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A comparative study of food security, self-efficacy, food coping strategies, and children nutritional status in urban and rural poor households in Cianjur Regency, Indonesia

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ABSTRACT

Introduction: Poverty, remains a major challenge in Indonesia, limiting households' access to adequate food and contributing to persistent food insecurity. This study aims to analyze the differences in food security, self-efficacy, food coping strategies, and the nutritional status of under-five children among poor households in urban and rural areas of Cianjur Regency.

Methods: This research is a comparative study with a cross-sectional design conducted in February 2025. The study sites were Kelurahan Sayang (urban) and Ciwalen Village (rural). The total number of subjects included in this study was 64 in the urban area and 62 in the rural area. Main respondents were mothers with children under five years old. Independent t-test was used if the data were normally distributed, while the Mann-Whitney test was applied for non-normally distributed data.

Results: Most mothers in both urban (43.8%) and rural (58.1%) had attained only a primary education (elementary school/equivalent). Most households in this study experienced food insecurity (urban 92.1% and rural 96.7%) ($p>0.05$), ranging from mild to severe levels. Almost all respondents in both areas exhibited low levels of self-efficacy (scores 1–3) (urban: 92.2% rural: 93.5%) ($p<0.05$). Most respondents fell into the low food coping strategy category (urban 62.5% and rural 67.7%) ($p>0.05$). Most food coping strategies used by households was adjusting meal distribution, with mothers prioritizing food for children over themselves and other adults. The nutritional status of children under five showed a high prevalence of underweight and stunting. Underweight prevalence among under-five children was 32.8% in urban areas and 22.5% in rural areas, while stunting affected 37.4% of urban children and 32.2% of rural children.

Conclusion: Most poor households in urban and rural areas remained food insecure, with low maternal self-efficacy and mild food coping strategies despite food insecurity. Underweight and stunting among under-five children are still prevalent.

KEYWORDS

Food access, poverty, stunting, underweight.

INTRODUCTION

Poverty remains a major challenge for both developed and developing countries, influencing various aspects of household welfare. In Indonesia, around 25.9 million people (9.36% of the population) still live in poverty, with urban poverty at 7.09% and rural poverty at 11.79%[1]. Cianjur Regency is among the five districts with the highest extreme poverty rates in West Java. In 2021, the number of poor residents in Cianjur peaked at 260,000 people, increasing from 10% in 2020 to 11.18% in 2021[2]. This situation led to Cianjur being targeted in Presidential Instruction No. 4/2022 on Accelerating the Eradication of Extreme Poverty in Indonesia. Poverty limits access to adequate food, often resulting in hunger and food insecurity[3].

Food is a basic human need, strongly linked to national resilience. According to Government Regulation No. 17/2015, food security is achieved when food is available and accessible in sufficient quantity, quality, safety, diversity, and nutrition. Food security is realized when every individual at all times has physical

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and economic access to safe, nutritious, and sufficient food for an active and healthy life[4]. The Food Security Index (IKP) reflects a region's food security and nutrition level. Cianjur's IKP for food utilization in 2022 was 65.76, categorized as Moderately Food Secure (Priority Scale 4), indicating a need for improvement to reach the "Food Secure" category (Priority Scale 6) alongside poverty reduction efforts[5].

Food insecurity is closely linked to poverty through limited purchasing power and food availability[6]. Low-income households often adopt food coping strategies to manage limited access to food, which affects both the quantity and quality of food consumption[7]. Such conditions influence unhealthy eating habits, including low fruit and vegetable intake[8], skipping breakfast[9], and higher consumption of fried or fast foods and carbohydrate-rich staples due to affordability and availability[10].

Several studies highlight the role of self-efficacy in addressing poor eating habits. Self-efficacy is the belief in one's ability to organize and execute actions to achieve specific behaviors[11]. Studies show that low food security is associated with low self-efficacy in making dietary choices and confidence in food preparation[12]. Community-based participatory interventions have also been shown to strengthen self-efficacy in addressing food insecurity[13]. Moreover, self-efficacy is influenced by nutrition knowledge, which supports healthier dietary behaviors and improved nutritional status[14].

Given these challenges, a comparative analysis of food security, self-efficacy, food coping strategies, and children nutritional status between poor households in urban and rural areas in Cianjur Regency is needed. This study focuses on exploring food security dimensions particularly food utilization and food access and their relationship with self-efficacy and household coping mechanisms to inform efforts to strengthen local food resilience.

METHODS

This research is a comparative study with a cross-sectional design conducted simultaneously within a single period in February 2025. The study sites were Kelurahan Sayang (urban) and Ciwalen Village (rural), selected based on their large populations and high numbers of social assistance recipients, as recommended by the local subdistrict office. Ethical approval was granted by the Health Research Ethics Committee of the Faculty of Nursing and Health Sciences, Muhammadiyah University of Semarang (No. 761/KE/11/2024).

Respondents were selected using purposive sampling, with the minimum sample size for each area calculated using the Lemeshow et al. (1997) formula. An additional 10% was added to anticipate drop-outs, resulting in a minimum of 62 respondents for urban and rural area, respectively. Main respondents were mothers with children under five years old. Inclusion criteria were being a permanent resident of the selected area, receiving social assistance (family hope program/rice subsidy/social aid), having an under-five child, and providing informed consent. Respondents who were not available during data collection were excluded.

Household food security data were collected through interviews using the Household Food Insecurity Access Scale (HFIAS), which consists of nine items referring to the past month. HFIAS is classified into four categories of food security status: food secure (score 0–1), mildly food insecure (score 2–7), moderately food insecure (score 8–14), and severely food insecure (score 15–27)[15]. The questionnaires used to assess maternal self-efficacy and food coping strategies were adapted from standardized instruments developed in previous studies, modified, and revalidated in Bogor District, West Java, Indonesia, using the same criteria as the study sample. Food coping strategy data were categorized into three levels from the Slamet (1993) interval formula: low, medium, and high. Maternal self-efficacy was analyzed using indicators based on the most recent instrument developed by Martin et al. (2016) on the self-efficacy for food security questionnaire and by Salarkia et al. (2015) regarding maternal self-efficacy related to young children. Maternal self-efficacy was classified into two categories based on interval scores: low self-efficacy (scores 1–3) and high self-efficacy (score 4)[16,17].

The questionnaires underwent validity and reliability testing among subjects with the same criteria as the study population but in a different target area. The food coping strategy questionnaire showed a validity value of $p<0.05$, indicating it is valid, and a Cronbach's alpha of 0.79, indicating it is reliable. The maternal self-efficacy questionnaire also demonstrated validity ($p<0.05$) with a Cronbach's alpha of 0.88, which was considered reliable. A measurement is deemed valid if the correlation coefficient is <0.05 and considered reliable if Cronbach's alpha is ≥0.6. Reliability indicates the extent to which measurement results are consistent when repeated on the same group of subjects, yielding relatively similar outcomes[18].

Nutritional status of children under five was assessed by measuring body weight and height or length, with two repeated measurements, while wearing minimal clothing (e.g. without shoes). For children under six months, body weight was measured using a digital infant scale with a capacity of 20 kg and an accuracy of 0.01 kg. For children aged ≥6 months, body weight was measured using a digital scale with a capacity of 200 kg and an accuracy of 0.1 kg, by weighing the mother holding the child and then subtracting the mother's weight. Body length of children under two years was measured using an infantometer with a capacity of 50 cm and an accuracy of 0.1 cm, while height of children aged ≥2 years was measured using a stadiometer with a capacity of 2 m and an accuracy of 0.1 cm. Anthropometric data were processed using WHO Anthro software version 3.2.2. According to WHO, children were classified as underweight if their body weight-for-age was <–2 SD, and as stunted if their body length/height-for-age was <–2 SD.

The data analysis comprised both univariate and bivariate approaches. Univariate analysis was conducted to present the frequency distribution of each measured variable, including household characteristics, subject characteristics, and eating habits. Prior to bivariate analysis, data normality was tested using the Kolmogorov-Smirnov test. The bivariate analysis included comparative tests. The Chi-square test was applied for categorical data. For continuous variables, the independent t-test was used if the data were normally distributed, while the Mann-Whitney test was applied for non-normally distributed data.

RESULTS

Cianjur Regency has its administrative center in Cianjur District and is bordered by Bogor and Purwakarta Regencies to the north; Bandung, West Bandung, and Garut Regencies to the east; the Indian Ocean to the south; and Sukabumi Regency to the west. Topographically, most areas of Cianjur Regency consist of mountainous terrain, except for a narrow lowland area along the southern coast[19]. Cianjur Regency was once among the regencies in West Java with a high prevalence of extreme poverty. Such poverty conditions can affect various aspects of household welfare, including poverty-related vulnerabilities and stunting among children under five. The characteristics of poor households in this study include parental education levels and household food expenditure.

As detailed in Table 1, most fathers in both urban (42.2%) and rural (53.2%) areas had attained only a primary education (elementary school). A comparable trend was observed among mothers, with nearly half of mothers in urban (43.8%) and rural (58.1%) settings having completed the same education level. Statistical testing indicated no significant difference in parental educational attainment between urban and rural households (p>0.05).

The proportion of food expenditure was calculated from interview results on total household cash outlays for food in the past month, divided by total household expenditure. This measure included only monetary spending on food purchases and excluded food obtained from assistance programs, transfers, or self-production. The majority of households in urban (90.6%) and rural (95.2%) areas allocated a high proportion

Table 1. Distribution of subjects based on parents' education level and proportion of food expenditure

Family characteristics	Urban		Rural		Total		*p-value*
	n	%	n	%	n	%	
Father's education							
Elementary	27	42.2	33	53.2	60	47.6	0.555
Junior High	16	25.0	15	24.2	31	24.6	
Senior High	20	31.3	13	21.0	33	26.2	
No Schooling	1	1.6	1	1.6	2	1.6	
Mother's education							
Elementary	28	43.8	36	58.1	64	50.8	0.130
Junior High	20	31.3	18	29.0	38	30.2	
Senior High	14	21.9	7	11.3	21	16.7	
No Schooling	2	3.1	1	1.6	3	2.4	
Proportion of food expenditure							
High (≥60%)	58	90.6	59	95.2	117	92.9	0.031
Low (<60%)	6	9.4	3	4.8	9	7.1	
Median (Min-Max) (%)	77(49-97)		83(33-97)		80(33-97)		
Mean±SD (%)	76.3±11.2		79.7±12.4		78±11.9		

p-values based on Chi-Square Test (father's and mother's education) and Mann-Whitney Test (expenditure variable). *Significant if* p < 0.05.

of their expenditure to food (≥60%). The share of food expenditure differed significantly between urban and rural households (p<0.05).

Most households in this study experienced some degree of food insecurity, ranging from mild to severe. In urban areas, the largest proportion of respondents were moderately food insecure (35.9%) and severely food insecure (32.8%), with only 7.8% classified as food secure. In rural areas, the majority were mildly food insecure (43.5%), followed by severely (27.4%) and moderately (25.8%) food insecure. Only 3.2% of rural households were food secure. The mean HFIAS score indicated a tendency toward greater food insecurity among urban households compared with their rural counterparts. However, this difference was not statistically significant (p>0.05). Notably, only seven households (5.6% of the total sample) were classified as food secure, underscoring the extremely low prevalence of household food security in this population and its relevance for programmatic interventions.

Regarding maternal self-efficacy, almost all respondents in both urban (92.2%) and rural (93.5%) areas reported low levels (scores 1–3). A small proportion demonstrated high self-efficacy (score 4), with 7.8% in urban areas and 6.5% in rural areas. Statistical analysis indicated a significant difference (p<0.05), with rural mothers showing higher mean self-efficacy scores in child feeding practices than their urban counterparts.

Maternal self-efficacy as shown in Table 3, a statistically significant difference was observed between urban and rural households (p=0.014). However, the mean difference was relatively small (0.20 points), suggesting limited practical significance despite statistical significance.

Regarding food coping strategies, most respondents in both urban (62.5%) and rural (67.7%) areas were classified as having low coping strategies, followed by moderate strategies (37.5% urban; 32.3% rural). No respondents reported high coping strategies. The mean coping strategy score tended to be slightly higher in urban than rural households; however, this difference was not statistically significant (p>0.05).

For the weight-for-age (WAZ) indicator, 10.9% of urban and 4.8% of rural children were severely underweight (total

Table 2. Distribution of respondents based on household food security status

Household Food Insecurity Access Scale (HFIAS)	Urban		Rural		Total		*p-value*
	n	%	n	%	n	%	
Food secure (score 0-1)	5	7.8	2	3.2	7	5.6	
Mildly food insecure (score 2-7)	15	23.4	27	43.5	42	33.3	
Moderately food insecure (score 8-14)	23	35.9	16	25.8	39	31.0	
Severely food insecure (score 15-27)	21	32.8	17	27.4	38	30.2	
Median (Min-Max)	10.5 (0-26)		8.5 (0-26)		10 (0-26)		
Mean±SD	11.39 ± 6.68		9.89 ± 6.9		10.65 ± 6.8		0.16

p-value based on Mann-Whitney Test. *Significant if* p<0.05.

Table 3. Distribution of respondents based on mothers' self-efficacy regarding child feeding

Mother's self-efficacy	Urban		Rural		Total		*p-value*
	n	%	n	%	n	%	
High self-efficacy (score 4)	5	7.8	7	6.5	12	9.5	
Low self-efficacy (score 1-3)	59	92.2	55	93.5	114	90.5	0.014
Median (Min-max)	3.3(1.8-4)		3.5(2.4-4)		3.4(1.8-4)		
Mean±SD	3.25±0.48		3.45±0.43		3.35±0.47		

p-value based on *Mann Whitney Test*. *significant if p<0.05.

Table 4. Distribution based of *food coping strategy*

Food coping strategy	Urban		Rural		Total		*p-value*
	n	%	n	%	n	%	
Low (score: ≤36)	40	62.5	42	67.7	82	65.1	0.351
Middle (score: 37-72)	24	37.5	20	32.3	44	34.9	
High (score: 73-108)	0	0.0	0	0.0	0	0.0	
Median (Min-Max)	29(2-54)		29.5(3-60)		29(2-60)		
Mean±SD	31.17±11.71		29.4±11.82		30.3±11.75		

p-value based on *Mann Whitney Test*. *significant if p<0.05.

Table 5. Distribution based on nutritional status of under-five children

Nutrition status	Urban		Rural		Total		*p-value*
	n	%	n	%	n	%	
WAZ							
Severely underweight (Z score <-3)	7	10.9	3	4.8	10	7.9	0.403
Underweight(-3 ≤ Z score <-2)	14	21.9	11	17.7	25	19.8	
Normal(-2 ≤ Z score ≤1)	36	56.3	45	72.6	81	64.3	
Overweight(>1 Z score)	7	10.9	3	4.8	10	7.9	
Mean ± SD (Z-Score)	-1.14 ± 1.6		-1.04 ± 1.2		-1.09 ± 1.41		
HAZ							
Severely stunting (Z score <-3)	15	23.4	9	14.5	24	19.0	0.073
Stunting (-3 ≤ Z score <-2)	14	14	11	17.7	25	19.8	
Normal (-2 ≤ Z score ≤3)	27	42.2	41	66.1	68	54.0	
Tall (>3 Z score)	8	12.5	1	1.6	9	7.1	
Mean ± SD (Z-score)	-1.29 ± 2.69		-1.04 ± 1.2		-1.17 ± 2.09		
WHZ							
Severely wasting (Z score <-3)	0	0	0	0	0	0	0.349
Moderate wasting(-3 ≤ Z score <-2)	4	6.3	5	8.1	9	7.1	
Normal (-2 ≤ Z score ≤1)	56	87.5	51	82.3	107	84.9	
At risk of overweight(1 <Z score ≤2)	3	4.7	5	8.1	8	6.3	
Overweight (>2 Z score ≤3)	0	0	1	1.6	1	0.8	
Obese (>3 Z score)	1	1.6	0	0	1	0.8	
Mean ± SD (Z-score)	-0.45 ± 1.08		-0.35 ± 1.14		-0.4 ± 1.1		

p-value based on *Mann Whitney Test*. *Significant if p<0.05.

unrban and rural 7.9%), while 21.9% of urban and 17.7% of rural children were underweight (total urban and rural 19.8%), corresponding to an overall prevalence of 27.7%. Regarding height-for-age (HAZ), the prevalence of severe stunting was 23.4% in urban and 14.5% in rural areas (total urban and rural 19.0%), while stunting was reported in 14.0% and 17.7%, respectively (total urban and rural 19.8%), yielding a combined prevalence of 38.8%. These findings are programmatically important, as they indicate that more than one in four children were underweight and nearly two out of five were stunted, underscoring a critical public health challenge. For weight-for-height (WHZ), the majority of children were classified as having normal nutritional status in both urban (87.5%) and rural (82.3%) households. Statistical analysis indicated no significant differences in WAZ, HAZ, or WHZ between urban and rural settings ($p>0.05$).

DISCUSSION

The generally low levels of parental education, with no parents attaining higher education are characteristic of low-income households. Limited educational attainment among fathers and mothers reflects restricted access to information, including nutrition knowledge, which ultimately affects household decision making regarding food management and can impact household food security[20].

Food expenditure remains the primary spending priority for most families, especially in rural areas. Rural households allocate a larger proportion of their income to food compared to urban households. This contrast is noteworthy, as food prices in urban areas are generally higher than in rural areas, yet the share of food spending is greater in rural settings. This can be explained by the fact that urban households, despite facing higher food prices, must also cover substantial non-food expenses such as rent, transportation, utilities, education, and lifestyle costs. These non-food costs reduce the proportion of income available for food, particularly among low-income families. As a result, poor urban households are often forced to compromise the quality and quantity of their food consumption to cope with the high cost of living[21].

Food security in this study was assessed using the Household Food Insecurity Access Scale (HFIAS), an instrument that measures the degree of household food security based on experiences of limited food access during the past 30 days. Nearly all low-income households, both urban and rural, experienced some level of food insecurity in this research. This food security condition is similar to the findings of study in Lombok, Indonesia which showed that food unavailability is a significant problem for households in Central Lombok, indicating that many families lack the resources needed to secure adequate food. This is evident from the fact that most of the study population experienced feelings of anxiety and uncertainty regarding their food supply[22]. The high proportion of food-insecure households in rural areas is generally attributed to dependence on seasonal agricultural activities, harvest fluctuations, limited market access, and inadequate food distribution infrastructure, which often prevent rural families from maintaining stable food supplies throughout the year[23]. Although urban households benefit from better market access, higher food prices combined with substantial non-food expenditures continue to render many household food insecure[21].

Mothers' self-efficacy in child feeding practices is linked to their confidence in their ability to make decisions and perform tasks related to food, such as selecting healthy and nutritious foods, preparing meals, and managing food surpluses[24]. Many rural mothers exhibit greater self-efficacy or stronger belief in their capacity to meet their children's nutritional needs. Higher self-efficacy as observed in rural areas in this study can help improve household food security compared to lower self-efficacy levels. One factor that may contribute to higher self-efficacy among rural mothers is the stronger social solidarity and close-knit community ties often found in rural settings compared to urban areas[25]. Bandura's theory posits that self-efficacy can be strengthened through social support and observing the success of others in similar situations (vicarious experience). More frequent social interactions among neighbours in rural communities can encourage mothers to exchange experiences, feeding strategies, and caregiving practices, thereby enhancing their confidence in providing appropriate nutrition for their children. In addition, outreach activities by community health volunteers and local health center staff who directly engage with target households in rural areas play an important role in reinforcing mothers' self-efficacy, despite the more limited access to formal information channels in these settings[11].

Food coping strategies are adaptive responses that households employ to manage economic pressures and limited food access. This study found similar economic conditions and levels of food security in both urban and rural areas, indicating that the majority of households in both settings tended to adopt low to moderate food coping strategies when facing food constraints. The absence of high-level coping strategies suggests that these households have not yet reached a critical or emergency state in meeting their food needs, but they have begun to make minor adjustments to manage their limited food resources[26]. The findings reveal that most respondents in both urban and rural areas fall into the low food coping category. However, many households remain food insecure, primarily due to limited income, a high proportion of expenditure devoted to food, and parents' low levels of education. These factors restrict economic access and knowledge needed to obtain nutritious food. As a result, although the coping strategies used are relatively mild, the underlying household conditions do not yet support adequate food security. Therefore, the low levels of coping observed in this study do not fully reflect a good state of food security. Demographic factors such as the household head's education, family size,

income, and expenditure are among the key determinants of food coping capacity[27].

In this study, urban children under five were more likely to experience malnutrition and stunting than their rural counterparts. This finding is consistent with other study which also reported that chronic undernutrition remains a major nutritional challenge in both rural and urban areas, with stunting continuing to be a leading issue in both contexts. Children who experience stunting are often affected by inadequate intake of micronutrients, particularly iron[28]. Insufficient iron and zinc intake are identified as risk factors for stunting. Several factors also may contribute to this, including the densely populated urban environment, which often leads to poor sanitation[29]. Over-crowded and unhygienic living conditions increase the risk of infection among young children, which can impair nutrient absorption and contribute to growth disorders such as stunting[30]. Moreover, social and economic inequalities among the urban poor limit access to nutritious food, as higher food prices often exceed the purchasing power of low-income households, making urban children more vulnerable to malnutrition and stunting. In addition, children in urban areas are at risk of imbalanced diets, frequently consuming convenience foods and calorie-dense but nutrient-poor foods due to financial constraints and lifestyle factors. This contributes to stunting even when caloric intake appears sufficient[31].

CONCLUSION

The food expenditure differed significantly between urban and rural areas ($p<0.05$). However, most low-income households in both urban and rural areas are food insecure. Mothers' self-efficacy levels are generally low, likely influenced by the household's economic conditions. Statistical analysis revealed a significant difference ($p<0.05$) in mothers' self-efficacy related to child feeding practices between urban and rural households. Most food coping strategies used by households was adjusting meal distribution, with mothers prioritizing food for children over themselves and other adults. The nutritional status of under-five children still shows a high proportion of underweight and stunting cases in both urban and rural areas.

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