Individual Analysis of Multidimensional Gender-based Poverty in Kepulauan Riau Province

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Abstract

Poverty has become a problem that always existed in various regions include Kepulauan Riau Province. This study aims to examine gender-based multidimensional poverty in Kepulauan Riau Province through the identification of the forming factors and the formulation of measurement results. Factor analysis used to analysis secondary data from susenas 2023. The result are factors that form the measurement of gender-based multidimensional poverty in Kepulauan Riau Province consist of access to information, housing and water resources, household status and assets, education and health. The women had lower conditions than men on almost all dimensions and indicators except for indicators of floor materials and residential status. Multidimensional poverty in an area can differ according to the analysis unit and age group. However, women's multidimensional poverty in general tends to be higher than men's multidimensional poverty.

Keywords: multidimensional poverty, gender, age group

Introduction

Poverty has become a problem that always existed in various regions so it becomes universal problem. Various efforts to alleviate poverty are carried out, one of which is through the formulation of the first sustainable development goals (SDGs), which is End poverty in all its forms everywhere. The fundamental problem of poverty shapes various other related problems such as the welfare gap which includes the gap between genders. Along with poverty, gender disparities are also on the global agenda, reflected in the goal 5 achieve gender equality and empower all women and girls.

The perspective of gender-based poverty has changed along with the development of poverty and gender equality studies. The Fourth Women's World Conference in Beijing1995 approved the fact that poverty has a female face (United Nations 1995). UN Women through the progress of the World's

Women report in 2011 stated that nearly one billion people are classified as poor but it is unknown how many women and girls live in poverty. Meanwhile, the UNDP in 2017 stated that more than 800 million people continue to live in poverty and women are more likely to live in poverty than men (Bradshaw, Chant, and Linneker 2019).

The determination of poverty is highly subjective and depends on the standards that each region uses to measure poverty. The poverty measurement approach has variations that carry different characteristics according to the purpose of the measurement. The importance of defining the approach to poverty measurement used is related to the determination of individuals or groups who are justified as poor individuals or groups so that it has implications for the formulation of different policies to overcome poverty. There are at least four different approaches to measuring poverty, namely monetary, capability, social exclusion and participatory approaches (Laderchi, Saith, and Stewart 2006).

Multidimensional poverty analysis using capability approach can better examine the difference in access between men and women that affect the probability of each gender being in poverty. Women have a dual role, namely productive and reproductive functions in the household so that they tend to have different access to men. In addition, the difference in access is also influenced by the difference in authority inside the household related to the norms in society. Women tend to be in time poverty and power poverty so that they experience income poverty (Bradshaw, Chant, and Linneker 2017). This condition shows that gender-based poverty studies are very complex and cannot be studied using monetary instruments alone. Multidimensional poverty can expand the focus of measurement not only to income but also include inadequacies in the welfare dimension. This expansion of focus in the context of gender accommodates the fact that income is only one dimension of poverty and gender inequality. Therefore, gender-based multidimensional poverty can explain the various limitations and complexities faced by women in managing and using resources in the households (Omotoso, Adesina, and Adewole 2022; Rogan 2016).

Poverty in Indonesia through Central Bureau of Statistics (BPS) is measured using monetary instruments to determine the population that belongs to the poor group. The determination of the poor population in Indonesia by BPS is based on the number of people who are below the poverty line (BPS 2023a). This is very prone to bias and generalization of the poor population because poverty is only seen from the size of the population's income. Efforts to study poverty not only through monetary instruments have been carried out, especially through multidimensional poverty. The use of multidimensional poverty shows a significant difference in poverty measurement in Indonesia which is more diverse compared to monetary poverty measurement (Perkumpulan PRAKARSA 2023). The percentage of poverty in Indonesia year 2023 is 9.36 percent and has decreased from the previous year (BPS 2023b). Meanwhile, the percentage of Indonesia's poor population according to the World Bank in 2023 is 9.4 percent and has a downward trend from 2011. On the other hand, the Gender Inequality Index in Indonesia year 2022 was 43.9 percent and ranked 109th worldwide. This achievement compared to ASEAN countries is still ranked 8th out of 11 countries (UNDP 2024).

Kepulauan Riau Province as part of Indonesia does not seem to have a consistent downward trend and tends to fluctuate in the percentage of poverty and gender inequality. The percentage of poverty in Kepulauan Riau Province is 5.69 – 6.24 percent during the period 2016 – 2023 (BPS 2023b). The Gender Inequality Index of Kepulauan Riau Province is 0.348 - 0.416 during the 2018-2023 period (BPS 2024a). However, Kepulauan Riau Province ranks in the top five provinces in various demographic and education indicators (BPS 2023c, 2024b). Therefore, efforts to alleviate gender-based poverty in Riau Islands Province can still be improved so that it has a stable trend. Based on this description, this study aims to examine gender-based multidimensional poverty in Kepulauan Riau Province through the identification of the forming factors and the formulation of measurement results.

Methods

Quantitative research design used in this research to examine various theories through analysis of the relationships between the variables studied

(Creswell 2021). Data used in this research are secondary data from Survei Sosial Ekonomi Nasional (susenas) produced by Badan Pusat Statistik (BPS) year 2023. Measurement unit in this survey divided to individual and household based on its indicators. Due to the difference of measurement unit, household data are applied equally to household members so there is generalization in some indicators. Data from susenas are classified based on age group (children, adolescent, adults, elderly) and gender according to (Espinoza-Delgado and Klasen 2018). Dimension and indicators used in this research influenced by Multidimensional Poverty Index (MPI) by UNDP and Perkumpulan PRAKARSA that consist of health, education, living standard (housing and basic needs), social protection and participation (Perkumpulan PRAKARSA 2023; UNDP 2010). Indicators in this research also based on difference deprivation in each age group as result of deduction from previous research and adjusted to data provided by susenas.

Factor analysis as data analysis method in this research used to identify relationships between independent variables to form a more concise set of variables (Santoso 2010). Factor analysis is expected to form latent variables as dimensions in gender-based multidimensional poverty derived from a collection of indicators with strong correlations. Thus, an appropriate model can be formed to identify gender-based multidimensional poverty according to the dimensions that compose it. After model of gender-based multidimensional poverty formed, descriptive statistics used to measure gender-based multidimensional poverty in each regency as aggregate of individual multidimensional poverty and become the unit of analysis in this research.

Result And Discussion

Factors that shape gender-based multidimensional poverty

Information access

The dimension of information access is represented by indicators of cellphone usage, cellphone ownership and internet access. However, the indicators that form the dimension of information access can be different in each group. Access to information is the main door for the community to access the impact of development. This because many services can be reached through

the dissemination of information such as health services, education and employment so that they can fulfill their needs and improve the quality of life. Based on table 1, it can be identified that adults is the group with the lowest percentage of the population that do not have access to information. Furthermore, of the three indicators in the dimension of information access, women tends to be higher who do not have access to information. These findings indicate that there is still a gender gap in accessing information.

Table 1
Percentage of population with no information access

Age Group	Not using mobile phones		Not owning mobile phones		Not accessing internet	
	Male	Female	Male	Female	Male	Female
Children	46.2	46.9	96.7	95.3	48.6	57.4
Adolescents	13.5	12.1	46.5	47.8	20.2	18.5
Adults	1.5	2.3	4.1	8.1	5.7	7.4
Elderly	14.9	34.4	21.8	52.3	46.4	61.2

Source : processed susenas 2023 data

Kepulauan Riau Province is one of the provinces with the largest percentage of mobile phone users in Indonesia (Listari, Pasaribu, and Novianti 2024). This shows that the preconditions needed for population to have access to information in Kepulauan Riau Province have been available so that the percentage of the population using mobile phones is quite large and continues to increase. Based on the analysis of digital poverty and economic poverty compared with digital poverty and national economic poverty, Kepulauan Riau Province is included in the lower category of both or quadrant III (Sakti 2022).
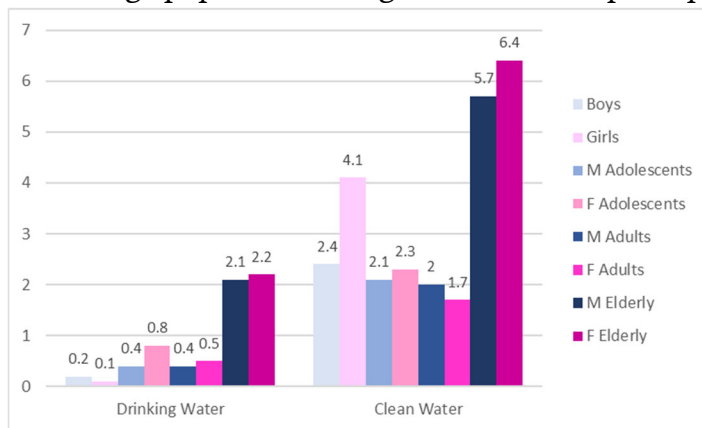
Housing and water sources

This dimension represents the condition of the house and water source where individuals live. The dimensions of housing and water sources are represented by indicators of house wall materials, house floor materials, drinking water sources and clean water sources. Based on the 2023 susenas data processing, the percentage of the population living in houses with inadequate wall materials in Kepulauan Riau Province tends to be low in the range of 0.5 – 2.2 percent but for floor materials ranges from 25.3 - 47.2 percent.

Water as one of the basic needs tend to be considered because it can have long-term implications, especially on the health of the population. The

percentage of the population living in houses with poor quality water sources in Kepulauan Riau Province tends to be low, ranging from 0.1 to 6.4 percent based on picture 1. This means that most of the population in the Kepulauan Riau Province has access to a decent source of water, both drinking water and clean water. Based on the gender group in Kepulauan Riau Province, women who access poor quality water sources are higher.

Picture 1
Percentage population living in houses with poor quality water sources
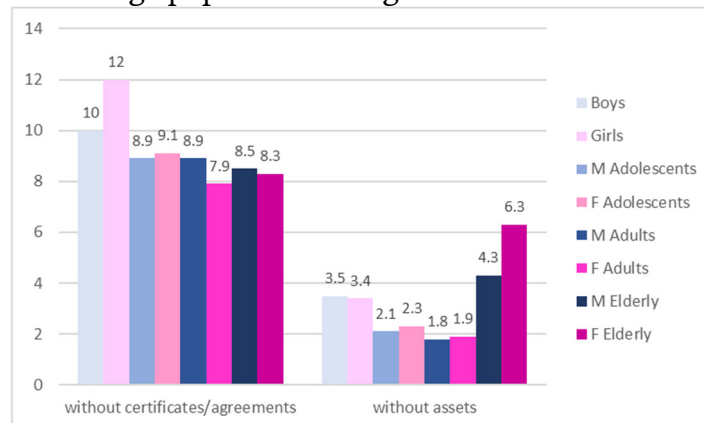

Source : processed susenas 2023 data

The low percentage of people living in houses with poor quality water sources in Kepulauan Riau Province shows that the water resources in Kepulauan Riau Province are quite good. Based on the DTKS, poor households in Kepulauan Riau Province have mostly used decent water sources (Hartoto 2021). This condition shows that the water source used by the people of Kepulauan Riau Province is good enough for the poor people. Although it has an archipelago configuration, turns out capable to fulfill the needs of a decent water source. Other evidence can be seen in water sources that use two main reservoirs, namely the reservoirs found in Sei Pulai and Gesek. Planned new reservoir is located in Bintan Regency which is expected to increase the provision of proper water sources (Kurniawan, Kismartini, and Purnaweni 2024). In addition, the community also has a strategy to fulfill clean water through the delivery of Sucheng ships, direct extraction at spring water sources and rainwater storage as done by the Sea Tribe community on Mensemut Island (Indriani et al. 2024).

Household status and assets

Legal status of residential ownership provides protection and legal certainty for residents so that it needs to be clarified and not causes disputes or conflicts in the future. Kepulauan Riau Province has a relatively low percentage of population living in houses without certificates or agreements ranging from 7.9 to 12 percent. Archipelago configuration related to the majority of the population who are fishermen will live in coastal areas so they can to be close to the sea as their source of livelihood or what is commonly referred to as *Rumah Pelantar*. *Rumah Pelantar* generally have no legality because they are built in coastal areas that supposed belong to the state. However, some *Rumah Pelantar* can have legality in the form of location permits, basis of rights, to *Hak Pakai* (HP) and *Hak Guna Bangunan* (HGB). This legality has at least provided legality for residents to use state land as their residence. Therefore, the percentage of population living in houses without certificates or agreements in Kepulauan Riau Province is tend to be low (Khumara and Mujiburohman 2022; Pujiwati, Imami, and Maesha 2020).

Picture 2

Percentage population living in houses with lack household status and assets

Source : processed susenas 2023 data

Transportation facilities owned by households are important in relation to the population accessing the impact of development. People who are isolated because they do not have transportation facilities will hinder the process of fulfilling their needs. The percentage of population living at household without transportation assets and/or land in Kepulauan Riau Province tends to be low, ranging from 1.8 to 6.3 percent, but women higher than men, especially the adolescent, adult and elderly groups. An archipelago configuration has its own
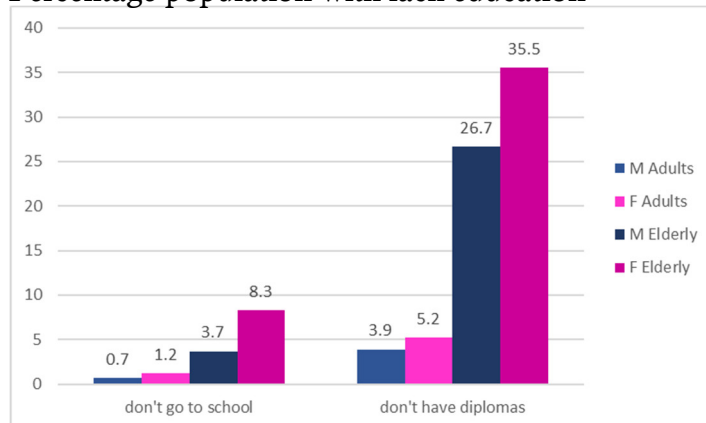
challenges in terms of inter-island connectivity in order to access resources and services. Therefore, the ownership of transportation assets is important for households and individuals so that they are not isolated from development. Most fisherman communities in Kepulauan Riau Province at least have traditional boats and motorboats that are used as the main asset of fishing which are transportation assets. Even though the boat has become a personal asset, there are still some residents who are still in the process of credit (Gustika, Dharmawan, and Sunito 2023; Tanjung 2023). This shows that transportation assets have been owned by most of the population of Kepulauan Riau Province even though they are still in the form of traditional boats.

Education

The education dimension represents the population's access to education so that it can improve the quality of human resources through their knowledge and skills. The educational dimension is found in all groups except for children. The group of adolescents is represented by indicators of educational aid. Meanwhile, adults and elderly groups are represented by the last level of education and the possession of diplomas.

Picture 3
Percentage population with lack education

Source : processed susenas 2023 data

There are more women who do not go to school and do not have diplomas. Poverty and social inequality are the most dominant factors that force women to drop out of school or limit participation in education. Financial constraints and social pressure from the surrounding community are often the cause of women not being able to access education. In addition, women living
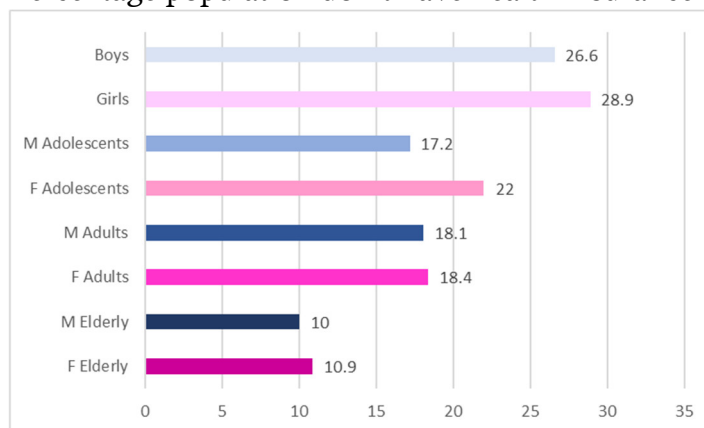
in rural areas also tend to be less likely to access education than women living in urban areas due to the lack of adequate educational opportunities and facilities (Gibson and Purba 2020; Setyadi 2022; Supianto et al. 2024).

Health

The health dimension in Kepulauan Riau Province is found in groups of children, adolescent boys, and elderly. The health dimension in Kepulauan Riau Province is represented by health insurance and a inpatient care in groups of girls, adolescent boys and elderly women. Smoking behavior is a separate dimension that is still related to the health dimension and is found in groups of adolescent boys and elderly men in Kepulauan Riau Province. The group of boys in the Riau Islands Province is slightly different where the health dimension is represented by health insurance and immunization as well as the inpatient care, which is a separate dimension.

Picture 4
Percentage population don't have health insurance

Source : processed susenas 2023 data

Health insurance is the indicator that most shapes the health dimension in Kepulauan Riau Province. Based on picture 4 it can be seen that there are still some residents who do not have health insurance. The group of girls is the group with the most lack of health insurance at 28.9 percent. Furthermore, more women do not have health insurance than men. The ownership of health insurance is important in ensuring that residents receive adequate health services. The existence of a population that still does not have health insurance shows that the health insurance provided by the government still does not reach the entire population to improve the quality of human resources through the

health sector. More women who do not have health insurance need to be considered because women are more vulnerable to health problems relates to the inherent nature to childbirth, so it is necessary to increase the coverage of health insurance, especially for women.

Gender-based multidimensional poverty measurement

Based on factor analysis, equations was obtained to measure gender-based multidimensional poverty in Kepulauan Riau Province. The equation can provide an overview of the dimensions that have the greatest contribution in shaping gender-based multidimensional poverty measurements in Kepulauan Riau Province based on each group and gender. This can be seen from the largest coefficient owned by the dimensions that form the gender-based multidimensional poverty measurement. Men and women both have the dimensions of housing and water sources as well as information access as the dimensions that have the greatest contribution.

Table 2 Equations for gender-based multidimensional poverty

Group	Equation	Symbol
Boys	$Y = 0{,}253hws + 0{,}189ia + 0{,}179hsa + 0{,}122hl + 0{,}119ip$	hws: housing and water sources
Girls	$Y = 0{,}321hws + 0{,}256ia + 0{,}249hsa + 0{,}175hl$	hs: housing
M Adolescents	$Y = 0{,}219hws + 0{,}209ia + 0{,}178hsa + 0{,}171ed + 0{,}113hl + 0{,}110smo$	ws: water sources
F Adolescents	$Y = 0{,}283ia + 0{,}189ed + 0{,}187ws + 0{,}176hs + 0{,}165hsa$	ia: information access
M Adults	$Y = 0{,}275hws + 0{,}260ia + 0{,}254ed + 0{,}211hsa$	hsa: household status & assets
F Adults	$Y = 0{,}273ia + 0{,}266hws + 0{,}255ed + 0{,}207hsa$	ed: education
M Elderly	$Y = 0{,}204ia + 0{,}20ed + 0{,}178hs + 0{,}160ws + 0{,}149hsa + 0{,}109smo$	hl: health
F Elderly	$Y = 0{,}258ia + 0{,}231ed + 0{,}202ws + 0{,}175hsa + 0{,}133hl$	smo: smoking ip: inpatient care

Source : processed susenas 2023 data

The percentage of multidimensional poverty in Kepulauan Riau Province as a whole is 15.92 percent based on table 3. This value is higher than the percentage of poverty from BPS in 2023 which is 5.69. This difference in numbers shows that there are numbers of people who are not classified as poor before being measured using multidimensional poverty. Therefore, multidimensional poverty measurements can provide a more in-depth measure. Based on regencies/cities, it can be identified that Kepulauan Anambas Regency has the highest percentage of multidimensional poverty in Kepulauan Riau Province, which is 56.27 percent. Meanwhile, Batam City has the lowest percentage of multidimensional poverty at 10.25 percent.

The measurement of gender-based multidimensional poverty is based on a comparison of multidimensional poverty between women and men which can

be seen through the ratio of the percentage of poor women and man. A ratio value above 1 indicates that women's multidimensional poverty is higher than men and vice versa. Based on table 3 the ratio value of Kepulauan Riau Province is 0.99 which shows that the percentage of poor men is higher than women. However, what needs to be noted is that the ratio value is close to one, which means that the percentage of men's and women's multidimensional poverty is almost the same, namely 16.03 percent and 15.80 percent.

Based on regencies/cities in Kepulauan Riau Province, gender-based multidimensional poverty shows varying values. Areas with values above one consist of Karimun, Bintan, Natuna and Kepulauan Anambas Regency while areas with values below one consist of Lingga Regency, Batam City and Tanjung Pinang City. Areas with higher women's multidimensional poverty are more to be found than higher men's multidimensional poverty. However, what needs to be noted is that the difference is slightly seen from the ratio which is in the range of 0.94 - 1.10 or around one so that when the analysis at the regency/city level shows that women's multidimensional poverty is higher than men, the analysis at the provincial level actually shows that men's multidimensional poverty is higher.

Based on age groups table 3, it can be analyzed that gender-based multidimensional poverty in Kepulauan Riau Province shows that men's multidimensional poverty is higher in children, adolescents and adults. This is based on the ratio of children, adolescents and adults who have values of less than 1, namely 0.95, 0.95 and 0.97. Meanwhile, the elderly group has ratio value of 1.34 and shows higher multidimensional poverty for women. These ratio values represent the tendency of men's multidimensional poverty in Kepulauan Riau Province to be higher than women.

Table 3
Percentage of multidimension poverty by gender and age group

Regency/City	Children				Adolescents				Adults			
	M	F	M+F	Ratio F/M	M	F	M+F	Ratio F/M	M	F	M+F	Ratio F/M
Karimun	20.09	28.18	24.03	1.40	29.75	30.20	29.96	1.02	19.33	21.97	20.64	1.14
Bintan	32.86	40.89	36.79	1.24	37.05	28.76	32.98	0.78	20.52	22.95	21.72	1.12
Natuna	33.93	23.11	28.58	0.68	27.69	26.90	27.30	0.97	28.87	32.26	30.49	1.12

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Regency/City	M	F	M+F	Ratio F/M	M	F	M+F	Ratio F/M	M	F	M+F	Ratio F/M
Lingga	42.13	59.51	50.42	1.41	45.13	44.14	44.65	0.98	48.34	48.33	48.33	1.00
Kepulauan Anambas	62.41	50.79	56.55	0.81	52.61	63.40	57.73	1.20	54.77	54.09	54.44	0.99
Kota Batam	17.48	14.24	15.91	0.81	12.83	12.03	12.44	0.94	8.09	7.20	7.64	0.89
Kota Tanjung Pinang	16.00	20.67	18.24	1.29	24.14	23.12	23.63	0.96	13.92	12.20	13.07	0.88
Kepulauan Riau Province	20.27	19.29	19.79	0.95	19.57	18.52	19.06	0.95	13.22	12.77	12.99	0.97

Regency/City	Elderly				Total			
	M	F	M+F	Ratio F/M	M	F	M+F	Ratio F/M
Karimun	22.80	24.18	23.48	1.06	22.51	24.67	23.57	1.10
Bintan	27.07	27.87	27.46	1.03	26.16	26.28	26.22	1.00
Natuna	34.38	41.67	37.89	1.21	29.51	30.99	30.23	1.05
Lingga	45.62	37.11	41.32	0.81	46.81	46.36	46.59	0.99
Kepulauan Anambas	54.87	69.42	61.88	1.27	54.78	57.85	56.27	1.06
Kota Batam	16.19	31.17	23.05	1.93	10.55	9.94	10.25	0.94
Kota Tanjung Pinang	14.07	19.96	17.00	1.42	16.47	16.18	16.32	0.98
Kepulauan Riau Province	22.38	30.06	26.06	1.34	16.03	15.80	15.92	0.99

Source : processed susenas 2023 data

Gender-based multidimensional poverty based on age group in Riau Islands Province at the regency/city level has a different tendency from the provincial level analysis. Some regions show that women's multidimensional poverty is more present in three to four age groups such as Karimun, Bintan and Lingga Regencies. Meanwhile, some regions have the same number of age groups between multidimensional poverty for women and men, namely Natuna Regency, Kepulauan Anambas Regency and Tanjung Pinang City. Furthermore, Batam City is an area that men's multidimensional poverty is higher in three age groups. Based on the distribution, it shows that gender-based multidimensional poverty at the regency/city level in Kepulauan Riau Province has a higher tendency for women's multidimensional poverty than men.

Based on the analysis of gender-based multidimensional poverty measurements, it can be identified that multidimensional poverty can differ according to the unit of analysis and age group. Kepulauan Riau Province at the provincial level shows higher men's multidimensional poverty both in general and age group. However, the analysis at the regency/city level is more varied and more regions show higher women's multidimensional poverty. The difference in gender-based multidimensional poverty that occurred in different

analysis units and age groups in Kepulauan Riau Province shows that the fact of poverty having a female face approved at the Fourth Women's World Conference in Beijing in 1995 is not entirely true. Although women are more likely to live in poverty, men living in poverty are also still present. Gender equality does not mean ignoring men and considering that men are always better off than women, including in poverty. Gender equality has the goal that both women and men have an equal opportunity to get out of the cycle of poverty.

Women's empowerment plays an important role in shifting the poverty paradigm that is closely related with women. The development of the times allows access to development to be easier for all genders so that they can provide input in efforts to improve the quality of life. This shift is marked by various forms of women's efforts to participate in the economy and development as a form of increasing women's empowerment. One of the forms of progress in women's empowerment is that there are more than 1,500 legal reforms that apply around the world in realizing gender equality and 88 percent of countries have established laws and regulations related to the elimination of violence against women and children. Another evidence at the national level, especially in Indonesia, is the increase in women's participation in basic education activities to higher education as well as women's representation in parliament. Efforts to implement gender mainstreaming (PUG) in every development policy process and product in Indonesia are also a form of increasing women's empowerment so that women's poverty can be reduced (Hoque 2015; Siscawati et al. 2020; Surbakti and Devasahayam 2015; UN Women 2025).

Conclusion

The factors that form the measurement of gender-based multidimensional poverty in Kepulauan Riau Province consist of information access, housing and water sources, household status and assets, education and health. Women had lower conditions than men on almost all dimensions and indicators except for indicators of floor materials and residential status. Multidimensional poverty in an area can differ according to the analysis unit

and age group. However, women's multidimensional poverty in general tends to be higher than men's multidimensional poverty. The formulation of poverty alleviation policies needs to consider gender differences because each gender has different dynamics.

Based on multidimensional poverty, it is important to identified dimensions improvement when conducting poverty alleviation strategies so that the implications received are more long-term on the quality of human resources. The need for further research mainly uses more specific data due to the limitations of the data in the susenas. In addition, expanded regional coverage can provide a more comprehensive representation in analyzing gender-based multidimensional poverty in Indonesia.

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