

Perception on health and exercise among Indonesian older adults: a sequential exploratory study in Javanese rural communities

Percepción sobre salud y ejercicio entre adultos mayores indonesios: un estudio exploratorio secuencial en comunidades rurales javanesas

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Abstract. This study aims to investigate the perceptions of health and exercise among older adults in rural Javanese communities in Indonesia. Through a sequential exploratory approach, the research uncovers diverse levels of knowledge regarding health and exercise among the rural populace. There are 40 older adults from three different regencies in Central Java Province participated in filling the Global Physical Activity Questionnaire (GPAQ). Further qualitative analysis used 25 samples out of 40 through convenient method. Semi-structured interview is conducted to confirm results of questionnaire and explore their perception on health and exercise. Despite variations, a predominant belief emerges among participants regarding the significant health benefits associated with exercise. Analysis reveals that a considerable majority (87.5%) of participants meet the World Health Organization's recommended standards of >600 METs/week, primarily through work-related physical activities. However, there remains a notable disparity in the prevalence of physical activity during leisure time, particularly in engaging in sport-related physical activities. The accumulated METs score dominantly comes from work and travel-related activities. Qualitative study reveals that there still few initiatives among the older adults to adopt a healthy living through sports and exercise. Some believe that sports was never part of their culture. To address these findings, we urge for strategic interventions from stakeholders to enhance awareness among rural older adults about the importance of sports and exercise to enhance the overall well-being. This entails the implementation of health education programs and the facilitation of collective exercise activities at the village level.

Keywords: health, exercise, older adults, rural communities, GPAQ

Resumen. Este estudio tiene como objetivo investigar las percepciones de la salud y el ejercicio entre los adultos mayores en comunidades rurales javanesas en Indonesia. A través de un enfoque exploratorio secuencial, la investigación descubre diversos niveles de conocimiento sobre la salud y el ejercicio entre la población rural. Participaron 40 adultos mayores de tres regencias diferentes en la provincia de Java Central, quienes completaron el Cuestionario de Actividad Física Global (GPAQ). Se realizó un análisis cualitativo adicional utilizando 25 muestras de las 40 a través de un método conveniente. Se llevó a cabo una entrevista semiestructurada para confirmar los resultados del cuestionario y explorar su percepción sobre la salud y el ejercicio. A pesar de las variaciones, emerge una creencia predominante entre los participantes con respecto a los importantes beneficios para la salud asociados con el ejercicio. El análisis revela que una mayoría considerable (87.5%) de los participantes cumple con los estándares recomendados por la Organización Mundial de la Salud de >600 METs/semana, principalmente a través de actividades físicas relacionadas con el trabajo. Sin embargo, sigue existiendo una notable disparidad en la prevalencia de la actividad física durante el tiempo de ocio, particularmente en la participación en actividades físicas relacionadas con el deporte. El puntaje acumulado de METs proviene predominantemente de actividades laborales y de viaje. El estudio cualitativo revela que todavía hay pocas iniciativas entre los adultos mayores para adoptar un estilo de vida saludable a través del deporte y el ejercicio. Algunos creen que el deporte nunca fue parte de su cultura. Para abordar estos hallazgos, instamos a intervenciones estratégicas por parte de las partes interesadas para aumentar la conciencia entre los adultos mayores rurales sobre la importancia del deporte y el ejercicio para mejorar el bienestar general. Esto implica la implementación de programas de educación para la salud y la facilitación de actividades de ejercicio colectivo a nivel de aldea.

Palabras clave: salud, ejercicio, adultos mayores, comunidades rurales, GPAQ

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Introduction

One of the groups vulnerable to health problems is the older adults. As they age, their physical condition will deteriorate further. It is inevitable for the older adults that there will be a decline in organ function that can affect their health status (Fikriyah et al., 2021; He et al., 2023; Hernawan & Rosyid, 2017; Rahman & Anugerah, 2022; Tocchi, 2015). Health problems in the older adults can include non-communicable diseases such as heart disease, diabetes, and high blood pressure (Untari et al., 2024). In addition, as the immune system weakens, the risk of the older adults contracting various dangerous diseases will increase. For example, during the Covid-19 pandemic, the older adults are the most vulnerable group to contract the Covid-19

virus (Fulmer et al., 2021). Therefore, during that time, the older adults are advised to increase awareness and implement robust preventive measures to avoid contracting that deadly disease (Batsis et al., 2021; Palmer et al., 2020; Silva-Smith & Benton, 2021).

Indonesia is among the most populous in the world. According to national census by Indonesia Statistics (BPS), in 2020 Indonesia has a population of 270.20 million people (Indonesia Statistics, 2024b). There has been a trend of increasing population in Indonesia over the past two decades (Alam et al., 2016). The increase in Indonesia's population is also accompanied by an increase in the percentage of older adults population. In 1960, the percentage of older adults population was only about 3.7% of the total population. Meanwhile, the figure continues to

rise from year to year, with a total of older adults population in 2011 reaching 9.7%. This number is projected to continue increasing to reach 14.61% by 2045 (Cicoh & Agung, 2022). Like many countries in Asia, the increase in the ageing population is caused by a decline in fertility rates and an increase in life expectancy (Tang et al., 2021).

Indonesia, as an archipelagic nation, has 17,505 islands, with 6,000 of them is home to millions of Indonesia citizens. Among these 6,000 islands, Java Island is one of the largest in Indonesia, with the majority of the Indonesian population (56%) residing on it (Indonesia Statistics, 2024a). As a country that provides healthcare coverage for all its citizens, it is important for a nation like Indonesia to ensure that its population has good knowledge and awareness of health (Suryanto et al., 2017). This is crucial, especially for the older adults, so they can maintain their health and not rely on state-funded healthcare. Good health for the older adults will undoubtedly improve their quality of life (Kusumaningrum et al., 2024; Pamungkas et al., 2021; Sari et al., 2021; Suryadi et al., 2024). For the nation, healthy older adults individuals will be able to contribute to saving healthcare budget allocations, which can then be allocated to other equally important areas.

One preventive measure in maintaining the health of the older adults is the habit of living an active lifestyle through regular physical activity and exercise (Brandão et al., 2021; Ibrahim et al., 2023). Exercise can increase bone density, prevent degenerative diseases, and reduce the risk of death from non-communicable diseases (Brinkley et al., 2017; Challoumas et al., 2023; Haque et al., 2024). Some studies indicate that an active lifestyle correlates positively with knowledge of the benefits of exercise for health. While there has been considerable research on health perceptions and exercise behaviors among older adults in various cultural contexts (Gallè et al., 2017; Jongenelis et al., 2022), there remains a notable gap in understanding these dynamics specifically within Indonesian older adults, particularly in rural Javanese communities. Existing studies often focus on urban populations or neglect the unique cultural and socioeconomic factors that may influence health perceptions and exercise habits among older adults in rural Java. Thus, there is a need for a sequential exploratory study that delves into the nuanced perceptions and practices related to health and exercise among this demographic, shedding light on the factors that may shape their behaviors and informing targeted interventions tailored to their specific needs. We chose the older adults on Java Island because Java has the largest population in Indonesia, so we hope Java can be used as a reference in strategies for improving the health and well-being of the older adults nationally across Indonesia. We also focused our research in rural communities as the access to knowledge and health facilities are often limited. Therefore, this study aims to gather insights into how older adults perceive the importance of health and exercise in their lives, identify any cultural or societal factors that influence these

perceptions, and examine the potential barriers or motivators for engaging in physical activities.

Materials and methods

Ethical approval

The entire participants were informed of the purpose and objective of this research. Participants in this study agreed to be part of it voluntarily. They have the right to withdraw from the study if they feel that their involvement would cause harm to themselves or their families. Furthermore, the researcher promises data confidentiality and the use of pseudonyms in every data presentation. The obtained data will not be published outside academic activities, and the research results will be published in scientific journals. The ethical committee of Universitas Muhammadiyah Surakarta has approved this research and its protocols.

The scope of the study is descriptive study. This research adopts a mixed-methods sequential explanatory design, characterized by the presentation of quantitative data followed by qualitative data. In this study, the researcher initially collects and analyzes quantitative data. In this case, the quantitative data used are level of weekly physical activity obtained from the Global Physical Activity Questionnaire (GPAQ). The collection of quantitative data is carried out in the first phase with the aim of obtaining physical activity level data from the subjects in this study. Subsequently, in the second phase, or qualitative phase, the collection of perception and knowledge about health, sports, and physical activity is conducted through semi-structured interviews. The Figure 1 describe the sequence of the study.

First phase

Quantitative phase

In this phase, the GPAQ (Global Physical Activity Questionnaire) is used to measure the participants' weekly level of physical activity. The GPAQ is employed in this research based on the fact that it is a tool referenced by the World Health Organization (WHO) for measuring the level of physical activity without gender, nationality, and race limitations. This means that the instrument can be used to measure the level of physical activity in individuals from various countries, both men and women of any race. The questionnaire measures the level of physical activity in three domains: work-related activities, travel-related activities, and recreational activities. These activities are assessed and converted into Metabolic Equivalents (METs). An individual is recommended to accumulate at least 600 METs per week through work, travel, and recreational activities. This amount of METs is equivalent to 75 minutes of vigorous physical activity or 150 minutes of moderate physical activity.

The GPAQ is given to participants selected through convenient sampling, considering that they are aged between 60 years and above, practice Islam, reside in villages, and are capable of communication without the use of aids. There are 40 participants distributed across four regions

in the Central Java region: Temanggung Regency (8 individuals), Klaten Regency (6 individuals), Sukoharjo Regency (4 individuals), and Pekalongan City (7 individuals). Face-to-face interviews are conducted to gather the necessary information for filling out the GPAQ. In this context, researchers inquire about participants' routines in the domains of work-related activities, travel-related activities, and recreational activities over one week. The questionnaire includes a list of closed-ended questions, and the answers provided by the participants are immediately used by the researchers to fill in the corresponding response columns in the questionnaire.

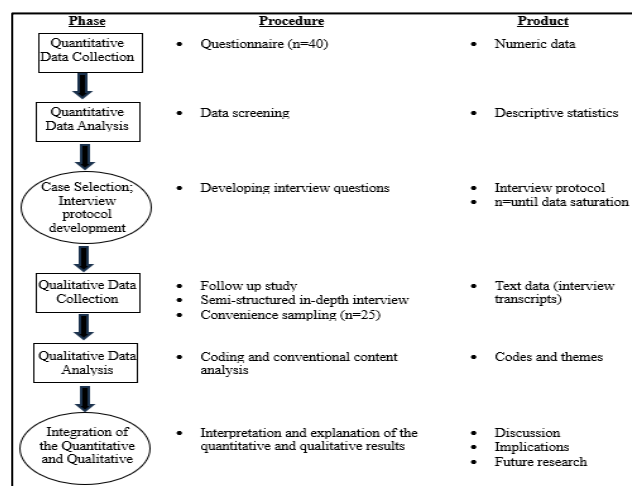


Figure 1 Study sequence diagram.

Second phase

Qualitative phase

The purpose of this phase is to collect participants' perceptions and knowledge about health, sports, and physical activity. There are 25 individuals who were previously involved as respondents in filling out the GPAQ, and they are included in this second phase. Convenience sampling method is used to select 25 individuals out of 40 participants. The following consideration is given when selecting the sample for qualitative phase namely (1) subject is willing to participate in the interview, (2) subject is on good health, (3) meet the accessibility and availability to the researcher. Both phases are carried out sequentially for each respondent through home visits on the same day. A semi-structured interview is used to gather information about the level of knowledge and awareness regarding health, sports, and physical activity. Prior to data collection, the research team formulates a list of questions to be asked to the participants. The questions include: (1) "What do you know about physical activity and sports?"; (2) "How do you define health?"; (3) "What are the benefits of sports that you are aware of?"; (4) "How important do you think sports are in improving your quality of life?"; (5) "How physical health helps improve your Islamic practice?" The Q&A session is conducted by developing questions based on the responses given by the participant. Additionally, participants are given the opportunity to address important matters that may not have been

asked by the researcher. The interview activity is conducted in the Indonesian language through an interactive Q&A session to elicit comprehensive responses from the participants. The entire Q&A session is recorded using a voice recorder for analysis in the subsequent stages of the research.

Statistical analysis

The quantitative data in this study were analyzed using the calculation formula provided in the GPAQ (Global Physical Activity Questionnaire) guide, which involves calculating the total METs (Metabolic Equivalent of Task) in the domains of physical activity during work, travel, and leisure time. This calculation aims to determine the accumulation of METs for each individual within a week. The analyzed data is then presented descriptively and serves as the basis for further analysis by combining it with qualitative data.

Meanwhile, the qualitative data were analyzed by first creating a verbatim transcript from interview recordings. Subsequently, this transcript was processed using NVivo 12 qualitative software for data storage, coding, and theme development. Thematic analysis was employed to identify, analyze, and report patterns (themes) within the qualitative data. The transcripts were processed using NVivo 12, where researchers immersed themselves in the data by repeatedly reading to gain a comprehensive understanding of the content. Interesting features or patterns in the data were identified and labeled, with codes assigned to these segments. This step involved breaking down the data into meaningful units. Codes were then organized into potential themes, which represent patterns of meaning capturing essential aspects of the data.

This combined use of quantitative and qualitative data in the study aims to provide a comprehensive analysis of the phenomena under investigation. Quantitative data collected through GPAQ offer statistical trends and patterns regarding the level of physical activity, while qualitative data in the form of interview responses provide in-depth insights into the underlying reasons or context.

Results

First phase

Quantitative phase

From 40 participants, 60% are male and 40% are female. The participants' ages range from 60 to 93 years with an average age of 67.23 years. Meanwhile, through the self-report questionnaire GPAQ, the Metabolic Equivalent (MET) values for both male and female participants were found to range from 120 to 10360 MET-minutes/week. The average MET score of the 40 participants is 3517.40 MET-minutes/week. Generally, this score depicts that, on average, the participants have met the minimum standards recommended by the WHO, which is 600 MET-minutes/week. Interestingly, within the quantitative data of this study, 5 out of 40 individuals or 12.5% of all participants in this study are still having MET scores below the

WHO recommendation. Additionally, there are other individuals with MET scores far exceeding the WHO's minimal recommendation. The quantitative data of this study will be followed up with interview processes to generally explore participants' perspectives on exercise and physical activity, especially perspectives from individuals with the lowest and highest MET score records. There is no correlation found between educational level and MET score ($\text{sig} > 0.05$). The descriptive statistic is presented in Table 1.

Table 1.
Socio-demographic characteristics and MET score.

Variables		Male n (%)	Female n (%)	Total	Mean
Age (years)	60-70	17 (42.5)	12 (75)	29 (72.5)	62.71
	>70	7 (17.5)	4 (25)	11 (27.5)	77.75
Educational Level	Below Primary	8 (33.3)	2 (12.5)	10 (25)	-
	Primary	6 (25)	6 (37.5)	12 (30)	-
	Secondary	4 (16)	3 (18.8)	7 (17.5)	-
	Tertiary	6 (25)	5 (31.3)	11 (27.5)	-
Occupational Status	Retired	10 (41.6)	7 (43.8)	17 (42.5)	-
	Active	14 (58.3)	9 (56.3)	23 (57.5)	-
Self-reported health status	Good	23 (95.8)	15 (93.8)	38 (95)	-
	Poor	1 (4.1)	1 (6.3)	2 (5)	-
MET Score	<600 MET-min/week	4 (14.3)	1 (6.3)	5 (12.5)	388
	>600 MET-min/week	20 (83.3)	15 (93.7)	35 (87.5)	3964.5
Dominant MET Score	Work	11 (50)	6 (40)	17 (45.9)	-
	Travel	3 (13.6)	5 (33.3)	8 (21.6)	-
	Leisure	8 (36.4)	4 (26.7)	12 (32.4)	-

Second phase

Qualitative phase

Theme 1: Knowledge about sports and physical activities

Sports have become part of the daily activities of society in general. Sports and physical activities are two concepts that are often used interchangeably, but actually have quite significant differences. Sports are structured and organized physical activities involving repeated exercises to improve physical fitness, skills, and performance. Typically, sports involve specific rules and are often regulated in a competitive context. Meanwhile, physical activity encompasses all types of body movements that expend energy. Physical activity can be structured or unstructured, and does not always involve competition or strict rules. Physical activity is also often associated with everyday tasks involving physical movement. Some participants in this study were unable to explain the difference between sports and physical activity. They consider both to be equally beneficial activities in maintaining physical health..

...I'm not a fan of sports; my physical activity consists only of sweeping and mopping the house. (HST, 61 y.o, female, 640 METS/week, retired worker)

Sweeping and mopping the house cannot be categorized as sports because they lack rules, governing federations, and are not activities typically competed in championships. However, the general perception among the public is that any physical activity that makes one tired and sweaty is

considered a sport.

...I spent most of my time in my garden (MBR, 69 y.o, male, 4536 METS/week, retired worker)

While some participants explained the definition of sports by mentioning their work activities, there were also some participants who were able to distinguish between the definitions of sports and physical activities by providing examples of both activities, giving explanation of past and current activities.

In the past, I enjoyed playing table tennis and soccer. However, at my current age, I've abandoned all of that. I've replaced it with gardening. (MBR, 69 y.o, male, 4536 METS/week, retired worker)

I used to enjoy playing softball. Now, I no longer play it. Nowadays, I spend more time in the fields as a farmer. (GYT, 70 y.o, male, 120 METS/week, farmer)

Theme 2: The habit of exercising participants changes with age.

Changes occur in the form of sports activities carried out as well as adjustments to the frequency and volume of sports activities. These changes are caused by changes in physical condition due to age, changes in social environment after retirement, and the loss of support from close people who have passed away.

...now I engage in brisk walking, which I find to be light for someone my age. This sport is also easy and cheap, there is no cost for me to do this sport. (GN, 67 y.o, Male, 560 METS/week, retired worker)

My sports activity as a retiree is older adults aerobic exercises. I am suitable for doing this type of exercise because all parts of the body are required to move. Moreover, this aerobic exercises is specifically designed for the older adults so the movements are not difficult for older people like me to do. (HRD, 62 y.o, Female, 2520 METS/week, retired teacher)

I used to enjoy playing table tennis and soccer. In the past, it had become a habit in our village that after Quran recitation schedule in the afternoon, it was time for sports for teenagers in our village. Moreover, there used to be a neighbor who provided table tennis facilities in the yard of his house. We were even more enthusiastic. Now that neighbor of mine has passed away and many of my peers have also passed away or migrated and live in other areas. (MBR, 69 y.o, male, 4536 METS/week, retired worker)

Theme 3: The benefits of exercise

The existence of the benefits of exercise for health is already well-known by participants. However, most of them (60% of total participants) have not been able to detail what health benefits they will gain from exercising regularly. Nevertheless, there are some participants who mention specific health benefits of exercise for their bodies, such as lowering blood sugar levels, and strengthening muscles and bones exercise is for keeping the body healthy, clearing the mind, and strengthening bones. (SNW, 61 y.o, female, 1440 METS/week, retired teacher)

The benefits I feel from exercise are being able to

control blood sugar levels, filling leisure time, and being able to sleep soundly. (MBR, 69 y.o, male, 4536 METS/week, retired worker)

The benefits of exercise described above are consistent with the findings of the research by Yuliadarwati et al. (2021), which revealed that the majority of elderly respondents in their study experienced poor sleep quality. Therefore, many elderly individuals aspire to improve their sleep quality, one of which is through engaging in physical activities.

Theme 4: Motivation for regular exercise

Exercise may not be an activity typically associated with the older adults. Exercise may simply be seen as part of the past that is now rarely done. However, some participants in this study have expressed that they continue to exercise regularly because they are internally driven by the importance of exercise and receive support and motivation from their friends and relatives. This is related to findings from Monma et al (2019) which revealed that regular exercise accompanied by friend or relatives is more effective in promoting healthy life expectancies (Monma et al., 2019).

I am aware that exercise has great benefits for health. If I hadn't been exercising regularly since long ago, I might not have been able to live a healthy life until this age. (LST, 78 y.o, female, 3920 METS/week, retired teacher)

I regularly exercise at the Community Health Center with fellow retirees. There, we greatly enjoy exercising together because we can joke around and motivate each other to stay healthy. (AS, 70 y.o, male, 2680 METS/week, retired worker)

I get motivation to exercise regularly from my husband, children, and friends... (SNW, 61 y.o, female, 1440 METS/week, retired teacher)

The location of this study is in Central Java Province, which, like the general population of Indonesia, is predominantly Muslim. The abundance of religious rituals in Islam also serves as motivation for participants to exercise in order to maintain a fit physique for performing various religious rituals, such as praying five times a day at the mosque, or performing the Hajj pilgrimage in the holy land of Mecca, Saudi Arabia.

I experienced during my pilgrimage to the holy land of Mecca that my body was not well-prepared, so the worship I performed was not optimal. After that, I made exercise a routine so that my body could be fitter and I could worship more smoothly. (AR, 62 y.o, male, 4240 METS/week, farmer)

I am aware that exercise can help in tranquility during worship. If the body is healthy, worship will be smooth and not disturbed. (MBR, 69 y.o, male, 4536 METS/week, retired worker)

What motivates me to exercise is to have a healthy body. If I have a healthy body, I can easily go to the mosque to worship together five times a day. (MR, 75 y.o, male, 960 METS/week, retired worker)

Theme 5: Barriers to regular exercise

Despite the known benefits of exercise for the body, there are still some individuals who find it difficult to make it a regular habit. In this study, several barriers faced by participants in maintaining a regular exercise routine were revealed.

I no longer have friends to exercise with. Currently, the exercise I do is limited to cycling in my free time. Even then, if my grandchildren are at home, I practically cannot exercise because I have to take care of them. (PRB, 63 y.o, male, 1080 METS/week, retired worker)

I rarely exercise since the older adults aerobic exercises activities in my neighborhood are no longer continued. Even though in the past, I always participated when there was older adults aerobic exercises. (LST, 78 y.o, female, 3920 METS/week, retired teacher)

I was not familiar with exercise before. I have always been busy working. My work was already like exercise. Seeing friends exercise makes me want to, but I'm physically tired from work. I come from an economically disadvantaged family, my mother is a widow, so since childhood, I have focused on helping my mother earn a living. That habit has persisted until now. (SM, 80 y.o, male, 3640 METS/week, seller)

... currently, I focus my time on working, worshipping, and resting. (SNT, 63 y.o, male, 7160 METS/week, seller)

Discussion

Living a healthy and active lifestyle has been proven to prolong life expectancy (Chudasama et al., 2020; Limpens et al., 2022; Monma et al., 2019). Regular exercise is one of the ways to achieve a better quality of life in old age. Various sports and exercise can be regularly undertaken by the older adults, either individually or in groups, to improve physical fitness. As stated by Suryadi et al., (2024) on their literature review, exercise such as yoga, aerobic sports, and resistance training is proved to have beneficial impact to older adults. It is also important for the older adults to reduce leisure time spent on sleeping, watching TV, and other sedentary activities. These habits are closely related to a sedentary lifestyle, which can increase the risk of death from non-communicable diseases such as high blood pressure, diabetes, and heart disease (Galvão et al., 2021; Li et al., 2023; Weraman et al., 2023). However, based on interviews with the subjects, they acknowledged that the exercise they have been engaging in are not recreational activities such as Yoga or resistance training. They admitted that such lifestyle is not part of their societies. Instead, they are more related to occupational physical activities such as farming, gardening, and taking care of livestock. These findings are supported by a similar study from () which states that an individual's choice to exercise and select a type of exercise is closely related to their beliefs and sociodemographic factors (Parra-Rizo et al., 2024). Whatever the type of physical activity, it remains important for older adults to stay physically active to maintain their fitness and overall health. Continuous efforts are needed to provide

older adults with information about the benefits of exercise for health so that they can be more motivated and consistent in maintaining their good habits. This is supported by research findings that indicate studies on perception can help many parties understand the risks, barriers, and factors that can motivate older adults to exercise, thereby enabling the implementation of appropriate approaches to increase community participation in regular physical activity (Dagenais et al., 2024; Galway et al., 2023; Jin et al., 2019).

As a clear guideline for everyone to avoid a sedentary lifestyle, the World Health Organization (WHO) recommends that individuals engage in at least 150 minutes of moderate-intensity physical activity per week or 75 minutes of vigorous-intensity physical activity (WHO, 2020). This study uses the METS scale to measure the adequacy of physical activity, with the WHO's minimum recommendation being 600 MET-minutes per week (WHO, 2024). Physical activity can be calculated from a person's work activities, physical activity during travel, or physical activity during leisure time. The data in this study show that the majority of MET scores are obtained from physical activity at work. This is an interesting fact that the majority of the older adults still engage in physically demanding jobs. Time duration committed in moderate to vigorous physical activity (MVPA) is often used as indicator to monitor health risk in older adults. The finding of this study revealed that source of physical activity of is more from working activities rather than from exercise in sports. This is similar to finding from previous research that compared to younger population, older adults have less time committed to sports and more time to do domestic jobs (Bélanger et al., 2011). It has become a culture in rural areas that exercise is not necessarily an activity associated with people living in villages, especially among the older adults. The result is supported by previous study that highlight the relation between physical activity and sociocultural factor on rural indigenous community in Fiji Island (Singh et al., 2023). During the present study, one participant said,

"... when I was still active in government service, I was more active in exercising because many colleagues in the office were into it. Now that I have retired and returned to village life, I have abandoned all those activities because not everyone here enjoys exercising. Exercise has not become a habit for people here." (MR, 75 years old, male, 960 METS/week, retired worker)worker)

Any form of physical activity is actually better than being completely sedentary. However, engaging in physical activity through sports offers greater benefits for the older adults (Galvão et al., 2021; Li et al., 2023). At least through interviews conducted in this study, it was found that those who regularly engage in sports such as cycling, aerobic exercises, and brisk walking express that exercise makes their bodies healthier and more energetic. Not only that, they also mention that through such exercise, they not only obtain physical health but also mental well-being. Working should not be a priority for the older adults, considering

that their financial needs are often met through savings, pension funds, or contributions from children or grandchildren to support their parents' lives. Therefore, to gain better benefits and to avoid stress in the workplace, it would be advisable for the older adults to allocate more time for exercise rather than solely focusing on work for livelihood. In order to encourage more older adults individuals to engage in active exercise, several strategic steps need to be taken with both internal and external approaches.

The internal approach involves focusing on building awareness among the older adults to exercise regularly. Educational programs about the benefits of exercise can be implemented by Community Health Centers in collaboration with village government officials to ensure that information about the significant benefits of exercise reaches the older adults population. If the older adults receive good knowledge about the benefits of exercise, it will raise awareness within themselves to actively participate in exercise. This is consistent with the interview results where one participant expressed gratitude for being able to live to the age of 78 because of their regular exercise routine. They mentioned that if it weren't for their dedication to exercise, they weren't sure if they would have lived to their current age. A good awareness of the benefits of exercise will enable the older adults to rearrange their daily activity priorities. For those who have been more physically active in the context of their work, it is possible that they will commit to reducing their working hours and allocate more time for exercise.

The internal approach must be accompanied by an external approach. Through interviews, it was revealed that some older adults individuals are enthusiastic about exercising at Community Health Centers because there are instructors and peers who can provide guidance and motivation. Additionally, exercising with peers is beneficial for reducing stress as they can exchange stories and jokes with each other. Several studies found that fun and enjoyment as a result of social interaction can be used as a motivation to promote active lifestyle among older adults (Devereux-Fitzgerald et al., 2016; Fulmer et al., 2021; Mauchley et al., 2023). Therefore we argue that it is important for the government to facilitate rural communities similar to already provided in Community Health Centers to create a supporting neighbourhood and environment for active lifestyle through sports and exercise.

The Indonesian government, through the Ministry of Village, Development of Disadvantaged Regions, and Transmigration, has allocated village funds since 2015, amounting to 2 billion Indonesian rupiah (127 thousand USD) per village. The ministry is committed to continuing this allocation until 2024, with a cumulative disbursement reaching 400 trillion Indonesian rupiah (25 million USD). This amount is significant, and the village funds should be utilized to maximize the welfare of rural communities. One indicator of welfare is physical and mental health. Through

integrated health service centers (*Posyandu*) at the village level, the government can evenly organize communal exercise activities at the community level. This is solely aimed at providing more accessible access to exercise for rural communities. Community Health Centers located in sub-district towns often cannot reach the entire rural population, so organizing exercise activities at the village level is expected to increase community participation in exercise. The previous study also support this findings, stated that obstacle in people participation in sports and exercise is often lack of infrastructure (Pelletier et al., 2020).

Conclusions

The level of knowledge about health and exercise varies among the rural population. This study reveals that older adults mostly recognize the importance of health and exercise for maintaining their overall well-being. Cultural and societal factors, such as traditional beliefs, community support, and social norms, play a significant role in shaping their perceptions of physical activity. Key barriers identified include limited access to exercise facilities, health issues, and lack of motivation, while motivators encompass community engagement, perceived health benefits, and family encouragement. The quantitative data have supported the claim. Based on MET score references, the majority of participants (87.5%) have met the WHO standards of >600 METs/week, yet many of these come from physical activities obtained through work. Meanwhile, the proportion of physical activity during leisure time through sports activities is still not dominant. Compared to physical activities at work, physical activity in sport provide additional benefit. It is important for not only nurture physical health but also psychological wellness. Therefore, strategic steps are needed from stakeholders to raise awareness among the rural older adults about the importance of exercise through health education programs and organizing collective exercise activities at the village level. This study provides insights into the levels of physical activity and perceptions of health and fitness among residents in rural areas. These findings can be utilized by the government to improve these conditions through community outreach and education at integrated healthcare services (*Posyandu*).

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Conflict of interest

The authors declare no conflict of interest on this study.

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