ORIGINAL ARTICLE

Health-related quality of life and its relationship with time use, role participation and perceived social support among retirees in Klang Valley and Malacca

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ABSTRACT

Introduction: With increased life expectancy among older adults in Malaysia, there is an increasing number of years of living after retirement. The role and lifestyle changes can significantly affect time use and participation in everyday life, influencing individuals' quality of life (QoL) and well-being. However, limited research has examined the health-related QoL and its relationship with time use, role participation and perceived social support among retirees in Malaysia.

Materials and Methods: In this cross-sectional study, we used the Malay versions of EuroQol 5 Dimensional (EQ-5D-3L, Time Use Diary, Role Checklist Version 3 (RCv3) and Multidimensional Scale of Perceived Social Support (MSPSS) questionnaires among 362 purposively selected Malaysian retirees aged 55 and older. Regression analysis was employed to identify the predictor of health-related QoL using the Statistical Package for Social Sciences (SPSS) version 26.

Results: The results indicate a weak positive association between all determinants (time use, role participation, perceived social support) and health-related QoL among retirees. Only time use and role participation significantly influenced the health-related QoL of retirees. Our findings reveal no direct and substantial relationship between perceived social support and health-related QoL among Malaysian retirees.

Conclusion: The results suggest active role involvement and effective time management can improve retirees' health-related QoL.

KEYWORDS:
QoL; retiree; role participation; social support; time use

INTRODUCTION

Malaysia is experiencing an ageing population, with older adults increasing yearly.[1] This trend is attributed to increased life expectancy, driven by advancements in medical care, hygiene and food supply.[2] As life expectancy for older adults increases, the number of years spent living after retirement also increases, leading to changes in responsibilities and lifestyles. As a result, the proportion of adults aged 65 years and above is growing yearly, with the latest figures in 2020 revealing that the senior age population has risen to 7%.[1]

QoL is an individual's perception of their place in life regarding their objectives, aspirations, and standards in the context of their culture and value systems.[3] Numerous standardised measures have been developed to assess QoL, including EQ-5D-3L, and demonstrate its significance in an individual's life. A study has found that health, family and income were among the most influential contributors to QoL.[4] Specifically, almost all older adults emphasised that health significantly contributes to QoL[4], underscoring the importance of health-related QoL.

Moreover, family members, including partners and children, were also highlighted as essential contributors, implying the importance of social support. More than half of the older adults stated health as their top priority, followed by needing children and partners to improve their QoL.[4] Contrarily, despite being emphasised as one of the contributors, income was not among the top priorities contributing to QoL.[4]

Besides QoL, retirement affects many aspects of an individual's life, including role shifts from worker to retiree and routine changes, which may impact QoL.[5,6] Post-retirement, individuals may face limited access to activities, limiting their role engagement and affecting their well-being.[5] Moreover, a slower daily rhythm and changed significance of activities led to a shift towards less demanding and unproductive activities,[5] which may influence QoL. Besides, the absence of daily demands can be stressful and reduce motivation, further impacting QoL.[6] In summary, the retirement experience is closely tied to engaging activities and roles, with the need for a flexible approach to address new themes in activities' transition, such as a new temporal structure and changes in the meaning of activities.

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Despite that, there is a lack of studies in the literature focusing on whether time usage, role engagement and social support impact health-related QoL among retirees. Meanwhile, numerous studies have examined factors associated with QoL in the general elderly population,[7-10] and few have comprehensively evaluated the factors connected to retirees' health-related QoL, particularly in Malaysia. Thus, this study addresses this gap by examining relationships between health-related QoL, time use, role participation and perceived social support among Malaysian retirees, specifically in the Klang Valley and Malacca regions, with an estimated population density of 585-8235 per km[2,11]

MATERIALS AND METHODS

Study Design

A cross-sectional research design was selected to assess the prevalence of a problem and examine the relationships between variables by sampling a representative cross-section of the population.[12] This design is also the most economical and efficient for data collection within the 2-year time frame of the study (March 2021-March 2022).

An online questionnaire was used to collect the data, using the Qualtrics Online Survey platform due to its cost-effectiveness, simplicity, and efficiency in data collection and analysis. Additionally, the data were collected during the fluctuating movement control order due to the progression of the COVID-19 pandemic, where generally physical distancing is enforced, and face-to-face data collection is not allowed but with specific restrictions on different phases of movement control order, location and aspects of life.[13]

Research Ethics Committee granted ethical clearance for this study, reference no: [REC/12/2020 (MR/4360)]. Participation in the study was voluntary, and retirees had complete autonomy in deciding whether to participate. All data from retirees were obtained with informed consent, awareness and explicit permission.

Sampling Method

The study recruited retirees aged 55 and above through purposive sampling. Participants were recruited from the non-governmental organisation Kelab Guru Bersara (Teachers' Retiree Association) and Pusat Aktiviti Warga Emas (PAWE) in the Klang Valley and Malacca regions. Inclusion criteria for participants included living in the community, being able to read and communicate in Malay to complete the questionnaires, and not having any chronic illness that affects their physical, cognitive and psychological function. In addition, exclusion criteria included foreigners who retired in Malaysia as a second home or those who opted for early retirement.

Research Instruments

Four instruments were used to collect participants' data and retirees' socio-demographic details. All instruments have been validated in Malay and have adequate psychometric properties. First, the time use diary is a self-report instrument that captures how retirees use their time over 24 hours.[14] The retirees were required to document their key activities, even if they just spent minutes on them. The instrument's internal consistency was assessed in three areas: main activity, the purpose of the activity and secondary activity, with Cronbach alpha coefficients ranging from 0.02 to 0.85 for the main activity, 0.34 to 0.73 for the purpose and 0.19 to 0.84 for the secondary activity.[15] Besides, known group validity was established by comparing participants over 50 from the community and nursing homes, revealing significant differences in the purpose of activities and time spent with family and at an organisation.[15]

Second, the Role Checklist Version 3 (RcV3) is a brief screening instrument that examines the retirees' involvement levels, satisfaction with participation, and reasons for non-participation.[16] It is a 10-item screening tool that allows clinicians and researchers to provide a client-centred care plan and collect outcome data on an individual or population level. The Role Checklist—Malay demonstrated high content and face validity indices (0.95-0.98 and 0.92-0.96, respectively), good to excellent test-retest reliability (intraclass correlation coefficients: 0.654-0.976), and moderate to perfect agreement (Cohen's kappa: 0.620-1.00).[17] Additionally, the total number of roles was positively correlated with the SWLS – Malay (r_s = 0.593, p<0.001), EQ-5D-3L–Malay (r_s = 0.366, p<0.001), and MSPSS – Malay (r_s = 0.314, p<0.001).[17]

Third, the Multidimensional Scale of Perceived Social Support (MSPSS) is a 12-item instrument designed to assess retirees' perceived social support using a seven-point Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree).[18] The sum of all 12 elements must be divided by 12 to get a mean score with a range of 1 to 7; a high score indicates high social support. The Malay version of the MSPSS (MSPSS-M) has strong internal consistency, with total scores ranging from α = 0.88 to 0.92 and subscale scores (friends, family, significant others) ranging from α = 0.82 to 0.96 (19-21). It also demonstrates excellent parallel form reliability (rs = 0.94, p<0.001) and test-retest reliability (rs = 0.77, p<0.001).[19] Furthermore, MSPSS-M shows significant correlations with other measures of social support, mental health, and psychological well-being (rs = -0.25 to 0.61, p<0.05 to 0.001).[20,21]

Finally, the EuroQol 5 Dimensional (EQ-5D-3L) is a brief, self-administered instrument of health-related QoL reported by the person (HRQoL). "3L" represents three scale options: no difficulties, moderate problems, and severe problems.[22] This instrument comprises a descriptive system with five domains, including "mobility, self-care, usual activities, pain or discomfort, and anxiety or depression," each rated on three levels of severity: (i) no problem, (ii) some problem and (iii) severe problem. Moreover, the Malay EQ-5D-3L has been validated for semantic, theoretical and linguistic equivalence to the English version.[23]

Data Analysis

Data for this study were analysed using the Statistical Package for Social Science version 25.0 software (SPSS-25). First, the characteristics of the sample were described using descriptive statistics. Next, regression analysis was used to identify the significant predictors of health-related QoL.

Table I: Demographic characteristics of retirees, their QoL, time use, role participation and perceived social support (n=362)

Demographic characteristics	n (%)	Mean (SD)
Age		66.94 (5.43)
Gender		
Female	181 (50.00)	
Male	181 (50.00)	
Religion		
Islam	224 (61.90)	
Christian	40 (11.00)	
Hindu	49 (13.50)	
Buddha	46 (12.70)	
Others	3 (0.80)	
Ethnicity		
Malay	220 (60.80)	
Chinese	74 (20.40)	
Indian	57 (15.70)	
Bumiputera Sabah	7 (1.90)	
Bumiputera Sarawak	2 (0.60)	
Others	2 (0.60)	
Marital status		
Single	10 (2.80)	
Married	289 (79.80)	
Divorced/widowed	63 (17.40)	
Education level		
No formal education	9 (2.50)	
Primary education	40 (11.00)	
Secondary education	122 (33.70)	
Tertiary education	191 (52.80)	
Location		
Urban	275 (76.00)	
Rural	87 (24.00)	
QoL (EQ-5D-3L)		
EQ Overall		74.97 (14.31)
Mobility		
No problem	274 (75.70)	
Some problem	88 (24.30)	
Self-care		
No problem	344 (95.00)	
Some problem	16 (4.400)	
Extreme problem	2 (0.60)	
Usual activities		
No problem	295 (81.50)	
Some problem	61 (16.90)	
Extreme problem	6 (1.70)	
Pain or discomfort		
No problem	203 (56.10)	
Some problem	155 (42.80)	
Extreme problem	4 (1.10)	
Anxiety or depression		
No problem	316 (87.30)	
Some problem	42 (11.60)	
Extreme problem	4 (1.10)	
Time use (hours)		
ADL		3.65 (1.67)
IADL		5.42 (3.40)
Productivity		0.58 (1.45)
Rest and sleep		10.42 (2.98)
Leisure		4.05 (2.63)
Alone		8.03 (7.28)
With family		13.91 (7.53)
With friends		0.94 (1.73)
With spiritual members		1.07 (1.80)
Role participation		
Student	58 (16.00)	
Worker	61 (16.90)	
Volunteer	99 (27.30)	
Care	207 (57.20)	

Table I: Demographic characteristics of retirees, their QoL, time use, role participation and perceived social support (n=362)

Demographic characteristics	n (%)	Mean (SD)
Homemaker	309 (85.40)	
Friend	263 (72.70)	
Family member	335 (92.50)	
Religious participant	294 (81.20)	
Hobby	189 (52.20)	
Organisation	106 (29.30)	
Total number of roles		5.31 (2.20)
Perceived social support		
Significant other		20.91 (4.48)
Family		21.17 (3.32)
Friends		19.99 (3.93)
Total		62.07 (9.96)

Table II: Predictors of QoL among retirees

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	β		
1 (Constant)	51.298	5.505		9.319	<0.001
Role participation	0.679	0.149	0.243	4.553	<0.001
Perceived social support	0.014	0.072	0.010	0.198	0.843
Time use	0.360	0.081	0.222	4.422	<0.001

[a]Dependent variable: QoL.

RESULTS

Descriptive Analysis

The study included 362 retirees, as presented in Table I, with a gender distribution equally split between males and females, each comprising 50% of the sample. The median age of the retirees was 66.94 years. Additionally, the majority of the participants were Muslim (61.9%), followed by Hindu (13.5%), Christian (11.0%) and Buddhist (12.7%). The largest ethnic group was Malay (60.8%), followed by Chinese (20.4%), Indian (15.7%) and other indigenous groups (3.1%). Most participants were married (79.8%), and over half had attained tertiary education (52.8%). The majority of participants lived in urban areas (76.0%).

The mean overall EQ score was 74.97, indicating a high health-related QoL among the retirees. The analysis showed that most participants reported no problems with mobility (75.7%), self-care (95.0%), usual activities (81.5%) and anxiety or depression (87.3%). However, a significant number of participants reported some problems with pain or discomfort (42.8%), and a smaller proportion reported extreme problems in self-care (0.6%), usual activities (1.7%), pain or discomfort (1.1%) and anxiety or depression (1.1%).

Regarding time use, retirees reported spending the most time on rest and sleep, with a mean and SD of 10.42 (2.98) hours per day. The mean and SD time spent on instrumental activities of daily living (IADL) was 5.42 (3.40) hours, followed by 3.65 (1.67) hours spent on activities of daily living (ADL). Retirees spent the most time with family, with a mean and SD of 13.91 (7.53) hours, followed by alone time, with a mean of 8.03 (7.28) hours. The least time was spent with friends and spiritual members, with a mean and SD of 0.94 (1.73) and 1.07 (1.80) hours, respectively. Furthermore, retirees reported spending an average of 0.58 hours on productive activities, the least time following retirement.

In terms of role participation, the majority of retirees in this study identified as family members (92.5%, n=335), followed by homemakers (85.4%, n=309) and religious participants (81.2%, n=294). Other roles included care (57.2%, n=207), hobbies (52.2%, n=189), membership in organisations (29.3%, n=106), and volunteering (27.3%, n=99). The mean and SD number of roles reported by the retirees was 5.31 (2.20), indicating that they were engaged in multiple activities. However, only a minority of the retirees reported being students (16.0%, n=58) or workers (16.9%, n=61), suggesting that most retirees were not engaged in formal or informal education or unretirement.

Regarding perceived social support, the retirees reported a relatively high mean score of perceived social support from significant others (20.91±4.48), family (21.17±3.32), and friends (19.99±3.93). The mean and SD for the total score of perceived social support was 62.07 (9.96), indicating that retirees in the study perceived their social support to be moderate to high across all sources.

Table II shows that the multiple regression model examined the relationship between health-related QoL and predictors such as time use, role participation and perceived social support. The R-value of the model was 0.363, indicating a weak but positive correlation between the predictors and the outcome variable. The R Square value of 0.132 suggests that the predictors explain 13.2% of the variance in health-related QoL. The adjusted R Square value of 0.125 is consistent with the number of predictors used in the model. The standard error of the estimate was 12.783, signifying the average distance of the data points from the regression line.

The results of the multiple regression analysis also revealed that role participation and time use were significant predictors of health-related QoL. The model was statistically significant ($F (3, 358) = 18.140, p<0.001$), with an R-squared

value of 0.13, indicating that the predictors account for 13% of the variance in health-related QoL. The unstandardised coefficients indicate the effect size of each predictor on the dependent variable, while the standardised coefficients demonstrate the relative importance of each predictor. Specifically, role participation ($\beta = 0.24$, $p<0.001$) and time use ($\beta = 0.22$, $p<0.001$) had a positive influence on health-related QoL. However, perceived social support did not significantly influence health-related QoL ($p>0.05$).

DISCUSSION

Based on the findings, the retirees in this study had a high level of health-related QoL, indicating that they generally had a positive outlook on life and were satisfied with their current circumstances. This finding is consistent with previous studies showing that retirement can be a fulfilling and rewarding phase of life for many individuals.[24-26]

The high level of health-related QoL observed among the retirees in this study may be attributed to several factors. Firstly, a significant portion of our participants had tertiary education, which positively influenced QoL in older persons, including retirees in Malaysia.[27] This notion is consistent with findings from countries like Iran, where higher education retirees have better retirement adjustment.[28]

Additionally, more than two-thirds of our participants resided in urban areas. While urbanisation might negatively influence QoL in Malaysia,[29] urban retirees often have access to a broader range of resources and opportunities, including cultural events, public transportation and diverse social and recreational activities.[30,31] This access could contribute to their positive outlook and satisfaction with their current circumstances. Furthermore, life satisfaction has been reported to be higher in urban areas in Malaysia,[32] which aligns with our findings of high health-related QoL among urban retirees.

This study aimed to identify the significant predictors of health-related QoL among retirees. The results of this study suggest that time use and role participation are significant predictors of health-related QoL among retirees. These findings are consistent with previous research highlighting the importance of engaging in meaningful activities and maintaining a daily routine for retirees to maintain their QoL.[33,34]

Retirees who engaged in more roles reported higher health-related QoL, which is in line with the theory of role theory, which posits that individuals who occupy multiple roles are likely to have greater self-esteem, a sense of purpose and more opportunities for social interaction, all of which contribute to better QoL.[35,36] These findings suggest that retirees should be encouraged to engage in multiple roles, including family, hobbies, volunteering and organisation membership, to enhance their health-related QoL.

Time spent on rest and sleep was the most significant time use variable for retirees in this study, consistent with the notion that adequate rest and sleep are essential for maintaining physical and mental well-being. However, it is worth noting that the retirees in this study reported spending the least time on productive activities, such as paid work or volunteering. This finding is consistent with previous studies that suggest retirees may experience a loss of purpose and social connection following retirement.[37,38] Therefore, encouraging retirees to engage in productive activities may enhance their sense of purpose and social connection, improving health-related QoL.

Interestingly, the results of this study suggest that perceived social support did not significantly predict health-related QoL. This finding is surprising, as previous research has consistently demonstrated that social support is a crucial determinant of the QoL.[39,40] However, retirees in this study reported relatively high levels of perceived social support, which may have attenuated the relationship between social support and health-related QoL. Future research should further explore the role of social support in predicting health-related QoL among retirees.

These findings have important implications for occupational therapists and other healthcare professionals in identifying appropriate therapies to enhance retirees' health-related QoL. Furthermore, this study contributes to a better understanding of post-retirement time utilisation, role engagement and perceived social support. Health professionals may use this clinically relevant information to promote healthy lifestyles among retirees in Malaysia and beyond.

Future research in this area could explore specific interventions to promote active role participation and time management among retirees, with a focus on improving health-related QoL. This research could also be extended to other populations and contexts, providing valuable insights into how role engagement and time use can impact the health-related QoL of older adults, including retirees.

The study has some limitations. For example, the study may be representative of Malay urban-dwelling retirees in Klang Valley and Malacca with a higher level of education. However, it may not fully represent other retiree groups in Malaysia, especially those from different ethnic backgrounds, rural locations or with lower levels of education. Additionally, the study did not control for potential confounding variables, such as personality traits, influences of fluctuating movement restrictions due to the progression of the COVID-19 pandemic or cultural factors that could have influenced the results. Future studies could include measures of these variables to understand their impact on QoL among retirees better.

Furthermore, the self-report measures used in the study may be subject to response bias or social desirability bias, which could have affected the results. Future studies could aim for a more representative sample to enhance the applicability of the findings. However, despite these limitations, the study provides valuable insights into understanding health-related QoL among retirees, and the findings can inform interventions to promote positive ageing outcomes.

CONCLUSION

In conclusion, this study highlights the significance of effective time management and active engagement in roles to enhance the health-related QoL among retirees, primarily those who reside in urban areas.

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REFERENCES

1. Department of Statistics Malaysia. Current Population Estimates, Malaysia. 2020. Report No.: 9788578110796.
2. Tobi SUM, Fathi MS, Amaratunga D, editors. Ageing in place, an overview for the elderly in Malaysia. AIP Conf Proc; 2017.
3. Felce D, Perry J. Quality of life: Its definition and measurement. Res Dev Disabil 1995; 16(1): 51-74.
4. Martinez-Martin P, Prieto-Flores M-E, Forjaz MJ, Fernandez-Mayoralas G, Rojo-Perez F, Rojo J-M, et al. Components and determinants of quality of life in community-dwelling older adults. Eur J Ageing 2012; 9(3): 255-63.
5. Jonsson H, Borell L, Sadlo G. Retirement: An occupational transition with consequences for temporality, balance and meaning of occupations. J Occup Sci 2000; 7(1): 29-37.
6. Jonsson H. The first steps into the third age: The retirement process from a Swedish perspective. Occup Ther Int 2011; 18(1): 32-8.
7. Onunkwor OF, Al-Dubai SAR, George PP, Arokiasamy J, Yadav H, Barua A, et al. A cross-sectional study on quality of life among the elderly in non-governmental organizations' elderly homes in Kuala Lumpur. Health Qual Life Outcomes 2016; 14(1): 6.
8. Čanković S, Ač-Nikolić E, Mijatović-Jovanović V, Kvrgić S, Harhaji S, Radić I. Quality of life of elderly people living in a retirement home. Vojnosanit Pregl 2016; 73(1): 42-6.
9. Talarska D, Tobis S, Kotkowiak M, Strugała M, Stanisławska J, Wieczorowska-Tobis K. Determinants of quality of life and the need for support for the elderly with good physical and mental functioning. Med Sci Monit 2018; 24: 1604.
10. Kwon M, Kim SA, So W-Y. Factors influencing the quality of life of Korean elderly women by economic status. Int J Environ Res Public Health 2020; 17(3): 888.
11. Department of Statistics Malaysia. Current Population Estimates, Malaysia. 2023. Report No.: 9788578110796.
12. Kumar R. Research methodology: a step-by-step guide for beginners Sage Publications; 2014.
13. Majlis Keselamatan Negara. Standard Operating Procedure: Pelan Pemulihan Negara 2021 [cited 2024 Mac 15]. Available from: https://www.mkn.gov.my/web/ms/sop-perintah-kawalan-pergerakan/.
14. Bauman A, Bittman M, Gershuny J. A short history of time use research; implications for public health. BMC Public Health. 2019;19 (Suppl 2): 607.
15. Asmuri SN, Brown T, Broom LJ. Translation, Validation, and Adaptation of the Time Use Diary from English into the Malay Language for Use in Malaysia. Occup Ther Health Care 2016; 30(3): 289-309.
16. Scott PJ, McKinney K, Perron J, Ruff E, Smiley J. Measurement of Participation: The Role Checklist Version 3: Satisfaction and Performance. Occupational Therapy - Occupation Focused Holistic Practice in Rehabilitation: InTech; 2017. p. 107-19.
17. Mohamad Sabri MQ, Syakir Menon QT, Mohd Razali NFA, Dahlan A, Thurasamy R, Che Daud AZ. Translation and validation of the Role Checklist into the Malay version among retirees. Br J Occup Ther 2024; 87(1): 24-30.
18. Ng CG, Amer Siddiq AN, Aida SA, Zainal NZ, Koh OH. Validation of the Malay version of the Multidimensional Scale of Perceived Social Support (MSPSS-M) among a group of medical students in Faculty of Medicine, University Malaya. Asian J Psychiatr 2010;3(1): 3-6.
19. Talwar P, Mohd Fadzil AR. Perceived social support among university students in Malaysia: A reliability study. Malay J Psychiatr 2013: 22(1): 31-8.
20. Teh WL, Shahwan S, Abdin E, Zhang Y, Sambasivam R, Devi F, et al. Confirmatory Factor Analysis and Measurement Invariance of the Multidimensional Scale of Perceived Social Support in Young Psychiatric and Non-Psychiatric Asians. Ann Acad Med Singap 2019; 48(10): 314-20.
21. Ng CG, Nurasikin MS, Loh HS, Anne Yee HA, Zainal NZ. Factorial Validation of the Malay Version of Multidimensional Scale of Perceived Social Support Among a Group of Psychiatric Patients. Malay Psychiatr J 2012; 21(2): 17-26.
22. Arifin B, Purba FD, Herman H, Adam JM, Atthobari J, Schuiling-Veninga C, et al. Comparing the EQ-5D-3L and EQ-5D-5L: studying measurement and scores in Indonesian type 2 diabetes mellitus patients. Health Qual Life Outcomes 2020; 18(1): 22.
23. Herdman M, Fox-Rushby J, Rabin R, Badia X, Selai C. Producing other language versions of the EQ-5D. The Measurement and Valuation of Health Status Using EQ-5D. In: Brooks, R., Rabin, R., de Charro, F. (eds) The Measurement and Valuation of Health Status Using EQ-5D: A European Perspective. 2003.
24. Hurtado MD, Topa G. Quality of life and health: Influence of preparation for retirement behaviors through the serial mediation of losses and gains. Int J Environ Res Public Health. 2019; 16(9): 1539.
25. Freund AM. The bucket list effect: Why leisure goals are often deferred until retirement. Am Psychol 2020; 75(4): 499.
26. Mohamad Sabri MQ, Thurasamy R, Che Daud AZ. Experiences of occupational balance following retirement: an interpretative phenomenological analysis. J Occup Sci 2024; 1-14.
27. Abdul Mutalip MH, Abdul Rahim FA, Mohamed Haris H, Yoep N, Mahmud AF, Salleh R, et al. Quality of life and its associated factors among older persons in Malaysia. Geriatr Gerontol Int 2020; 20: 92-7.
28. Kaveh MH, Shoushtari-Moghaddam E, Nazari M, Karimi M, Ghahremani L. Predictive power of retirement resources in retirement adjustment and quality of life among male retirees: a cross-sectional study in central Iran. Educ Gerontol 2023; 49(6): 447-59.
29. Lim SC, Chan YM, Gan WY. Social and health determinants of quality of life of community-dwelling older adults in Malaysia. Int J Environ Res Public Health 2023; 20(5): 3977.
30. Alcañiz M, Riera-Prunera M-C, Solé-Auró A. "When I retire, I'll move out of the city": mental well-being of the elderly in rural vs. urban settings. Int J Environ Res Public Health 2020; 17(7): 2442.
31. Liu Y, Jia L, Xiao J, Chen Q, Gan Q, Huang J, et al. The Subjective Well-Being of Elderly Migrants in Dongguan: The Role of Residential Environment. Trop Med Infect Dis 2022; 7(8): 199.
32. Park MS-A, Joshanloo M. Satisfaction with life declines with age in Malaysia: An exploratory analysis of factors influencing subjective well-being in a developing/middle-income country. Appl Res Qual Life 2021; 16(2): 471-86.
33. Mohamad Sabri MQ, Robani S, Ahmad Roslan NF,Yau MKS, Che Daud AZ. COVID-19 Outbreak Restrictions on Daily Activities and Its Psychological Impact on Elderly: A Scoping Review. Malaysian Journal of Medicine and Health Sciences 2022; 18(SUPP15): 349-58.
34. Provencher V, Poulin V. Promoting the social participation of seniors through meaningful leisure activities to support satisfying aging. Taylor & Francis; 2020. p. 1-4.
35. Cho J, Kim B, Park S, Jang J. Postretirement work and volunteering by poverty groups informed by role theory. J Gerontol Soc Work 2018; 61(3): 243-60.
36. Mergenthaler A, Sackreuther I, Staudinger UM. Productive activity patterns among 60–70-year-old retirees in Germany. Ageing Soc 2019; 39(6): 1122-51.

37. Segel-Karpas D, Ayalon L, Lachman ME. Loneliness and depressive symptoms: the moderating role of the transition into retirement. Aging Ment Health 2018; 22(1): 135-40.
38. Lewis NA, Hill PL. Does being active mean being purposeful in older adulthood? Examining the moderating role of retirement. Psychol Aging 2020; 35(7): 1050-7.
39. Tarkar P, Dhamija S. The influence of perceived social support on quality of life and intention towards work after retirement. Int J Sci Technol Res 2020; 9(2): 3520-3.
40. Lestari SK, de Luna X, Eriksson M, Malmberg G, Ng N. A longitudinal study on social support, social participation, and older Europeans' Quality of life. SSM-Population Health 2021; 13: 100747.