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From Struggle To Strategy: Home Isolation During The SARS-Cov-2 Pandemic In Meruyung, Depok, Indonesia

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ABSTRACT

To manage self-isolation at home, the Indonesian government provided various health procedures to curb the transmission of COVID-19. Self-isolation at home, in hotels, refuge housing, or health facilities was among the recommended protocols. This study aimed to assess self-awareness and preparedness for home isolation during the SARS-CoV-2 pandemic. From January to April 2020, an analytical and cross-sectional design was used to collect data with a validated scoring questionnaire on internal and external perceptions of self-isolation at home during the pandemic. Simple descriptive and Fisher's Exact test analyses were conducted, with a significance level of 0.05. The study covered homes in 11 sub-districts in the Limo Depok district of West Java, Indonesia, involving 1169 participants, including household heads, spouses, and elderly members aged 60 and above. The findings revealed that more females than males were present, with 66% of the participants aged 60 and above. The category of confirmed cases was 3% suspicious cases, 3.4% travelers, 93.7% non-confirmed cases, and 32% had comorbidities. External factors included a densely populated sub-district with only 19% meeting excellent standards of residential location. Only 20.5% of the total subjects were willing to practice self-isolation at home. Raising awareness and empowering families to break the chain of transmission independently is crucial. Lessons learned from positive COVID-19 cases in the village highlight the need for local stakeholders to collaborate and develop effective networks.

Introduction

The occurrence of pandemic illnesses with severe consequences instills anxiety in society. Physical and emotional unpreparedness can lead to vulnerability and increased risk when engaging in self-isolation within the community. When the WHO declared SARS-CoV-2 a pandemic and the government classified it as a non-natural disaster, it was recognized as a disease epidemic necessitating comprehensive countermeasures involving all segments of society. As of December 2, 2020, data from the Indonesian government's official SARS-CoV-2 monitoring website reported 549,508 confirmed positive cases nationwide. Meanwhile, West Java Province was in fourth place with the highest number of cases in Indonesia, at 53,395. Meanwhile, Depok City ranked among the top three cities in West Java with the highest number of positive COVID-19 cases, reporting 9,494 confirmed cases and a total of 668 cases in isolation or undergoing treatment. [1,2]

In response to the high daily number of positive COVID-19 cases in Indonesia, the Government, with assistance from the National Task Force for COVID-19, quickly implemented various health protocols and regulations. One of the key strategies is the 3-T approach: Testing, Tracing, and Treatment. This approach emphasizes (1) the importance of testing to identify positive cases. (2) Immediate tracing of individuals who have tested positive or had close contact with positive patients. (3) Providing appropriate treatment based on the results of

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these tests. This structured strategy aims to effectively manage and control the spread of COVID-19. One necessary measure for suspected close contacts or confirmed positive patients is to undergo self-isolation.

The self-isolation procedure, as outlined in Circular No. HK.02.01/Menkes/202/2020.[3] In those circulars, the Indonesian government outlines self-isolation as a key strategy to manage the pandemic and break the chain of transmission. It can be done at home or in government-provided health facilities, provided a referral is obtained from a nearby primary healthcare facility. The SARS-CoV-2 infection and pandemic place the elderly in a high-risk group. Compared to younger individuals, older people have more comorbidities and a weakened immune system as they age. Given the circumstances, the government has issued several technical criteria that citizens, particularly older individuals, must meet to self-isolate at home.[4]

To conduct self-isolation effectively, several criteria must be met, including:

- A residential location that is not densely populated
- The availability of a separate room from other household members
- Access to a terrace or open space
- Adequate air ventilation
- The availability of clean water
- Sufficient logistics for food and medicine

These factors significantly impact the success of self-isolation. If these technical parameters are not met, the self-isolation process may be less effective and could potentially fail.

Meruyung, the most densely populated sub-district in Limo District, Depok City, spans an area of 216 km² and is home to 17,643 residents. The sub-district lacks hospital and primary health center facilities, and health workers, such as general practitioners and dentists, are unavailable. Only private practice midwives serve the community. Given these conditions, this study aims to explore how residents' self-awareness impacts their perceived readiness for home isolation during the SARS-CoV-2 epidemic, particularly among household inhabitants.

Methodology

Study design and sampling methods

This analytical, cross-sectional study was a collaborative effort between two medical faculties from different universities in Jakarta, under the Indonesian Physician of Community Medicine and Public Health Association (PDK3MI) regional chapter 3. Data collection employed cluster sampling from districts to the household level, encompassing all households in the Meruyung sub-district of Limo Depok, West Java. Meruyung, an urban district near Jakarta, has a high proportion of elderly citizens and a high prevalence of COVID-19. The study included all inhabitants in the 12 neighborhood units (Rukun Warga, or RW) of the Meruyung sub-district. **Figure 1** depicts the household sampling technique.
Household member participation included heads of households, spouses, and/or elderly members aged 60 and above. Qualified medical internship students (clerkship students) and health cadres conducted face-to-face interviews using a closed-ended questionnaire.

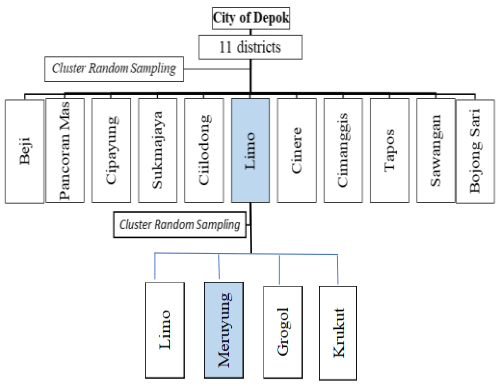

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Figure 1. Households selected as sampling subjects

Variables of interest

Early in the study, the instrument was created, validated, and tested for reliability with a group of 20 participants. This resulted in a statistical value of 0.90 and a Cronbach's Alpha of 0.80, indicating the instrument was valid and reliable for data collection. The closed-ended questionnaire included internal factors (age, sex, comorbidities, and case category) and external factors (location and home condition) that affect perceptions of preparedness for home self-isolation among families and the elderly.

The results were based on the overall score of the questionnaire's two risk variables. Internal factors included comorbidities (sickness other than SARS-CoV-2) and case type (suspected, probable, confirmed, close contact, or traveler requiring self-isolation). External factors included the dwelling location (based on family card and domicile address) and home condition (technical requirements for self-isolation). Adequate ventilation, a separate bedroom or living area, and sufficient food and drink supplies were necessary to maintain a two-meter distance between family members. Modification questions based on Bodas and Peleg's report (2020) for awareness of preparedness for self-isolation. [5,6]
The questionnaire included two items that assessed and explored their self-awareness of national regulations regarding the SARS-CoV-2 outbreak. The questions evaluated compliance with public health regulations regarding isolation to cut off transmission, on a nominal scale (yes or no). The first two items assessed preparedness with self-isolation, the following text **Q1**: "*If a medical officer requested you to stay in self-isolation at home, would you be ready to stay*?". Another question: Q2, "Would you report, if known and you were asked to report to a local or medical officer, a violation of self-isolation decrees at home designed to protect public health?" If the answer is "yes", you will receive a score of "1"; if the answer is "no", you will receive a score of "0".

Statistical Analysis

Data analysis was conducted using IBM SPSS version 25.0 for Windows. A simple descriptive analysis and Fisher's Exact test with a significance level of $p < 0.05$ were performed to evaluate the association between risk factors and perception of preparedness for self-isolation. All household respondents, including older people, provided informed consent after receiving an explanation of the study's objectives. The study protocol was approved by the Ethics Committee of the Faculty of Medicine (ethical clearance number 34/KER_FK/2/2020).

Results and Discussion

Result

Risk Factors of Preparedness Perception

In this sub-district, the resident characteristics, based on sex, were nearly equal between females and males. A total of 65.8% were aged between 60 and 70, with the majority being above 70. Most residents were non-confirmed cases, indicating they were healthy at the time of testing. The residential area, located in the city of Meruyung sub-district, was densely populated, with only 19.1% of the population meeting the criteria for self-isolation housing as per government guidelines (**Table 1**).

Table 1. The Characteristics of Residents Based on Risk Factors

No	Risk Factors	Categories	n,% (1169, %)
1.	Sex	Female	624 (53,4)
		Male	545 (46,6)
2.	Age	< 60 yr	400 (34,2)
		60 – 70 yr	562 (48,1)
		>70 yr	207 (17.7)
3	Cases category	Suspect case	34 (2.9)
		Probable case	-

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		Confirmation case	-
		Closed contact	-
		Traveler	40 (3.4)
		None	1095
		Confirmation	(93.7)
4	Comorbiditi	Yes	379 (32.4)
	es	None	790 (67.6)
5	Residential location	Density area	1100 (94.1)
		Non-density	69 (5.9)
6	Home Criteria	Meet criteria	223 (19.1)
		Not meeting the criteria	945 (80.9)

In the *Meruyung* sub-district area, 80.9% of inhabitants lived in homes that did not meet the four requirements for isolation. This indicates that their housing conditions were insufficient for self-isolation, as they lacked separate rooms and windows that opened to the outdoors for proper ventilation.

Self-Awareness of Preparedness

However, based on a self-awareness evaluation in line with national SARS-CoV-2 regulations, at that time, only 20.5% of residents felt prepared to perform self-isolation at home. The majority, including those with elderly family members, acknowledged that they were not ready to undertake self-isolation, even though they were older themselves (**Table 2**).

Table 2. Scoring result of Perception on Self-awareness Preparedness
for Self-Isolation during COVID-19

Preparedness of Self-isolation	**n (769), %**
Prepared	240 (20,5)
Unprepared	929 (79,5)

Self-isolation represents adapting to new habits to help the government eliminate the pandemic crisis by disrupting the transmission chain. According to Law Number 6/2018, during the SARS-CoV-2 pandemic, individuals can use their own homes for health quarantine or self-isolation.

Associated Risk Factors

Table 3 shows that the majority of risk variables associated with preparation perception among groups were linked to age, disease comorbidity, and housing condition ($p < 0.05$), with no differences in sex.

Table 3. Associated Risk Factors with Preparedness Perception for Self-isolation

No.	**Risk Factors**	**Category**	**Preparedness of Self-isolation at home**				***p****	95% CI (Lower-Upper)
			Prepared n=240		**Unprepared n=929**			
			n	**%**	**n**	**%**		
1.	Sex	Female	125	52.1	499	53.7	0.664	0.764-0.780
		Male	115	47.9	430	46.3		
2.	Age	≥60 yr	0	0	769	82.7	**0.000**	0.000-0.000
		<60 yr	240	100	160	17.3		
3.	Comorbid	Yes	0	0	379	40.8	**0.000**	0.000-0.000
		None	240	100	550	59.2		
4.	Home condition	None fulfilment	0	0	224	24.1	**0.000**	0.000-0.000
		Yes fulfilment	240	100	705	75.9		

Risk factors for contracting SARS-CoV-2 exist across all age groups. Our findings reveal that the unprepared group included five times more individuals over 60 years old than the other groups. This group also had four times more comorbidities, which significantly impacted risk variables ($p = 0.000$) and home conditions. Notably, there were substantial differences in risk factors between the two groups, with a large proportion of the unprepared group being below 60 years old, having no comorbidities, and having homes that met isolation requirements.

Discussion

Among the subjects, 32.4% had one or more comorbidities such as hypertension, diabetes mellitus, and osteoarthritis. WHO data shows that over 95% of deaths due to

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COVID-19 occur in individuals over 60 years old, with more than 50% involving those 80 years or older. Additionally, 8 out of 10 deaths occur in individuals with at least one underlying health condition, particularly cardiovascular disease, hypertension, and diabetes.[7,8] However, the result obtained was different from the study conducted by Griffith et al. (2020).[9] It's stated that COVID-19 cases in several countries were more common among men and their comorbid diseases.[9] From a biopsychosocial perspective, men are more vulnerable than women. However, everyone experiences fear and anxiety about becoming infected due to the high transmission, morbidity, and mortality rates.

Many observations of the dwelling state, based on specific criteria, revealed insufficient conditions for self-isolation. For example, family members were unable to maintain an acceptable spacing and physical distance of at least 2 meters within the household. Additionally, food insecurity hindered the adequate supply of logistics. One of the most significant issues for senior inhabitants in the region was not just their living conditions but also the presence of one or more comorbidities. The rights of older people, including access to healthcare, social protection, and social support, are enshrined in Law No. 13 of 1998 Concerning Elderly Welfare.[10] Furthermore, the WHO emphasizes ensuring that older people receive what they need and desire. All seniors must be treated with dignity and respect during this pandemic, adhering to the principle of "leaving no one behind". [11,12] Providing older adults with accurate information is essential for their physical and mental health during a pandemic. This information should also outline what to do in the event of an infection.

The Covid-19 Task Force's self-isolation guidelines highlight that environmental factors, particularly food logistics, are crucial for effective self-isolation.[13] During a pandemic, residents, especially older people, need protection, nutritious food, bare essentials, financial assistance, medicines, and social care. Families or nearby residents generally provide food logistics, whereas financial aid is sourced from village funds or government programs. Unfortunately, many districts cannot afford to offer adequate support through their village funds.

Self-isolation is regulated under Law No. 6/2018 concerning health quarantine. This law aims to protect the public from diseases and health risk factors that could lead to a health emergency, such as the COVID-19 pandemic. 15 Self-awareness involves adhering to health protocols and self-isolating if experiencing symptoms of illness, respiratory disease, a travel history, or close contact with positive COVID-19 patients, even if asymptomatic. In some areas, stigmatization has occurred, affecting not only the affected family members but also health workers, leading to social exclusion or expulsion. Home quarantine was implemented for all household members in close contact with a positive case, with a prohibition on leaving the house, and necessities provided by the local government. The duration of self-isolation recommended by the Indonesian Task Force was until recovery, as monitored daily by health officers.

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According to the Ministry of Health's 2020 Covid-19 prevention and control guidelines, confirmed asymptomatic cases should self-isolate for 10 days from the date the specimen was taken. For symptomatic cases without follow-up RT-PCR analysis, self-isolation should last for at least 10 days plus an additional 3 days without fever or respiratory symptoms. After completing the initial 14 days of self-isolation, individuals must continue monitoring their health for a further 14 days, totaling 28 days, and report to a general practitioner or local health institution.13, 16, 17 However, as the number of cases decreased, the period required for self-isolation became shorter, and patients were monitored by phone for their signs and symptoms.

Individuals over 60 are highly susceptible to SARS-CoV-2 due to a weakened immune system, known as immuno-senescence. This, along with comorbidities like hypertension, diabetes, cardiovascular disease, chronic lung disease, and cancer, significantly increases the fatality rate among the elderly. Isolation for those with comorbidities aims to reduce virus transmission within high-risk groups. According to Indonesia's official COVID-19 data, the top three comorbidities in patients are hypertension (51.1%), diabetes mellitus (34.9%), and heart disease (18.4%).[2,18] A meta-analysis study by Wang B (2020) identified that comorbidities such as hypertension, diabetes, COPD, cardiovascular disease, and cerebrovascular disease are significant risk factors for COVID-19 patients..[19] Data from Indonesia's official COVID-19 website indicated that the most common comorbidities among patients self-isolating or undergoing treatment were diabetes, hypertension, and chronic cardiovascular disease. Similarly, a study by Al-Otaiby et al. (2022) in Saudi Arabian hospitals found that the prevalent comorbidities among SARS-CoV-2 patients were diabetes (48.2%), hypertension (44.2%), and chronic cardiovascular disease (10.5%).[20] It highlights a global perspective, showing that the issue of comorbidities among COVID-19 patients is widespread and not unique to any one region.

Therefore, according to the guidelines for implementing self-isolation at home, as outlined in the Decree of the Minister of Health No. HK.01.07/MENKES/4641/2021, dated 16 and 21, Individuals with comorbid diseases are not recommended for home self-isolation, especially vulnerable groups such as the elderly. Covid-19 pandemic guidelines advise that if the head of a household over 60 years old is suspected of having an infection and has comorbidities, local community leaders should notify the sub-district head to refer them to primary healthcare or a hospital. Enhancing community empowerment in preventing SARS-CoV-2 infection is crucial. Leveraging the community's potential can help prevent the transmission of viruses effectively.[17,22-24]

The government issued a prevention manual for village-level community health as a comprehensive guide. This guideline serves as a resource for community and government collaboration to address pandemic challenges. Elderly social institutions, central and regional governments, and the community provide 24-hour protection for older people. Institutions play a crucial role in protecting high-risk groups, including older people, from COVID-19 and

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stigmatization. Efforts include implementing health protocols, providing health services, and conducting rapid tests for all individuals, including older people and healthcare workers. Adopting healthy behaviors, such as maintaining personal hygiene and keeping a clean social environment, is also emphasized.

In socio-economic prevention, the government and social donations provide aid to people experiencing poverty, those affected, or those with lower incomes. The community has shown mutual support to those in need, especially the economically affected. Activities continue as usual for older people and employees/institutional officers, with the continuous implementation of health protocols to reduce face-to-face meetings in large groups.

During a pandemic, vulnerable individuals are often neglected. Strengthening family bonds is crucial for preparing and enduring these uncertain times. Families can help overcome various challenges caused by strain. When official assistance is insufficient, families become the most significant and trustworthy support for older people. The first step for families with senior members is to prevent them from being exposed to COVID-19. Family members must follow health protocols, such as avoiding groups or gatherings, to minimize the risk of bringing the virus home.[15,25] Family members or relatives with outside activities and potential COVID-19 exposure should avoid contact with older people. Older people should limit their interactions to one or two family members or caregivers who have adhered to health protocols, including frequent hand washing, maintaining cleanliness, and wearing a mask.

The family plays a vital role in enhancing the quality of life for its members, including older individuals. Relatives who don't live with older people should monitor and stay in touch with them online on a daily basis. Ensuring that all family members, particularly those with chronic conditions or comorbidities, are in good health is essential. Understanding and adhering to information and guidance from authorities helps eliminate stigmatization. Supporting each other and working together are key to breaking the transmission chain.

Following this study, *Desa / Kelurahan Siaga* was established at the sub-district level across provinces. Community engagement team members, acting as resident representatives, take turns monitoring preventive measures. When positive diagnoses are reported, households conduct contact tracing and refer individuals to the nearest primary health facility. Community participation follows national guidelines and can be adapted to local circumstances.

There are several limitations to the findings. Firstly, due to the early stage of the outbreak, only 78% of the total sample responded, as some homes refused to participate. Secondly, we did not distinguish between participants diagnosed with COVID-19 and those exposed to the virus at work or in the community. Additionally, we conducted home visits and face-to-face surveys, following health protocols, and provided socialization on preventive actions based on national guidelines to help families reduce uncertainties.

Conclusion

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Promptly boosting the prevention and management of chronic diseases like hypertension, diabetes, and cardiovascular disease among vulnerable groups is critical. Additionally, fostering independence in adhering to health prevention protocols is necessary.

Involving and empowering local communities is key to successfully reducing COVID-19 morbidity and breaking the transmission chain. It's essential to remain alert to other infectious diseases and potential outbreaks. Building strong social networks in neighborhoods can be very effective. Additionally, ensuring continuous care for older people is necessary, with support from both families and the community during challenging times. Raising awareness through genuine socialization, information sharing, and strong policies and networks is crucial for recognizing the problem and developing an integrated, preventative policy tailored to the local context.

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