        | 25.6%      |
|                   |                | <b>Total</b> | 121       | 100%       |
|                   | Respect        | Very Low     | 22        | 18.2%      |
|                   |                | Low          | 21        | 17.4%      |
|                   |                | High         | 17        | 14%        |
|                   |                | Very High    | 61        | 50.4%      |
|                   |                | <b>Total</b> | 121       | 100%       |
|                   | Care           | Very Low     | 5         | 4.1%       |
|                   |                | Low          | 17        | 14%        |
|                   |                | High         | 12        | 9.9%       |
|                   |                | Very High    | 87        | 71%        |
|                   |                | <b>Total</b> | 121       | 100%       |

The table shows that the mother's highest assessment of the filial value of her family was on the care and respect indicators with a very high category, each of which had a total of 87 mothers (71%) and 61 mothers (50.4%). The responsibility indicator had a high category with as many as 39 mothers (32.2%).

**Table 4: Mother's Resilience Level of Facing Annual Floods**

| Variable            | Category  | Total | Percentage |
|---------------------|-----------|-------|------------|
| Mother's Resilience | Very Low  | 40    | 33.1%      |
|                     | Low       | 49    | 40.5%      |
|                     | High      | 23    | 19%        |
|                     | Very High | 9     | 7.4%       |
| <b>Total</b>        |           | 121   | 100%       |

It is known that 49 respondents (40.5%) had low mother's resilience, 40 respondents (33.1%) had very low resilience, 23 respondents (19%) had high resilience, and 9 respondents (7.4%) had a very high level of resilience.

**Table 5: Respondent's Family Appraisal Level**

| Variable         | Category     | Total | Percentage |
|------------------|--------------|-------|------------|
| Family Appraisal | High         | 20    | 16.5%      |
|                  | Moderate     | 90    | 74.4%      |
|                  | Low          | 11    | 9.1%       |
|                  | <b>Total</b> | 121   | 100%       |

Based on the table above, it is known that more than a few respondents had moderate family appraisals consisting 90 people (74.4%), and only 11 (9.1%) with low family appraisals. These results showed that respondents started to have a high family appraisal score.

**Table 6: Family Resilience Level of Facing Annual Floods**

| Variable          | Category     | Total | Percentage |
|-------------------|--------------|-------|------------|
| Family Resilience | High         | 22    | 18.2%      |
|                   | Moderate     | 81    | 66.9%      |
|                   | Low          | 18    | 14.9%      |
|                   | <b>Total</b> | 121   | 100%       |

Based on the table above, it is known that more than half of the respondents had moderate family resilience as many as 81 people (66.9%). The number of respondents with low family resilience was 18 people (14.9%).

**Table 7: Respondent's Coping Strategy level**

| Variable        | Category  | Total | Percentage |
|-----------------|-----------|-------|------------|
| Coping Strategy | Very Less | 0     | 0%         |
|                 | Poor      | 13    | 10%        |
|                 | Adequate  | 56    | 46.3%      |
|                 | Good      | 52    | 43%        |
| <b>Total</b>    |           | 121   | 100%       |

Based on the table above, 56 respondents (46.3%) had adequate coping strategies, 52 respondents (43%) had good coping strategies, and 13 respondents (10%) had poor coping strategies.

**Table 8: Health Worker's Value**

| Variable              | Category  | Total | Percentage |
|-----------------------|-----------|-------|------------|
| Health Worker's Value | Very Less | 29    | 24%        |
|                       | Poor      | 18    | 14.9%      |
|                       | Adequate  | 30    | 24.8%      |
|                       | Good      | 44    | 36.4%      |
| <b>Total</b>          |           | 121   | 100%       |

Based on the table above, 144 respondents (36.4%) stated that the reinforcement, facilities, and support from health workers were good, as many as 30 respondents (24.8%) stated adequate, and as many as 18 respondents (14.9%) stated poor, and as many as 29 respondents (24%) stated very less.

**Table 9: Family Characteristics**

| No | Category                       | Subcategory                 | f          | %           |
|----|--------------------------------|-----------------------------|------------|-------------|
| 1  | Family Type                    | Nuclear Family              | 64         | 52.9        |
|    |                                | Extended Family             | 54         | 44.6        |
|    |                                | Single Parent               | 3          | 2.5         |
|    |                                | <b>Total</b>                | <b>121</b> | <b>100%</b> |
| 2  | Total of Children              | No child                    | 5          | 4.1         |
|    |                                | 1-2 Children                | 94         | 77.7        |
|    |                                | Had more than 2 children    | 22         | 18.2        |
|    |                                | <b>Total</b>                | <b>121</b> | <b>100</b>  |
| 3  | Total of families in one house | 1 head of household         | 67         | 55.4        |
|    |                                | 2 heads of household        | 23         | 19          |
|    |                                | More than 2 heads of family | 31         | 25.6        |
|    |                                | <b>Total</b>                | <b>121</b> | <b>100%</b> |

Based on the table above, it is known that the most types of families in Sukorejo Village were nuclear families with a total of 64 families (52.9%) and the rest were extended families (44.6%) and single parents (2.5%). There were 4 divorced families, but 1 family lived in an extended family. 5 families did not have children or as much as 4.1% of the total sample size, and there were still families who had more than 2 children with a total of 22 families (18.2%). Some families had 2 heads in 1 house with a frequency of 31 families or 25.6% of the total sample. However, most have only 1 household in one house with a frequency of 67 or equivalent to 55.4%.

**Table 10: Results of Variable Analysis Using SEM-PLS**

| No | Pathway                                    | Path Coefficient | Significance |
|----|--|------------------|--------------|
| 1  | Mother's factor<br>Coping strategy         | 0.897            | 0.370        |
| 2  | Health worker's factor<br>Coping strategy  | 1.755            | 0.080        |
| 3  | Family factor<br>Coping strategy           | 0.388            | 0.698        |
| 4  | Filial Value<br>Coping strategy            | 4.863            | 0.000        |
| 5  | Family Appraisal<br>Coping strategy        | 4.034            | 0.000        |
| 6  | Coping strategy<br>Mother's resilience     | 2.591            | 0.010        |
| 7  | Mother's resilience<br>Family's resilience | 8.789            | 0.000        |
| 8  | Self-efficacy<br>Mother's resilience       | 3.617            | 0.000        |
| 9  | Self-efficacy<br>Family Resilience         | 6.132            | 0.000        |

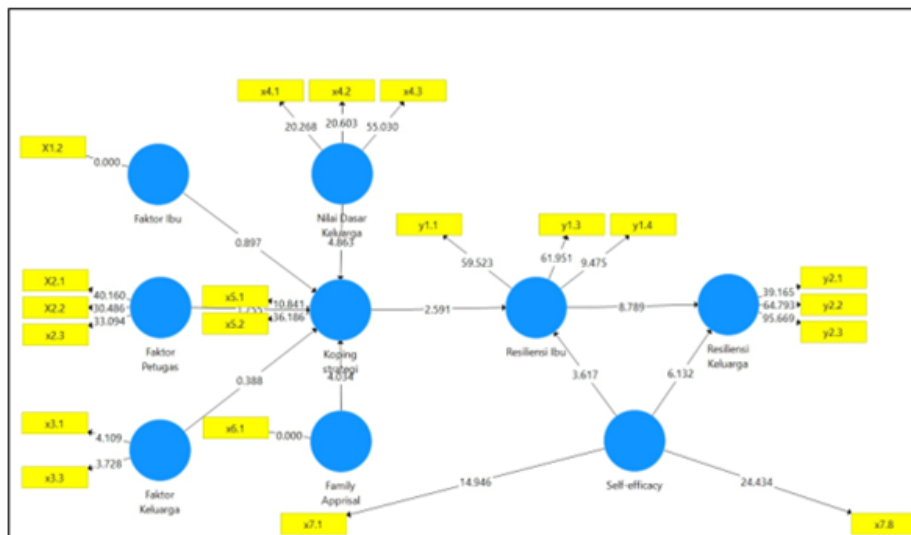


Figure 1: Visualization of Variable Analysis Using SEM-PLS

## DISCUSSION

Based on the results of the research above, it is known that coping strategies were influenced by family appraisal, and filial value. These coping strategies and self-efficacy could affect the mother's resilience and family resilience. Various studies have been conducted to obtain effective media in disaster education, some of them are Tabletop Disaster Education (TDE) and educational film (Sholihah, & Rahayu, 2020). The biggest challenge experienced by Indonesia at this moment is delivering COVID-19 vaccination during the event of natural disasters that continue to occur during 2020-2021 pandemic (Theresia, & Reñosa, 2023). Coping strategy according to Le *et al.*, (2021) is a process of adjustment to unpleasant events. The respondent's coping strategy emerged as a response to the problems and pressures experienced by the flood disaster. A resilient condition will be formed when the coping strategies used are appropriate and effective to deal with the pressure and stress experienced, but if the coping strategies used were not effective then the pressure and stress experienced could increase (Ortega & Dagostino, 2023). The higher is the health workers factor and mother's coping level approaches, the higher mother's resilience in managing the impact of flood disaster. Developing the capacity of health professionals is necessary to enable them to inform women about flood and its effect along with management strategies and ultimately help them develop better coping mechanisms.

## CONCLUSION

Based on the results of the study, it can be concluded that factors related to mothers, health worker's factors, family appraisals, and filial value can affect the level of resilience of mothers in overcoming the impact of flood disasters. However, mothers also need to improve their coping strategies and self-efficacy to increase their level of resilience.

## Conflict of Interest

The authors declare that they have no competing interests.

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