MOH/S/IKU/122.19(RR)-e

NATIONAL HEALTH AND MORBIDITY SURVEY 2018 : ELDERLY HEALTH

VOLUME TWO : ELDERLY HEALTH FINDINGS

(NMRR-17-2655-39047)

Institute for Public Health, National Institutes of Health (NIH)
Ministry of Health Malaysia

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Produced and Distributed by:

The National Health and Morbidity Survey 2018: Elderly Health
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National Institutes of Health,
Ministry of Health,
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Published by the Institute for Public Health, National Institutes of Health (NIH), Ministry of Health, Malaysia

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VOLUME II
ELDERLY HEALTH FINDINGS

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This report comprises of two volumes, as follows:

I. Volume I: Methodology and General Findings
II. Volume II: Elderly Health Findings

ISBN: e978-983-2387-83-1

Suggested citation:

Institute for Public Health (IPH), National Institutes of Health, Ministry of Health Malaysia. 2019. National Health and Morbidity Survey (NHMS) 2018: Elderly Health. Vol. II: Elderly Health Findings, 2018. 182 pages

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The views expressed in this report are those of the authors alone and do not necessarily represent the opinions of other investigators participating in the survey, nor the views or policy of the Ministry of Health.

ACKNOWLEDGEMENTS

The authors would like to express their appreciation to the Director General of Health Malaysia, for his permission to publish this report. The authors would also like to thank the Director General of Health Malaysia for his enduring support and guidance during the conduct of this survey. Our deepest gratitude to the Director, Family Health Development Division for recognising the pressing need to study the state of elderly health in the nation, thereby leading to the implementation of this study under the umbrella of the National Health and Morbidity Surveys. Our sincere appreciation to the Deputy Director General (Research and Technical Support), our beloved Director of the Institute for Public Health, for their unwavering support, confidence and technical advice throughout the various stages of the survey that led this project to fruition.

The National Health and Morbidity Survey 2018, was accomplished with budget supported by the National Institutes of Health, Ministry of Health Malaysia. Technical advice was from the Advisory Panel and Steering Committee, consisting of executives and experts from both inside and outside the Ministry of Health. The authors would like to express our sincere thanks to them.

The authors thank all the State Health Directors and all State Liaison Officers who have been instrumental in mobilising resources during the data collection phase. The authors also thank all parties who assisted in the implementation of the survey, from the field supervisors, data collectors and drivers, without whom the survey would not have been a success.

Finally, our sincere appreciation is extended to all respondents who had participated in and contributed their valuable time and precious information towards the survey. It is our hope that these findings will help program leaders and policy makers to better run the various health and other services available.

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LIST OF ABBREVIATIONS

ADL - Activities of Daily Living
CASP-19 - Control, Autonomy, Self-realization and Pleasure, 19 items questionnaire
CI - Confidence Interval
GDS - Geriatric Depression Scale
GPAQ - Global Physical Activity Questionnaire
IADL - Instrumental Activities of Daily Living
IDEA - Identification and Intervention for Dementia in Elderly Africans
IPAQ - International Physical Activity Questionnaire
EPF - Employees Provident Fund
MET - Metabolic equivalent
NGO - Non-Government Organization
NHMS - National Health and Morbidity Survey
PPQoL - Perceived Poor Quality of Life
QoL - Quality of Life
WHO - World Health Organization
YLD - Years Lost due to Disability

4.0 QUALITY OF LIFE

4.1. Quality of Life

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4.1.1 Introduction

Quality of life (QoL) is the general well-being of individuals and communities, outlining negative and positive features of life. It represents satisfaction with life, including physical health, education, family, safety, employment, wealth, and security to freedom, religious beliefs, and the environment.[1] According to the World Health Organization (WHO), quality of life is defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. While QoL often depends on health, studies in older persons have shown that QoL is perceived to extend beyond health, which include social circumstances and functional limitations.[2] In recent years, there are many studies that measure QoL among older persons[3,4] which are necessary as it measures the efficacy of welfare programs, health interventions and health care services provide for them.[5] QoL has become a commonly used measurement in the evaluation of multisector public policy, including health, social, community and policy actions.

There are several tools to measure QoL. However, a relevant and valid outcome measures is necessary to assess the QoL of older adults. The CASP-19 is one of the QoL tools that has been widely used in many population-based settings among older persons including the English Longitudinal Study of Ageing (ELSA) and the British Household Panel Survey (BHPS) which reported a mean QoL score of 42.5[6] and 40.2[7] respectively. However, another study in a hospital-based setting in Taiwan reported a lower mean QoL score of 38.2.[8] A small-scale study that assessed QoL among older Malaysians using CASP-19 yielded pre and post-test mean QoL scores of 43.8 and 42.5 respectively.[9] Thus, to assess QoL in old age in a population-based nationwide setting, the 19 items, summative QoL scale of Control, Autonomy, Self-Realization and Pleasure (CASP-19) questionnaire was used in this survey. The CASP-19 comprises of four domains that include 4 items for control, 5 items for autonomy, 5 items for pleasure and 5 items for self-realization.[10] Its scored on a 4-point Likert scale ranging from 0 to 3 and total score was generated by summing all items yielding a range of 0 to 57. Higher scores indicate higher levels of satisfaction of QoL. Perceived poor quality of life (PPQoL) was classified among respondents who obtained QoL score in the lowest tertile for each group. The aim of this study was to determine the quality of life (QoL) among the pre-elderly (aged 50-59 years old) and elderly (aged 60 years old and above) in Malaysia.

4.1.2 Findings

In total, 6,835 eligible pre-elderly and elderly completed the survey, from which 6,795 (99.4%) completed all items in the CASP-19. The estimated mean QoL score for pre-elderly was 48.65 (95% CI: 47.99, 49.30) which is higher than the elderly, 46.76 (95% CI: 46.06, 47.45)(**Table 4.1.2.1**). There are four domains in CASP-19 including control, autonomy, pleasure and self-realization. The estimated mean score for control was higher among pre-elderly [9.89 (95% CI: 9.67, 10.12)] compared to elderly [9.14 (95% CI: 8.91, 9.37)]. Similarly, a higher estimated mean score was obtained among pre-elderly [12.54 (95% CI: 12.39, 12.69)] than elderly [12.01 (95% CI: 11.85, 12.17)] for the self-realization domain. However, there were no differences between the estimated mean scores for autonomy and pleasure domains between these two groups. (**Table 4.1.2.2**)

There were differences in estimated mean QoL scores between the pre-elderly and elderly. The estimated mean QoL scores were higher among the pre-elderly who lived in urban [49.01 (95% CI: 48.20, 49.82)], males [48.71 (95% CI: 47.98, 49.44)], females [48.59 (95% CI: 47.90, 49.28), single (never married/ separated/ divorced/ widowed) [47.83 (95% CI: 46.85, 48.81)], with primary education [47.47(95% CI: 46.55, 48.38), and had individual monthly income of less than RM 1000 [47.31 (46.62, 47.99)] (**Table 4.1.2.1**).

4.1.2.1 Quality of Life among Pre-Elderly in Malaysia

A total of 3,045 individuals aged 50 to 59 years completed all items in CASP-19 out of an estimated 2,945,395 individuals in the pre-elderly age group in Malaysia. The estimated mean QoL score among the pre-elderly was 48.65 (95% CI: 47.99, 49.30). There were no differences in estimated mean QoL scores across all socio-demographic variables excluding individual income, where the estimated mean QoL score was higher among respondents with high income [50.12 (95% CI: 49.31, 50.93)]. Higher trends of estimated mean QoL scores were observed among those who lived in urban areas [49.01 (95% CI: 48.20, 49.82)], males [48.71 (95% CI: 47.98, 49.44)], married [48.78 (95% CI: 48.11, 49.46)], those with tertiary education [50.39 (95%CI: 49.54, 51.25)], employed [49.20 (95% CI: 48.56, 49.85)] and had a higher income [50.12 (95% CI: 49.31, 50.93)]. In contrast, the estimated mean QoL scores were lower among those who lived in rural [47.43 (95% CI: 46.60, 48.26)], females [48.59 (95% CI: 47.90, 49.28)], single [47.83 (95% CI: 46.85, 48.81)], those with no formal education [44.91 (95% CI: 43.27, 46.56)], unemployed (unemployed/ retiree/ homemaker) [47.80 (95% CI: 46.99, 48.61] and had individual monthly income of less than RM 1000 [47.31 (95% CI: 46.62, 47.99)] (**Table 4.1.2.1**).

4.1.2.2 Prevalence of perceived poor Quality of Life (PPQoL) among Pre-elderly in Malaysia

A total of 1,020 pre-elderly perceived poor QoL with an estimated of 832,350 individuals. The prevalence of the pre-elderly with PPQoL was 28.3 (95% CI: 24.4, 32.5). There was no difference in the prevalence of PPQoL by sex, marital status and education level. However, the prevalence of PPQoL was higher among pre-elderly who lived in rural [36.6 (95% CI: 31.3, 42.3)], unemployed [34.6 (95% CI: 29.4, 40.2)], while respondents with high income showed the lowest prevalence of PPQoL [18.1 (95% CI: 13.8, 23.2)] (**Table 4.1.2.3**).

4.1.2.3 Quality of Life among elderly in Malaysia

A total of 3,750 elderly completed all items in CASP-19 with an estimated population of 3,040,197 individuals in the elderly group in Malaysia. The estimated mean QoL score was 46.76 (95% CI: 46.06, 47.45). QoL decreased among those who lived rural [45.44 (95% CI: 44.24, 46.64), single [45.17 (95% CI: 44.23, 46.11)], unemployed [46.35 (95% CI: 45.64, 47.06)]. QoL increased with increasing education level and income level. There was no difference in estimated mean QoL score for sex(**Table 4.1.2.1**).

4.1.2.4 Prevalence of perceived poor Quality of Life (PPQoL) among elderly in Malaysia

A total of 1,283 elderly perceived poor QoL with an estimated population of 868,670 individuals. The prevalence of perceived poor QoL among the elderly was 28.6 (95% CI: 25.0, 32.5). There was no difference in the prevalence of PPQoL by sex and occupation. However, PPQoL was higher among elderly who lived in rural [36.7 (95% CI: 30.6, 43.2)], single [36.7 (95% CI: 32.0, 41.7)], no formal education [49.8 (95% CI: 44.7, 55.0)] and those who had individual monthly income of less than RM 1000 [36.0 (95% CI: 31.8, 40.4)] (**Table 4.1.2.3**).

4.1.3 Conclusion

The quality of life was better among the pre-elderly than the elderly. Compared to internationally published mean scores, the overall estimated mean CASP-19 scores for our population was comparatively high, indicating that the older population in Malaysia perceived a better QoL than previously studied population using the same tool. However, QoL reduced among the unemployed and the lowest individual monthly income groups. These highlight particular target groups to develop social provision in order to ensure equality in QoL.

4.1.4 Recommendations

i. Ensure that future policies do not negatively affect the QoL of our population in order to maintain this relatively favourable QoL status.
ii. Develop and enforce policies which will enhance the QoL of specific groups identified to have lower QoL in our population.
iii. Invest in research which will identify factors that have led to the relatively better QoL observe in our population compare to other countries in order to preserve the well-being of our nation.

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5.0 MENTAL HEALTH

5.1 DEMENTIA SCREENING

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5.1.1 Introduction

Dementia is a chronic degenerative disease that leads to deterioration in memory, impairs thinking and comprehension, changes behaviour and affects the ability of the person with dementia to perform everyday activities. This deterioration of function has led dementia to be one of the major causes of disability among the elderly. The physical, psychological and economic impact caused by dementia is further compounded as the disease not only affects the individual, but also their caregivers, families and society.

In May 2017, the 70th World Health Assembly adopted dementia as a public health priority.[1] This is timely as dementia was the 5th leading cause of death globally in 2016.[2] In Malaysia, dementia was estimated to be the third leading cause of disability burden among males and the second leading cause among females aged 80 years and above for 2014.[3]

The objective of this study was to determine the prevalence of dementia among the elderly (aged 60 years old and above) population in Malaysia. The Identification and Intervention for Dementia in Elderly Africans (IDEA) Cognitive Screen, which is a validated tool for dementia screening in Malaysia, was used as the cognitive assessment tool to screen for dementia.[4] This study was conducted among urban elderly and the suggested value for a cut-off for probable dementia was the score of 11 or below. Subsequent unpublished work in Malaysia showed a cut-off of 8 and below as being more appropriate for those with low literacy rates. A sensitivity analysis was carried out using these specific cut-offs for urban and rural elderly and was found to have the same overall prevalence as a cut-off of 10 and below for the overall population. Thus, a score of 10 and below was then determined to be the cut-off for probable dementia.

5.1.2 Findings

The overall prevalence of probable dementia was 8.5% (95% CI: 6.97, 10.22). The elderly living in urban urbans showed a much lower prevalence of dementia at 6.8% (95% CI: 5.11, 9.00) compared to those in rural areas at 12.9% (95% CI: 10.50, 15.84). There was a higher prevalence of dementia among females compared to males [9.7% (95% CI: 7.66, 12.30) vs. 7.1% (95% CI: 5.53, 9.14)]. Those who were married were also found to have a lower prevalence at 5.4% (95% CI: 4.31, 6.88). (**Table 5.1.2.1**)

Those with a higher level of education had a lower prevalence, as the prevalence was 22.0% (95% CI: 17.36, 27.55) among those with no formal education and 4.4% (95% CI: 2.46, 7.64) among those with secondary level education. Elderly who were unemployed (unemployed/retiree/homemaker) had a higher prevalence at 15.2% (95% CI: 12.29, 18.72). The prevalence was also consistent with individual income reported by the elderly, with the highest prevalence among those with a monthly income of less than RM 1000 at 11.8% (95% CI: 9.41, 14.69), with reduction in prevalence with increasing income. (**Table 5.1.2.1**)

5.1.3 Conclusion

The World Health Organization (WHO) estimates the prevalence of dementia to be between 5% to 8% among the general elderly population. The estimated prevalence of probable dementia at 8.5% highlights the extent of the problem of this disease in Malaysia.

The prevalence of dementia was higher with lower educational levels and lower income levels. It is important for clinicians, programme managers and policy makers to take note that there is a higher prevalence of this disease in the rural areas compared to the urban areas.

5.1.4 Recommendations

i. Develop a comprehensive national strategic plan for dementia, which includes screening for dementia in high risk populations, creating awareness about the disease and to develop a dementia registry in Malaysia
ii. Initiate multi-sectorial programmes through public-private partnership in urban and rural areas and promote community engagement.
iii. Collaboration between government and NGOs to create dementia care and dementia friendly centres to support people with dementia and their caregivers.
iv. As Malaysia is moving towards an ageing population, we should create elderly friendly urban developments which cater for people with dementia.

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5.2 DEPRESSIVE SYMPTOMS SCREENING

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5.2.1 Introduction

Depression is a mood disorder characterised by symptoms that adversely affects one's psychosocial well-being and daily functioning.[1] It is a significant form of mental health disorder in the elderly that contributes 5.7% of total years lost due to disability (YLD) in those aged 60 and above.[2] However, many of them fail to recognise depressive symptoms.[3]

The World Health Organization (WHO) reported that depression occurs in 7% of the elderly population. Other studies in United States, United Kingdom, and some Asian countries mostly reported higher prevalence of elderly depression (between 3.7% to 42.5%).[4,5,6,7,8]

Geriatric Depression Scale or GDS is one of the most common tools used for screening depression among the elderly population.[9] A local study conducted in 2015 using GDS-30, reported a prevalence rate of 56.1%[10], while Nurhayati et al reported a rate of 23.5% for mild and 2.5% for severe depression.[11] Another study using GDS-14 by Teh et al reported the prevalence of major depression at 16.7% and clinical depression at 36.7%.[12]

The GDS-14 validated by Teh et al, was chosen to be used in the NHMS survey based on its feasibility and high sensitivity (Sn) and specificity (Sp) (Sn = 95.5%, Sp = 84.2% for clinically significant depression and Sn = 100%, Sp = 92.0% for major depression)[12] A cut-off points of 6 and above was chosen to indicate clinically significant depression whereas a score of 8 and above was used to indicate major depression.

In this survey, we aimed to estimate the overall prevalence of depressive symptoms among the elderly (aged 60 years old and above) population in Malaysia and by sociodemographic factors.

5.2.2 Findings

The overall prevalence of depressive symptoms (clinically significant depression) among the elderly was 11.2% (95% CI: 9.37, 13.40), while the overall prevalence of probable major depression was 5.3% (95% CI, 4.05, 6.83). (**Table 5.2.2.1**)

The prevalence of depressive symptoms was higher among elderly in rural areas [14.4% (95% CI, 12.04, 17.22)] compared to the elderly in urban areas [10.1% (95% CI, 7.79, 12.88)]. Females had higher prevalence of depressive symptoms [11.7% (95% CI, 9.39, 14.50)] compared to males [10.7% (95% CI, 8.86, 12.96)]. Depressive symptoms were higher among those who were single (never married/separated/divorced/widowed) [17.0% (95% CI, 13.48, 21.11)], as compared to those who were married [8.6% (95% CI, 7.14, 10.40)]. The elderly who were unemployed (unemployed/retiree/homemaker) had higher prevalence of depressive symptoms at 12.7% (95% CI, 10.58, 15.13) compared to those who were employed. By individual monthly income level, the elderly with the lowest income had the highest prevalence of depressive symptoms [14.6% (95% CI, 12.14, 17.43)]. (**Table 5.2.2.1**)

5.2.3 Conclusion

A substantially high prevalence of depression among elderly was reported in this study. Nevertheless, the overall prevalence of depressive symptoms among the elderly in this study appears to be lower compared to studies from other countries using the same tool.[13,14] However, the prevalence of major depression was comparable with the WHO, where unipolar depression was reported to be 7.0% among the elderly.[2]

5.2.4 Recommendations

Although depression is associated with advanced aging, identification of risk factors such as being in rural areas, single, low income and unemployed was important and should be explored further. By addressing these risk factors, appropriate measures can be taken to reduce depression in the elderly.

i. Preventive strategies should cater towards determinants of depressive disorders such as income and employment. For example, improving the current pension plan, EPF plan and establishing a Ten-Year Strategy to promote Healthcare and Welfare for the elderly to ensure better financial security.
ii. Encourage health clinics and welfare department to increase numbers of elderly activity centres/ associations in rural areas to encourage their participation in social engagement as one of the ways to prevent depression.
iii. Create awareness among public for preventive measures and early identification of depression.

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6.0 FUNCTIONAL LIMITATIONS AND FALLS

6.1 ACTIVITIES OF DAILY LIVING (ADL)

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6.1.1 Introduction

Functional status has been used to assess the ability to perform activities of daily living (ADL) and instrumental activities of daily living (IADL).[1] ADL consist of essential elements of self-care such as bowels, bladder, grooming, toilet use, feeding, transfer, mobility, dressing, climbing stairs and bathing. The requirement of assistance due to inability to independently perform one or more of ADL indicates functional limitation and need for supportive services. The Barthel index of activities of daily living was used to measure functional status of the elderly.[2] A total maximum score of 20 was categorized as absence of functional limitation and a total score below 20 were categorised as presence of functional limitation. A study in Spain showed 34.6% of elderly aged 65 years and above have limitation to perform ADL.[3] Another study in India showed the prevalence of functional limitation of 5.5% among those aged 75 and above.[4] The National Health and Morbidity Survey 2018 was conducted with the objective of determining the prevalence of functional limitations among the elderly (aged 60 years old and above) in performing ADL.

6.1.2 Findings

Our findings showed that only 3.8% (95% CI: 3.04, 4.74) of pre-elderly had functional limitation in ADL. A higher prevalence was found among urban [3.8% (95% CI: 2.93, 4.99)] and female elderly [4.3% (95% CI: 3.19, 5.89)]; single (never married/ separated/ divorced/ widowed) [7.3% (95% CI: 4.81, 10.63)] and with monthly income below RM1000 [6.6% (95% CI: 4.93, 8.83)]. (**Table 6.1.2.1**)

Overall, the survey found that 17.0% (95% CI: 14.99, 19.23) of elderly had functional limitation in ADL. Females had a higher prevalence of functional limitation in ADL compared to males at 21.2% (95% CI: 18.16, 24.52) versus 12.7% (95% CI: 10.82, 14.78). A higher prevalence was also found in individuals living in rural areas [17.9% (95% CI: 15.00, 20.36)], single [25.5% (95% CI: 22.29, 20.09)], no formal education [29.5% (95% CI: 24.22, 35.34)], and those with monthly income below RM1000 [20.3% (95% CI: 17.61, 23.33)]. (**Table 6.1.2.1**)

6.1.3 Conclusion

This study highlights that functional limitation in ADL increases with age. Females, single and in the lower income group had higher levels of functional limitations in ADL. An estimated one in six elderly had a reduction in at least one basic ADL. This indicates that elderly are at higher risk of functional limitation in terms of ADL. Those who are incapable of performing basic ADL will require assistance from family caregivers or formal care services. This finding is alarming considering our population is ageing rapidly. Therefore, strategic imperatives need to be put in place immediately to reduce dependency levels as well as to provide coordinated care services to our older population.

6.1.4 Recommendations

i. Development of activity planning and public education programs for the elderly to achieve recommended physical activities which focus on muscle-strengthening reducing sedentary behaviour, and risk management
ii. Early detection of loss of function and timely access to treatment and rehabilitation to restore function.
iii. Education of caregivers in providing a safe home environment specifically catered for the elderly with functional limitations.
iv. Provide elder-friendly spaces at home and in public areas such as good lighting, non-slip walking surfaces, stair rails, toilet grab bars and wheel chair accessible ramps to ease mobility and assistive technologies to reduce the threshold of disability.

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6.2 INSTRUMENTAL ACTIVITIES OF DAILY LIVING (IADL)

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6.2.1 Introduction

Our objective is to identify the prevalence of limitations in instrumental activities of daily living (IADL) among the elderly in Malaysia. We used the Lawton & Brody IADL scale[2] to assess the ability of the elderly to live independently. The eight IADL measured include ability to use the telephone, shopping, food preparation, housekeeping, laundry, mode of transportation, responsibility for own medications, and ability to handle finances. These questions differ from ADL as they refer to activities that are not necessarily performed on a daily basis but are required to enable independent living. The results were divided into two categories which consist of dependent (total score seven and below), and independent (total score of eight) categories. With the culture of filial piety and gender roles in our society, it was not possible to differentiate whether the respondent reported that they did not perform a certain IADL because they were genuinely unable to perform it, or the role has been delegated due to their status. A study in South India showed that 51.7% of elderly aged 60 years and above were dependent[3] while another study among the elderly aged 65 years and above in Spain found 11.5% of the elderly population have severe dependence and 5.5% were totally dependent in terms of IADL.[1] In a study performed in Ulu Langat, Selangor, functional limitations in IADL were present among 33.5% of individuals aged 60 years and above.[4]

6.2.2 Findings

6.2.2.1 Limitation in (IADL) among the pre-elderly and elderly in Malaysia

A total of 3,134 pre-elderly (aged 50-59 years old) responded to this module. An estimated 21.3% of pre-elderly were dependent in terms of IADL. The prevalence of pre-elderly who were dependent was higher in rural areas [24.6% (95% CI: 21.09, 28.48)], females [21.6% (95% CI: 18.69, 24.71)], single [25.3% (95% CI: 20.47, 30.87)], those with no formal education [41.1% (95% CI: 32.83, 49.92)], unemployed (unemployed/retiree/homemaker) [26.5% (95% CI: 23.18, 30.14)] and individuals with income less than RM1000 [27.6% (95% CI: 23.98, 31.60)], (**Table 6.2.2.1.1**).

On the other hand, 42.9% (95% CI: 39.91, 45.98) of the elderly (aged 60 years old and above) population were dependent in terms of IADL. A higher prevalence of dependent elderly was from rural areas [54.3% (95% CI: 50.92, 57.69)], females [49.4% (95% CI: 45.31, 53.43)], single [58.8% (95% CI: 54.91, 62.57)]. The prevalence of those who were dependent were also found to be higher among those with no formal education [69.4% (95% CI: 63.98, 74.26)], who are unemployed [48.1% (95% CI: 44.54, 51.70) and individuals with monthly income less than RM1000 [53.2% (95% CI: 49.89, 56.50)]. (**Table 6.2.2.1.1**)

6.2.2.2 Dependency on others at health care facility

For urban pre-elderly, 3.0% (95% CI: 1.96, 4.44) required assistance from another person in the clinic area, 2.4% (95% CI: 1.53, 3.80) in the toilet area and 2.6% (95% CI: 1.67, 3.99) in the car park area of health care facilities. Similarly, in the rural areas 3.0% (95% CI: 2.03, 4.30) required assistance in the clinic area, 2.7% (95% CI: 1.73, 4.08) in the toilet area and 3.5% (95% CI: 2,35, 5.11) in the car park area of health care facilities (**Table 6.2.2.2.1**).

For urban elderly, 11.3% (95% CI: 8.33, 15.13) required assistance in the clinic area, 10.7% (95% CI: 7.83, 14.49) in the toilet area and 11.7% (95% CI: 8.64, 15.53) in the car park area of health care facilities. However, in the rural areas, 12.7% 95% (CI: 10.70, 15.06) required assistance in the clinic area, 12.2% (95% CI: 10.44, 14.24) in the toilet area and 14.4% (95% CI: 11.64, 17.67) in the car park area of health care facilities (**Table 6.2.2.2.2**).

6.2.3 Conclusion

Overall, the prevalence of functional dependence was high in rural areas, among females, single, having no formal education and with monthly income less than RM1000. However, the interpretations of the findings need to take into consideration our conservative estimates due to cultural norms. It remains undeniable that the need for some assistance with IADLs increases with age with a large number of the elderly population requiring assistance.

6.2.4 Recommendations

i. Conduct special programs to raise awareness on the importance of maintaining functional independence with increasing age and to collaborate with the community to deliver programs that will maintain independence.
ii. Early detections of loss of functions with timely referral to appropriate agencies for assessment and management.
iii. Reduce age-biased systems and attitudes in order to ensure that the older population is able to maximise their functional abilities
iv. Specific research focusing on culturally appropriate instruments to more accurately detect functional limitations in our society and to identify effective solutions to reduce loss of function.

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6.3 FALLS

Contributors : Nur Azna Mahmud, Norzawati Yoep, Faizah Paiwai, Nik Adilah Shahein, Tan Maw Pin, Muslimah Yusof, Nor Asiah Muhamad

6.3.1 Introduction

Globally, falls is a major health issue concerning the elderly. A fall is defined as an event in which the individual comes to rest on the ground, floor or lower level.[1] It can result in mortality, morbidity, higher rates of nursing home placement, expensive medical treatment, and loss of confidence leading to voluntary restriction of activities.[2,3] A fall can result in many types of injuries such as brain haemorrhage, lacerations or abrasions, fractures and musculoskeletal damage.[4] A study in Germany found a prevalence of falls of 17.6% among respondents aged 40 to 95 years[5] while another study in a rural area in Perak showed a prevalence of 4.07% among elderly aged 60 years and above.[6] Findings from the Falls Prevention Baseline Survey, New South Wales in 2009, showed that among elderly aged 65 years and above, 61.2% of the respondents fell once, 21.4% fell twice, 7.8% fell three times, and 9.5% fell four or more times in the last year resulting in grazes or bruises (71.0%) and sprains or strains (9.9%).[7] In a population based survey done in the United States, which had an average follow up of 3 years, showed that 55% of women reported falling and 8.5% reported fractures.[8] Epidemiology of falls for older people aged 65 years and above from many population-based studies in the United States reported that 5% of the respondents sustained fracture or required hospitalisation.[9] For this National Health and Morbidity Survey, the fall module consisted of six questions with the objective of determining the prevalence and characteristic of falls among elderly (aged 60 years old and above) in the community.

6.3.2 Findings

The prevalence of falls among pre-elderly in the previous twelve months from the date of interview was 8.8% (95%CI: 7.55, 10.22). A higher prevalence was observed among females [9.9% (95% CI: 8.25, 11.95)], those living in rural areas [10.1% (95% CI: 7.84, 12.81)], those with no formal education [12.2% (95% CI: 7.43, 19.40)] and have income less than RM1000 [10.8% (95% CI: 8.43, 13.62)]. Among the elderly, 14.1% (95% CI: 12.47, 15.83) reported at least one fall in the previous twelve months from the date of interview. Females showed a higher prevalence of ever falling compared to males, 14.7% (95% CI: 12.73, 16.99) and 13.4% (95% CI: 11.52, 15.46) respectively. Those who are single (never married/ separated/ divorced/ widowed) [36.8% (95% CI: 29.06, 45.28)] and with no formal education [16.2% (95% CI: 12.66, 20.49)] reported a high prevalence of falls. (**Table 6.3.2.1**)

6.3.2.1 Frequency of falls

Of those who reported the presence of any falls in the previous twelve months, 80.9% of pre-elderly had a fall once while 19.1% had two or more falls in the previous twelve months. A similar trend was found among elderly, a higher percentage of had one episode of fall in the past twelve months compared to two or more falls, 72.5% versus 27.5% respectively. (**Table 6.3.2.1.1**)

6.3.2.2 Types of injury

Among pre-elderly who had any fall in the previous twelve months 40.3% had no injury, 40.5% had minor injury and 19.2% had severe injury. Among elderly who had any fall in the previous twelve months 36.5% had no injury, 45.1% had minor injury and 18.4% had severe injury. (**Table 6.3.2.1.1**)

6.3.2.3 Medical treatment for the most severe injury

Rate of getting outpatient treatment after falls among pre-elderly was 39.8% while 13.0% of them were hospitalised and 47.1% were self-treated. Among elderly, 43.6% were self-treated, 40.4% were treated as outpatient and 16.0% were hospitalised after a fall. (**Table 6.3.2.1.1**)

6.3.2.4 Location of the last fall

Outdoors shows the highest percentage, 51.9% compared to other locations of the last fall among pre-elderly followed by 30.2% falls occurring indoors, 9.9% in bathrooms and 7.9% outside the house. Similarly, the highest percentage of falls among elderly occurred outdoors at 43.9% followed by indoors, outside the house and in the bathrooms (33.9%, 15.1% and 7.1% respectively). (**Table 6.3.2.1.1**)

6.3.3 Conclusion

Nearly 15% of elderly experienced a fall in the previous twelve months. Those elderly were twice likely to fall than those pre-elderly. Nearly 30% of those elderly who fell reported two or more falls. Severe injury occurred in almost 20% among those who had fallen. Majority of the pre-elderly and elderly had chosen to self-treat compared to getting treatment in healthcare facilities after a fall. The most common location of falls among the pre-elderly and elderly was the outdoors. Falls in the elderly should therefore be considered common with potentially serious consequences.

6.3.4 Recommendations

i. Create awareness and educate the community about the importance of recognizing risk factors of falls among elderly and the importance of safety at home.
ii. Implement fall risk assessment especially among primary health care providers.
iii. Develop and implement fall prevention programs such as providing support in terms of assisting with home modifications and removing hazards to create safe environments, exercise and physical activity interventions and secondary fall prevention strategies.

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7.0 URINARY INCONTINENCE

7.1 STRESS AND URGE URINARY INCONTINENCE

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7.1. Introduction

Urinary incontinence is the unintentional loss of urine due to loss of voluntary control over the urinary sphincter.[1] Urge and stress incontinence are the most common types in older people.[2] The United Kingdom prevalence for urge urinary incontinence in the elderly aged above 70 years is 24.9%.[3] An Australian study revealed stress urinary incontinence in 28% of respondents and urge urinary incontinence in 21% of respondents.[4] In Malaysia, no nationally representative study has been done previously for urge and stress incontinence. However, we found two local studies done in year 2009 and 2015 which showed the prevalence of urinary incontinence of 9.9% and 3.8% among those aged above 60 years.[5,6]

Objectives

1. To identify the prevalence of stress urinary incontinence among elderly (aged 60 years old and above)
2. To identify the prevalence of urge urinary incontinence among elderly (aged 60 years old and above)

Variables definitions

i. Stress Urinary Incontinence: the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing
ii. Urge Urinary Incontinence: the complaint of involuntary leakage accompanied by or immediately preceded by urgency

The Malaysian National and Health Morbidity Survey 2018 used a Malay Language Questionnaire for Urinary Incontinence Diagnosis (QUID) to identify both Stress Urinary Incontinence and Urge Urinary Incontinence. The prevalence of stress urinary incontinence was measured by Question 1 to Question 3 (score ≥ 4), while urge urinary incontinence was measured by Question 4 to Question 6 (score ≥ 6).

The above cut-off scores for urinary incontinence were determined based on the presence of clinically significant urinary incontinence, rather than the presence of any urinary leakage. Comparisons with other prevalence studies will have to be made with caution, as many other prevalence studies have included the presence of any urinary leakage even rarely or occasionally. The findings of this national survey should therefore be interpreted as presence of clinically significant urinary incontinence, rather than the prevalence of any urinary incontinence, which is the alternative approach considered in other prevalence studies.

7.1.2 Findings

A total of 3,716 elderly, who answered the questions by themselves without proxy and answered the whole module E were selected. The prevalence of stress urinary incontinence among elderly in Malaysia was 2.9% (95% CI: 2.3-3.6). It was higher among elderly in rural areas with 3.5% (95% CI: 2.7- 4.6) as compared to urban areas with 2.7% (95% CI: 2.0- 3.6). The prevalence was highest among females with 4.4% (95% CI: 3.4-5.7) as compared to males 1.4% (95% CI: 0.9-2.1). The elderly who were single (never married/ separated/ divorced/ widowed) and had no formal education had the highest prevalence among each group with 4.7% (95% CI: 3.2-6.7) and 4.9% (95% CI: 3.3- 7.4) respectively. Those who were unemployed (unemployed/retiree/homemaker) and with a monthly income less than RM1000 had higher prevalence of stress urinary incontinence with 3.7% (95% CI: 2.8- 4.8) and 3.7% (95% CI: 2.8- 4.8) respectively. (**Table 7.1.2.1**)

Similarly, as for the urge urinary incontinence selection, a total of 3,716 elderly, who answered the whole module E questions by themselves without proxy were selected. The prevalence of urge urinary incontinence among elderly in Malaysia was 3.4% (95% CI: 2.2- 5.4) and 3.9% (95% CI: 2.80-5.30) in rural areas. Females had highest prevalence with 4.1% (95% CI: 2.0–8.1) respectively. Elderlies who were single showed a higher prevalence of 4.7% (95% CI: 2.7 -7.8). Unemployed elders with 4.2% (95% CI: 2.5 – 6.8) and those who received primary education with 4.7% (95% CI: 2.3 –9.3) showed the highest prevalence in respective groups. Elderly with monthly income less than rm1000 showed the highest prevalence of urge urinary incontinence of 4.5% (95% CI: 2.5 – 7.9). (**Table 7.1.2.1**)

7.1.3 Conclusion

Being in rural areas, female, single, absence of formal education, unemployed, and income less than RM1000 were linked to an increased prevalence of both stress and urge incontinence. Our findings highlight target groups for intervention of this common condition often associated with embarrassment and reluctance to seek treatment.

7.1.4 Recommendations

i. The elderly should be screened for urinary incontinence and referred for appropriate treatment.
ii. Public education to increase the awareness of urinary incontinence and preventive measures such as pelvic floor exercises
iii. Better access to treatment and increased availability of services to address urinary incontinence.

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8.0 VISION AND HEARING DISABILITY

8.1 VISION DISABILITY

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8.1.1 Introduction

In Aristotle's classical hierarchy of the senses, the ancient Greek philosopher and thinker deemed sight to be the highest of the five human senses. More than two millennia later, the consensus holds that good quality vision is important in ensuring good quality of life. Vision disability affects productivity and increases the economic burden of a country.[1,2] Vision disability is defined as a decreased ability to see to a degree that causes problems not remediable by usual means, such as glasses or medication. According to the International Classification of Diseases (ICD-10) there are 4 levels of visual function; blindness, severe visual impairment, moderate visual impairment, and normal vision.

In 2010, the World Health Organization (WHO) estimated that up to 285 million people worldwide have some form of visual impairment and 39 million are blind. Of the blind, 82% are aged 50 years and above.[3] The main causes of blindness among the elderly – most of which are avoidable and preventable – are cataract (51%), glaucoma (8%), age related macular degeneration (5%), and diabetic retinopathy (1%). Cataract, a fully treatable condition, is the leading cause of blindness in low- and middle-income countries where treatment may not always be readily accessible.

In May 2013, the 66th World Health Assembly endorsed resolution WHA66.4 entitled "Towards Universal Eye Health: A Global Action Plan 2014-2019. The goal of this action plan is to reduce avoidable visual impairment as a global public health problem and to secure access to rehabilitation services for the visually impaired.[4] Malaysia, being one of the member states, also endorsed and signed this resolution.

In Malaysia, the National Eye Survey II (NES II) 2014 was a population-based survey using the Rapid Assessment of Avoidable Blindness (RAAB) survey technique to estimate blindness and visual impairment. Sabah had the highest prevalence of blindness (1.9%), followed by Sarawak 1.6%.[5] The central zone, which is considered urban, had the lowest prevalence of blindness 0.5%. The main cause of blindness was cataract, at 58%. Based on NES II findings, blindness intervention programs were carried out throughout the country. One of the intervention programs, Klinik Katarak Kementerian Kesihatan Malaysia (KK-KKM) formerly known as Klinik Katarak 1 Malaysia, was launched as an outreach program aimed at providing access to the rural area of Sarawak, Sabah and East Coast of Malaysia.

The questions employed in the present survey of elderly people in Malaysia to determine vision and hearing disabilities were based on the work of the Washington Group on Disability (WG), which focuses on functional limitations rather than impairments and is deemed suitable for the international comparison of prevalence rates.[6] The WG questions were adapted and operationalised in a 2006 Zambian survey of living conditions among people with disabilities.[7] In the present survey, data on visual disability was obtained from elderly individuals aged 50 years and above through interviews conducted by trained research assistants using questions from the WG Extended Question Set on Functioning (WG ES-F).[8] Levels of difficulty were grouped in 4 discrete categories: 'no difficulty', 'some difficulty', 'a lot of difficulty', and 'cannot at all'. While "disability" is an umbrella term encompassing impairment, activity limitation or participation restriction,

"vision disability" was defined as a positive response of either "a lot of difficulty" or "cannot see at all". The objective of the study, therefore, was to determine the magnitude of elderly individuals aged 50 years and above in Malaysia with vision disability affecting life function.

8.1.2 Findings

The overall prevalence of elderly individuals in Malaysia with vision disability was 1.8% (95%CI: 1.18, 2.67) among pre-elderly (aged 50-59 years) and 4.5% (95%CI: 3.45, 5.90) among elderly (aged 60 years old and above). (**Table 8.1.2.1**)

For pre-elderly, the prevalence of vision disability was almost similar between sex, which was 1.9 % (95%CI: 1.07, 3.43) for males and 1.6% (95%CI: 1.06, 2.50) for females. Those who resided in rural areas had a higher prevalence of vision disability 2.4% (95% CI: 1.49, 3.80) as compared to urban areas 1.6% (95% CI: 0.92,2.76). A higher prevalence of vision disability was noted among married pre-elderly 1.9% (95% CI: 1.23,2.91). By level of education, the highest prevalence of vision disability was noted to be among pre-elderly who had no formal education 3.9% (95% CI: 1.79,8.35). Based on the employment status, those who were employed showed a higher prevalence of vision disability 1.9% (95% CI: 1.13, 3.24). The prevalence of vision disability was highest among those from the middle-income group (RM1000-RM1999), 2.1% (95% CI: 1.12, 3.92). (**Table 8.1.2.1**)

For elderly, both male and female have almost similar prevalence of vision disability, which was 4.4% (95%CI: 3.11, 6.22) and 4.6% (95%CI:3.35, 6.35) respectively. Elderly individuals living in rural areas had a higher prevalence of vision disability 6.5% (95%CI: 4.80, 8.61) as compared to 3.8% (95%CI: 2.57, 5.62) for the urban population. In terms of marital status, those who were single (never married/ separated/divorced/widowed) demonstrated a higher prevalence of vision disability, 5.8% (95%CI: 4.14, 8.06) compared to married elderly, 3.9% (95%CI: 2.88, 5.32). Based on education level, the survey revealed a higher prevalence of vision disability among those who did not receive formal education 9.4% (95%CI: 6.84, 12.71). By employment status, the highest prevalence of vision disability was among those who were unemployed (unemployed/ retiree/ homemaker), 5.4% (95% CI: 4.15, 7.05). The prevalence was also higher among those in the lowest income group with less than RM1000 per month 5.8% (95%CI: 4.33, 7.63). (**Table 8.1.2.1**)

8.1.3 Conclusion

The survey revealed that the overall prevalence of vision disability was significantly higher among the elderly, compared to the pre-elderly. This can be contributed by a few conditions such as cataract and age-related macular degeneration, for which ageing is the main risk factor. The prevalence of vision disability among the elderly was similar to that found in NHMS 2015 (4.3%).[9] The high prevalence of vision disability within the rural population was comparable with other studies,[10-13] which may be attributable to poor access to eye care. Accessibility towards cost of treatment for eye care might also be the reason for higher prevalence of vision disability amongst the lower education status and lower income group.

8.1.4 Recommendations

In view of the findings highlighted above, the recommendations below are suggested.

i. Reduce avoidable visual impairment by securing timely access to rehabilitation services for the visually impaired.
ii. Blindness prevention, provision of quality eye care and rehabilitation programs must be tailored to targeted groups such as elderly individuals with a lower education level, belonging to lower income groups and the unemployed.
iii. Expand and strengthen outreach services especially to rural areas.
iv. Healthcare providers should be trained to screen and detect patients with visual impairment early, so that timely treatment and intervention can be provided.
v. Increase public awareness on prevention of visual impairment by strengthening promotional activities such as Klinik Katarak KKM, Cataract Finder programs, World Sight day celebration and collaboration with other government and non-governmental agencies.
vi. Expand of the role of community health nurses to implement elderly health care including eye care in community clinics and homes.
vii. Empower the elderly in Pusat Aktiviti Warga Emas (PAWE) under the Social Welfare Department and elderly health care club in health clinics about health promotion activities on elderly health care, including caring for their vision.

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8.2 HEARING DISABILITY

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8.2.1 Introduction

With the rising ageing global population, the number of people with hearing loss is growing at a rapid pace. WHO estimates that about 466 million (6.1%) people in the world live with disabling hearing loss and 93% of these were adults. Among the adults, there are more males (56%) than females (44%) with disabling hearing loss. Of these, about one in three individuals are aged 65 and more.[1]

Hearing loss is a partial or complete loss of hearing, also known as hearing impairment, which can occur in one or both ears. The normal hearing level for humans is between 0-20 decibels (dB) and hearing loss can be graded as mild, moderate, severe or profound. Hearing loss can significantly affect the ageing person's quality of life, interfering with one's daily ability to listen, converse, and communicate.[2] All of this can lead to frustration, depression, reduced functional status, and social isolation.[3]

Researchers in the United States found that age is the strongest predictor of hearing loss with the greatest likelihood of hearing loss in the oldest group surveyed (aged 60 to 69).[4] A lower education level was also shown to be associated with hearing loss.[5] Individuals from low-income households are much more likely to suffer from hearing loss than those who earn higher salaries, and this has been demonstrated in both children and adults.[6] Low socio-economic status is a risk factor for middle ear pathology, and any type or degree of hearing loss may affect educational achievement.[7]

Optimal management of the condition requires early recognition and input from a range of health professionals mainly otorhinolaryngologists and audiologists. Major barriers to improved hearing in older adults include lack of recognition of hearing loss, and a perception that hearing loss is a normal part of aging or is not amenable to treatment.[8] The rehabilitation of the hearing impaired needs to consider the function, activity, and participation of the person and providing of hearing aid.[9]

The questions employed in the present survey of elderly people in Malaysia to determine vision and hearing disabilities were based on the work of the Washington Group on Disability (WG), which focuses on functional limitations rather than impairments and is deemed suitable for the international comparison of prevalence rates.[10] The WG questions were adapted and operationalised in a 2006 Zambian survey of living conditions among people with disabilities.[11] In the present survey, data on hearing disability was obtained from elderly individuals aged 50 years and above through interviews conducted by trained research assistants using questions from the WG Extended Question Set on Functioning (WG ES-F).[12] Levels of difficulty were grouped in 4 discrete categories: 'no difficulty', 'some difficulty', 'a lot of difficulty', and 'cannot at all'. While "disability" is an umbrella term encompassing impairment, activity limitation or participation restriction, "hearing disability" was defined as a positive response of either "a lot of difficulty" or "cannot hear at all". The objective of the study, therefore, was to determine the magnitude of elderly individuals aged 50 years and above in Malaysia with hearing disability affecting life function.

8.2.2 Findings

8.2.2.1 Prevalence of wearing hearing aids among elderly in Malaysia

The overall prevalence of wearing hearing aids among Malaysian pre-elderly was 0.2% (95% CI: 0.07,0.41), whereas for the elderly it was 1.5% (95%CI: 0.90, 2.53). (**Table 8.2.2.1.1**)

8.2.2.2 Prevalence of hearing disability among pre-elderly and elderly in Malaysia

The overall prevalence of hearing disability among pre-elderly was 0.9% (95% CI: 0.55, 1.33). There was no significant difference between locality, sex, marital status, employment status and income in terms of hearing disability among pre-elderly. Based on level of education, those who were only educated up to the primary level had a significantly higher prevalence of hearing disability, 2.1% (95% CI: 1.17, 3.73). (**Table 8.2.2.2.1**)

The overall prevalence of hearing disability among the elderly was 6.4% (95%CI: 5.00, 8.26). The prevalence was higher in rural areas with 7.0% (95%CI: 5.32, 9.09) compared to urban area 6.2% (95%CI: 4.45, 8.70). By sex, the prevalence was almost similar between males and females with 6.3% (95%CI: 4.91, 7.98) and 6.6% (95%CI: 4.23, 10.17) respectively. With respect to marital status, the highest prevalence of hearing disability was noted among those who were single (never married/ separated/ divorced/ widowed), 8.0% (95% CI: 5.46, 11.58) compared to those who are married 5.7% (95% CI: 4.47, 7.27). By level of education, the highest prevalence of hearing disability was noted among respondents who had no formal education 11.3% (95% CI: 8.38, 15.04). By employment status, the prevalence of hearing disability was significantly higher among the unemployed (unemployed/retiree/homemaker), 7.6% (95% CI: 5.79, 9.88). Elderly individuals in the lowest income group of less than RM 1000 showed the highest prevalence of hearing disability at 8.3% (95%CI: 5.95, 11.44). (**Table 8.2.2.2.1**)

8.2.3 Conclusion

Hearing disability was found to be significantly higher among the elderly compared to the pre-elderly population. The prevalence of hearing disability among the elderly in this study was also higher compared to NHMS 2015 (2.4%).[13] However, these self-reported figures are relatively low when compared to findings from the Malaysian National Hearing and Ear Disorders Survey conducted in 2005 which showed via audiometric measurements that 10.4% of the pre-elderly and 35% of the elderly have disabling hearing impairment.[14] This suggests a degree of underreporting, and similar disparities between self-reported and audiometric data are also evident in other countries.[15] Similar to vision disability, there was a high prevalence of hearing disability among those of low socio-economic status thereby highlighting the need for outreach programs designed specifically to reach these groups.

8.2.4 Recommendations

i. Hearing impairment detection and provision of care must be tailored to elderly from low socio-economic status who may have problems accessing these services.
ii. Healthcare providers should be trained to screen and detect patients with hearing impairment early, so that timely treatment and intervention can be provided.
iii. Educate and empower the elderly dwelling in the community to recognise any deterioration in hearing and seek help for it, to change perceptions that hearing loss is an inevitable part of aging and is not amenable to treatment.
iv. Timely referrals to otorhinolaryngologists and audiologists by primary care providers may increase the hearing health care needs of an aging population.
v. Empower the elderly in Pusat Aktiviti Warga Emas (PAWE) under the Social Welfare Department and elderly health care club in health clinics about health promotion activitieson elderly health care including caring for their hearing.
vi. National Ear and Hearing Care program (NEHC) to allocate suitable resources and strategically promote access to ear and hearing care.
vii. Hearing loss must be addressed as a public health issue by increasing awareness among all sectors of society.

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9.0 PHYSICAL ACTIVITY

9.1 PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR

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9.1.1 Introduction

Physical activity is defined as any bodily movement produced by skeletal muscles that require energy expenditure.[1] Regular physical activity is proven to help prevent and treat non-communicable diseases (NCDs) such as heart disease, stroke, diabetes and breast and colon cancer. It also helps to prevent hypertension, overweight and obesity, and can improve mental health, quality of life and well-being. Beyond its health benefits, increasing participation in physical activity has multiple social and economic benefits and can contribute to achieving the 2030 Sustainable Development Goals (SDGs).[2]

Physical inactivity (lack of physical activity) is a major public health problem that has been identified as the fourth leading risk factor for NCDs, causes more than 5.3 million deaths worldwide in 2008.[3] Another global health challenge is population aging in both developed and developing countries, including Malaysia, which results in an increasing burden of illness in older people from NCDs.

In view of older adults being generally more physically inactive than younger adults, they are at greater risk of developing chronic health conditions, which leads to an increased use of health care systems and rising health care costs of the country. This survey therefore aims to determine the prevalence of physical activity and sedentary behaviour in the Malaysian pre-elderly and elderly population. The specific objectives are to determine: i) the prevalence of being physically active in Malaysian pre-elderly and elderly population by sociodemographic characteristics; ii) the prevalence of high level of sedentary behaviour (≥8 hours of total sedentary time per day) in Malaysian pre-elderly and elderly population by sociodemographic characteristics; and iii) the prevalence of high level of sedentary behaviour in Malaysian pre-elderly and elderly population by physical activity status and sociodemographic characteristics.

Physical activity and sedentary behaviour were assessed using the Global Physical Activity Questionnaire (GPAQ). The total amount of physical activity in three different domains (work-related, travel-related and leisure time) in a typical week was calculated in metabolic equivalent (MET) minutes per week. Work-related domain includes paid or unpaid work, household chores or daily activities that a person has to do. Travel-related domain includes walking or cycling activities to travel from one place to another. Leisure time domain includes sports, fitness and recreational (leisure) activities. According to the GPAQ analysis guidelines[4], being “physically active” is defined as doing at least: i) 30 minutes of moderate intensity activity or walking per day on at least 5 days in a typical week; or ii) 20 minutes of vigorous-intensity activity per day on at least 3 days in a typical week; or iii) 5 days of any combination of walking and moderate- or vigorous-intensity activities achieving a minimum of at least 600 MET-minutes per week. “High level of sedentary behaviour” is defined as at least 8 hours of total sedentary time on a typical day. This cut-off is based on a study that reported detrimental association between sitting more than 8 hours a day and all-cause mortality[5], as well as is supported by a previous published article, which is also using GPAQ.[6]

9.1.2 Findings

9.1.2.1 Prevalence of being physically active among pre-elderly and elderly by sociodemographic characteristics

The overall prevalence of being physically active among pre-elderly (aged 50-59 years old) and elderly (aged 60 years old and above) were 83.3% (95% CI: 80.30, 85.99) and 70.2% (95% CI: 66.89, 73.24), respectively (**Table 9.1.2.1.1**).

Among the pre-elderly group, urban population [83.9% (95% CI: 80.11, 87.04)] reported a slightly higher prevalence of being physically active compared to rural population [81.5% (95% CI: 77.21, 85.17)]. A significantly higher prevalence was observed among females [86.5% (95% CI: 83.10, 89.34)] compared to males [80.2% (95% CI: 76.45, 83.55)]. No significant differences in prevalence were observed across different marital status, educational levels, employment status, and individual monthly income levels (**Table 9.1.2.1.1**).

Among the elderly group, urban population [72.9% (95% CI: 68.76, 76.59)] reported a significantly higher prevalence of being physically active compared to rural population [62.8% (95% CI: 57.79, 67.63)]. A higher prevalence was observed among females [71.4% (95% CI: 67.44, 75.13)] compared to males [68.8% (95% CI: 65.26, 72.21)] with no significant difference. A significantly higher prevalence was observed among elderly who were married [74.2% (95% CI: 71.07, 77.11)] compared to those who were single (never married / separated/ divorced/ widowed) [61.5% (95% CI: 56.00, 66.81)]. Those with no formal education [52.0% (95% CI: 47.00, 56.96)] reported a significantly lower prevalence compared to those with a primary [67.2% (95% CI: 63.02, 71.09)], secondary [81.4% (95% CI: 77.16, 85.06)] or tertiary education level [73.3% (95% CI: 65.65, 79.84)]. Elderly who were unemployed (unemployed/ retiree/ homemaker) reported a significantly lower prevalence of being physically active [66.5% (95% CI: 62.58, 70.25)] compared to their employed counterparts [81.5% (95% CI: 77.54, 84.93)]. In terms of individual monthly income level, the lowest income level group (less than RM1000) reported a significantly lower prevalence [64.6% (95% CI: 60.66, 68.29)] compared to the higher income level groups of RM1000-RM1999 [75.3% (95% CI: 70.69, 79.36)] and RM2000 or more [81.1% (95% CI: 77.24, 84.51)](**Table 9.1.2.1.1**).

9.1.2.2 Prevalence of being physically active among pre-elderly and elderly by domains

Among the three different domains, both pre-elderly [71.7% (95% CI: 67.95, 75.11)] and elderly populations [54.3% (95% CI: 51.20, 57.41)] showed the highest prevalence of being physically active in work-related domain. For both pre-elderly and elderly groups, the prevalence was significantly lower in travel-related domain [17.4% (95% CI: 15.41, 19.60) in pre-elderly; 15.2% (95% CI: 13.38, 17.25) in elderly] and leisure time domain [15.6% (95% CI: 13.30, 18.24)] in pre-elderly; 13.7% (95% CI: 11.80, 15.88) in elderly] compared to work-related domain (**Table 9.1.2.2.1**).

9.1.2.3 Prevalence of high level of sedentary behaviour among pre-elderly and elderly by sociodemographic characteristics

The overall prevalence of high level of sedentary behaviour among pre-elderly and elderly were 17.4% (95% CI: 12.45, 23.82) and 23.2% (95% CI: 17.61, 29.97), respectively (**Table 9.1.2.3.1**).

Among pre-elderly group, the prevalence of high level of sedentary behaviour was slightly higher in rural population [17.7% (95% CI: 11.45, 26.28)] compared to urban population [17.3% (95% CI: 11.40, 25.48)] with no significant difference. By sex, the prevalence was higher among males [18.2% (95% CI: 12.82, 25.29)] compared to females [16.6% (95% CI: 11.68, 22.97)], also with no significant difference. Pre-elderly who were single, with primary education level, unemployed, and with an individual monthly income level of less than RM1000 reported a higher prevalence of high level of sedentary behaviour compared to their respective counterparts, but with no statistically significant differences (**Table 9.1.2.3.1**).

Among the elderly group, the prevalence of high level of sedentary behaviour was slightly higher in rural population [23.7% (95% CI: 16.34, 33.11)] compared to urban population [23.0% (95% CI: 16.11, 31.83)] with no significant difference. By sex, no significant difference in prevalence was observed between males [22.9% (95% CI: 17.11, 29.85)] and females [23.6% (95% CI: 17.74, 30.60)]. Elderly who were single [25.1% (95% CI: 18.98, 32.30)] reported a higher prevalence of high level of sedentary behaviour compared to elderly who were married [22.4% (95% CI: 16.61, 29.43)] with no significant difference. Elderly who have no formal education [31.6% (95% CI: 25.02, 38.99)], unemployed [25.2% (95% CI: 19.26, 32.33)] and those with an individual monthly income level of less than RM1000 [26.6% (95% CI: 20.64, 33.60)] were more sedentary compared to their respective counterparts, but with no statistically significant differences (**Table 9.1.2.3.1**).

9.1.2.4 Prevalence of high level of sedentary behaviour among pre-elderly and elderly by physical activity status and sociodemographic characteristics

Among the pre-elderly group, those who were physically inactive [21.9% (95% CI: 15.12, 30.61)] reported a higher prevalence of high level of sedentary behaviour compared to those who were physically active [16.5% (95% CI: 11.41, 23.33)], but with no statistically significant difference. Our findings showed that pre-elderly who were physically active can still be highly sedentary on the same day, indicating that sedentary behaviour is different from physical inactivity. Focusing on sedentary behaviour among pre-elderly who were physically inactive, those who were in rural population, males, single, with primary education level, unemployed, and those with an individual monthly income level of less than RM1000 reported a higher prevalence of high level of sedentary behaviour compared to their respective counterparts, but with no statistically significant differences (**Table 9.1.2.4.1**).

Among the elderly group, those who were physically inactive [32.0% (95% CI: 24.55, 40.57)] reported a higher prevalence of high level of sedentary behaviour compared to those who were physically active [19.5% (95% CI: 13.89, 26.72)], but with no statistically significant difference. Similarly, our findings showed that elderly who were physically active can still be highly sedentary on the same day, indicating that sedentary behaviour is different from physical inactivity. Focusing on sedentary behaviour among elderly who were physically

inactive, those who were in rural population, males, single, with no formal education, unemployed, and those with an individual monthly income level of less than RM1000 reported a higher prevalence of high level of sedentary behaviour compared to their respective counterparts, but with no statistically significant differences (**Table 9.1.2.4.1**).

9.1.3 Conclusion

In NHMS 2018, approximately 83% of Malaysian pre-elderly and 70% of Malaysian elderly were physically active. In the previous NHMS 2015, where a different questionnaire (IPAQ short version) was used, the prevalence of being physically active was 68.2% among pre-elderly and 51.2% among elderly.[7] Compared to other countries using the same questionnaire (GPAQ), our prevalence is comparable to those reported in Singapore (71.0%, among age group 60-79 years), China (75.9%, among age group ≥50 years) and India (78.0%, among age group ≥50 years), but is higher than in South Africa (49.1%, among age group ≥50 years) and Brazil (38.0%, among age group ≥60 years).[6,8,9] The prevalence of high level of sedentary behaviour among Malaysian elderly (23.2%) is also comparable with a Singaporean study (23.0%, among age group 60-79 years).[6] Our findings showed that sedentary behaviour is not the same as physical inactivity. People who are physically active can still be highly sedentary on the same day and vice versa.[10] Hence, not only should older adults be physically active, but also be less sedentary, in order to maintain good health. As a whole, the findings from this survey are encouraging in light of intensive efforts by the Malaysian government to promote healthy and active lifestyles over the past few years.

9.1.4 Recommendations

Our findings have important implications for health policy makers by highlighting the sociodemographic characteristics of Malaysian pre-elderly and elderly population that are at greater risk of being physically inactive and highly sedentary. Several strategies for improving physical activity level and reducing sedentary behaviour among older people are recommended as below:

i. Develop effective and feasible physical activity interventions aimed at relevant population groups and settings. For example, use of health messages or reminder notices through social media to promote walking among older adults, as walking is among the most cost-effective and accessible means of exercise for older people.
ii. Create an active environment by improving conditions for walking, cycling and use of public transport, as well as strengthening access to good-quality public and green open spaces, recreational areas and sports amenities to older people.
iii. Encourage older adults to try to be as physically active as possible to meet the recommended level of physical activity for optimal health benefits or as physically active as their abilities and conditions allow. For example, encourage participation of older adults in neighbourhood community activities, encourage older adults to include more walking, cycling and use of public transport for trips to local destinations in their daily lives.

Implement national and community-based campaigns to enhance awareness, knowledge and understanding of the multiple health benefits of regular physical activity and less sedentary behaviour, according to ability, towards creating an active and healthy aging society.

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10.0 ORAL HEALTHCARE

10.1 ORAL HEALTH - RELATED QUALITY OF LIFE (OHRQoL)

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10.1.1 Introduction

Oral health-related quality of life (OHRQoL) has become one of the important aspects of epidemiological studies in the past 20 years, as the mode of medical sciences has changed from a biomedical model to biological-psychological-social medical model. The epidemiological literature on OHRQoL among the elderly is not very encouraging, and it indicates profound imbalances among countries and regions and as a function of institutionalization. This disparity is mainly attributable to differences in socioeconomic conditions and the availability of and access to oral health services.[2] This OHRQoL study on the elderly is the first initiative taken by Ministry of Health Malaysia, where investigations were done systemically, using Geriatric Oral Health Assessment Index-Malay questionnaire (GOHAI).[3] The objectives of the survey were to investigate the status of OHRQoL among the elderly (aged 60 years old and above), and to explore their perceptions towards their own general and oral health, their perceived needs for dental treatments as well as their utilizations of oral health care services in the last 3 months.

10.1.2 Findings

10.1.2.1 Oral Health Related Quality of Life (OHRQoL)

The response rate for this module was 97.2%. More than half of the elderly reported that, they had good [40.8% (95% CI: 36.72, 44.97)] or fair [25.2% (95% CI:22.79, 27.72) oral OHRQoL. It was revealed that, the elderly who received no formal schooling had a lower OHRQoL [31.8% (95% CI: 26.35, 37.80), compared to those who attained higher education until secondary or tertiary levels. About half of the elderly who had individual monthly income of at least RM 2000 claimed that, they had a good OHRQoL (50.3%, 95%CI: 44.19, 56.48) (**Table 10.1.2.1.1**).

10.1.2.2 Self-rated General Health

Almost seven out of ten of the elderly claimed that, their general health was good [67.4% (95% CI: 63.32, 71.17). More than three quarter who attained highest education until secondary and tertiary educational levels rated their general health as healthy, significantly higher compared to those with no formal schooling. A higher prevalence of self-rated healthy general health was observed among those who had individual monthly incomes of at least RM2000 as compared to those earning less than RM1000, at 79.1% (95%CI: 73.27, 84.00) and 62.1% (95%CI: 57.29, 66.67), respectively (**Table 10.1.2.2.1**).

10.1.2.3 Self-rated Oral Health

Majority of the elderly reported that, they had a healthy oral health status (71.2%, 95% CI: 67.18, 74.85). A higher prevalence of the elderly who rated their oral health as healthy was observed among those with tertiary level (81.6%, 95%CI: 72.98, 87.95) as compared to those who

received no formal schooling (61.9%, 95%CI: 56.71, 66.74). Besides that, the elderly who had individual monthly income higher than RM 2000 reported a higher prevalence at 84.3% (95%CI: 78.75, 88.62) of rating their oral health as healthy, compared to those who earned less than RM 1000 per month, at 66.5% (95%CI: 61.66, 70.99) (**Table 10.1.2.3.1**).

10.1.2.4 Perceived Need for Dental Treatment

Only 18.8% (95% CI: 15.91, 22.00) of the elderly reported that, they needed dental treatments. There were no significant differences seen among other sociodemographic variables (**Table 10.1.2.4.1**).

10.1.2.5 Prevalence of Oral Healthcare Utilization in the Last Three Months

Overall, in the last three months, only 1 out of 10 elderly claimed to have received any form of dental treatment (9.4%, 95%CI: 7.80, 11.26). Higher prevalence of oral health care utilization was seen among the elderly in urban areas (10.8%, 95% CI: 8.73, 13.28), compared to that among those in rural areas (5.6, 95% CI: 4.15, 7.43). Meanwhile, the prevalence of elderly who sought oral healthcare was double among those who attained education until secondary or tertiary levels, compared to those without formal education. Similar findings were observed among the elderly who had individual monthly income higher than RM 2000 (14.8%, 95% CI: 11.31, 19.19), as compared to those who earned less than RM 1000 per month (6.8%, 95% CI: 4.77, 9.67) (**Table 10.1.2.5.1**).

10.1.3 Conclusion

A good percentage of OHRQoL, [40.8% (95%CI: 36.72 44.97)] among the elderly was reported in Malaysia. This is slightly higher, compared to that among the institutionalized elderly in Barcelona, Spain, which was 33.0%.[4] About 67.4% of the elderly in this study perceived that, they had a good general health. Seven out of ten of them perceived that, they had a healthy oral health and only 28.8% of them rated their oral health status as unhealthy. This finding revealed better results, compared to those in the National Oral Health Survey of Adults in 2010 (60.5%).[5] In addition, the prevalence of elderly who claimed that they had a poor oral health status had decreased from 39.5% in 2010 to 28.8% in this survey.[5] The percentage of perceived needs for dental treatments was low (18.8%), although normatively defined needs among the Malaysian elderly in 2010 was a high 99.8%.[5] The utilisation rate of oral health care services was found to be gradually improving from 6.1 % in 2010 to 7.6% in 20136 to 9.4% in this current survey.

10.1.4 Recommendations

The findings of this study revealed an urgent need to address the issues of low OHRQoL among the elderly and the low utilisation rates among them in utilising oral healthcare services. Thus, the following recommendations are made:

i. To advocate public health policies which support the establishment of age-friendly primary oral health care.
ii. To train oral health personnel dedicated to taking oral health care of elderly.
iii. To establish collaborations with medical /health personnel for the provision of comprehensive cares for the elderly.
iv. Further studies are recommended to look into factors contributing to low utilisations of oral healthcare among the elderly in Malaysia.

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11.0 SOCIAL SUPPORT

11.1 SOCIAL SUPPORT AND NETWORKING

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11.1.1 Introduction

Social support is an exchange of resources between at least two individuals which is perceived by the provider or the recipient to be intended to enhance the well-being of the recipient.[1] Evidence has shown social support moderates the effects of health-related strain on mental health in elderly.[2,3] It is also identified as an important factor that may buffer against the ill effects of stress on mental and physical health. The general objective of this survey was to examine the social support received by pre-elderly (aged 50-59 years old) or elderly (aged 60 years old and above) populations in Malaysia. In particular, two major dimensions of social support were studied; social interaction and subjective support.

The instrument used to measure social support in this module was the 11-item Duke Social Support Index (DSSI).[4] This 11-item (DSSI) was a short scale instrument for use with older people and supported as an instrument in health promotion strategies as well as aged care research.[5,6] Reliability and validity of the 11-items Duke Social Support Index for the Malaysian population was previously done with Cronbach's alpha coefficient for overall score being 0.77.[7] The 11-item DSSI consists of two sub-scales. The first measures the size and structure of the social network (Social Interaction) and consists of four items. The second is a seven-item subscale which measures the perceived satisfaction with the behavioural or emotional support obtained from this network (Subjective Support).[8] The social support is calculated as the sum of scores for items 1 to 11 with higher scores indicating more social support received. Established cut-off points to categorize scores into low to fair, high and very high was published by Strodl et.al (2003) among the Australian population and was used in this study as the best option to obtain the prevalence of those with poor social support.[9]

11.1.2 Findings

11.1.2.1 Poor social support among pre-elderly and elderly in Malaysia

The total numbers of pre-elderly and elderly who answered this module were 3,133 and 3,959 respectively. The prevalence for poor social support were significantly higher among the elderly (30.8; 95% CI: 27.24, 34.52) compared to pre-elderly (24.3; 95% CI: 21.07, 27.87) in Malaysia. No significant difference was found in total social support with regards to sex, strata and occupation. Among the pre-elderly, the highest prevalence of poor social support was reported among those single (never married/ separated/ divorced/ widowed) (33.4; 95% CI: 26.93, 40.52). Pre-elderly with no formal education reported significantly higher prevalence (32.9; 95% CI: 23.13, 44.47) compared to those with tertiary education (16.2; 95% CI: 11.29, 22.67). Among those with monthly income less than RM1000, the prevalence of poor social support was significantly higher (29.6; 95% CI: 25.38, 34.22) compared to those with income more than RM2000 (19.4; 95% CI: 15.48, 23.97). The highest prevalence was among those with no formal education (45.7; 95% CI: 39.84, 51.67).

In the elderly group, there is no significant difference in prevalence of poor social support based on strata, sex and occupation. Elderly with no formal education reported significantly higher prevalence (45.7; 95% CI: 39.84, 51.67) compared to those with tertiary education (17.6; 95% CI: 11.72, 25.67). By marital status, single elderly had significantly higher prevalence (40.1; 95% CI: 35.01,45.47) compared to those married (26.4 95% CI: 22.57,30.52). The prevalence was significantly higher for those with monthly income less than RM1000 (37.4; 95% CI: 33.10,41.82) compared to those with monthly income more than RM2000 (17.4; 95% CI: 12.64, 23.43). (**Table 11.1.2.1.1**)

11.1.2.2 Social Interaction among Pre-Elderly and Elderly in Malaysia

Analysis of the social interaction subscale showed that the overall estimated mean score was higher among the pre-elderly (8.6; 95% CI: 8.43, 8.79) compared to elderly (19.3; 95% CI: 19.11, 19.49). Among the pre-elderly, the highest estimated mean score was found significantly higher among those with tertiary education (9.1; 95% CI: 8.79, 9.49) and who had monthly income more than RM2000 (9.0; 95%CI: 8.69, 9.24). No significant difference was found in social interaction scores by strata, sex, occupation and marital status. Among the elderly, the highest mean score was reported among single elderly (19.5; 95% CI: 19.35, 19.71) and those with tertiary education (19.9; 95% CI: 19.60, 20.11). No significant differences in social interaction scores were seen by strata, sex, occupation and individual monthly income. (**Table 11.1.2.2.1**)

11.1.2.3 Subjective Support among Pre-Elderly and Elderly in Malaysia

The overall estimated mean score for subjective support subscale among pre-elderly was 19.7 (95% CI: 19.55, 19.82) which was significantly higher than elderly in Malaysia (19.3; 95% CI: 19.11, 19.49). Among pre-elderly, only those who were single (19.8; 95% CI: 19.65, 19.92) was found to be significantly associated with subjective support. No significant difference was found in subjective social support scores by strata, sex, education, occupation and individual monthly income. Among elderly, the highest estimated mean subjective support score was reported among those with tertiary education (19.9; 95% CI: 19.60, 20.11), monthly income more than RM2000 19.8 (95% CI: 19.52, 20.06) and those single, 19.5 (95% CI: 19.35, 19.71). No significant difference was found in subjective social support scores by strata, sex, and occupation. (**Table 11.1.2.3.1**)

11.1.3 Conclusion

Overall in Malaysia, social support and networking prevalence was found to be lower in elderly compared to pre-elderly group. This study has also emphasized the importance of social networks among elderly such as among family, friends and the community. It is therefore important to increase social support and networking among the elderly by providing avenues for them to actively participate and engage with the community.

11.1.4 Recommendations

i. It is vital for the community to give support to the elderly through community-empowerment programmes.
ii. Priority should be given by related agencies, non-profit organisation (NGOs) and communityleaders to provide special activities and programmes for the elderly to stay connected withthe local community.
iii. Prevention of social isolation among elderly must be actively initiated through community networking programmes.

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12.0 NUTRITIONAL STATUS AND DIETARY PRACTICES

12.1 NUTRITIONAL STATUS

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12.1.1 Introduction

Malnutrition is a common problem among the elderly due to physiological changes that occurs with aging and age-related chronic diseases that influence food purchasing, preparation and intake. The prevalence of malnutrition among the elderly in the country was 20.0% and it ranged between 5-40% among non-institutionalized elderly.[5,6] According to a review on obesity in Malaysia by Ghee (2016), the prevalence of overweight and obesity started to decline at the age of about 60 years and above.[7] Data from the United States National Health and Nutrition Examination Survey (NHANES) 2015-2016 showed prevalence of obesity among elderly aged 60 years and above was 41.0%.[8] An important method in detecting malnutrition is through anthropometry assessment.[9,10] BMI, waist and calf circumference are important and universally acceptable anthropometric indicators among adults aged 18 years and above. These are non-invasive methods that can assess body size, proportion and composition. These nutritional assessments are not only limited to an individual's state of nutrition, but also reflects the health status, social and economic circumstances of groups of population.[11]

Objectives

i. To determine nutritional status among pre-elderly (aged 50-59 years old) by sociodemographic characteristics.
ii. To determine abdominal obesity among pre-elderly by sociodemographic characteristics.
iii. To determine nutritional status among elderly (aged 60 years old and above) by sociodemographic characteristics.
iv. To determine abdominal obesity among elderly by sociodemographic characteristics.

Variable Definition

i. Body Mass Index (BMI)

BMI was calculated as the ratio of weight in kilogram to the square of height in meters (kg/m^2) and was classified using two guidelines; World Health Organization (WHO) (1998) and Clinical Practice Guidelines on Management of Obesity (Malaysia) 2004.[1] WHO (1998) classified BMI into 6 categories; underweight (<18.5 kg/m^2), normal (18.5-24.9 kg/m^2), overweight (25.0-29.9 kg/m^2), obese I (30.0-34.9 kg/m^2), obese II (35.0-39.9) and obese III (≥40.0 kg/m^2). Clinical Practice Guidelines on Management of Obesity (Malaysia) 2004 (CPG 2004) classified BMI into 6 categories also but with different cut-off values; underweight (<18.5 kg/m^2), normal (18.5-22.9 kg/m^2), overweight (23.0-27.4 kg/m^2), obese I (27.5-34.9 kg/m^2), obese II (35.0-39.9) and obese III (≥40 kg/m^2).

ii. Abdominal obesity

Abdominal obesity was determined using the measurement of waist circumference. It was classified using two guidelines, WHO Western Pacific Region/ International Association for the Study of Obesity/ International Obesity Task Force (WHO/IASO/IOTF) (2000) and WHO (1998). WHO/IASO/OTF (2000) classified abdominal obesity as waist circumference ≥90cm for men and ≥80cm for women while WHO (1998) classified abdominal obesity at waist circumference >102cm for men and >88cm for women.[2,3]

iii. Risk of Muscle Wasting

Risk of muscle wasting was determined by measuring calf circumference with cut-off values of <30.1 cm for men and <27.3 cm for women based on recommendations by Sakinah H et al.[4] This assessment was conducted for the elderly only.

12.1.2 Findings

12.1.2.1 Nutritional status of pre-elderly

Based on WHO (1998) classification, the national prevalence of underweight, normal weight, overweight and obesity among Malaysian pre-elderly was 1.9% (95% CI: 1.40, 2.50), 35.9% (95% CI: 32.90, 39.10), 39.4% (95% CI: 36.70, 42.10) and 22.8% (95% CI: 20.70, 25.10) respectively. (**Table 12.1.2.1.1 – Table 12.1.2.1.4**)

Prevalence of underweight was higher among the pre-elderly living in rural areas [2.8% (95% CI: 1.95, 3.91)], females [2.2% (95% CI: 1.44, 3.22)], single (never married/ separated/ divorced/ widowed) [3.9% (95% CI: 2.37, 6.39)], had no formal education [4.8% (95% CI: 2.81, 8.20)], unemployed (unemployed/retiree/homemaker) [2.6% (95% CI: 1.77, 3.69)] and with an individual monthly income of less than RM1000 [2.9% (95% CI: 1.99, 4.11)]. (**Table 12.1.2.1.1**)

Prevalence of normal weight was higher among the pre-elderly living in urban areas [36.4% (95% CI: 32.54, 40.47)], males [41.3% (95% CI: 37.90, 44.87)], those who were married [36.1% (95% CI: 32.88, 39.38)], had secondary education [37.3% (95% CI: 33.35, 41.48)], employed [39.6% (95% CI: 36.46, 42.91)] and with an individual monthly income of RM2000 or more [38.1% (95% CI: 34.27, 42.08)]. (**Table 12.1.2.1.2**)

The prevalence of overweight was higher among the pre-elderly living in urban areas [39.5% (95% CI: 36.21, 42.94)], males [41.9% (95% CI:38.35, 45.56)], married [40.6% (95% CI:37.79, 43.47)], those with tertiary education [43.7% (95% CI:38.55, 48.99)], employed [39.6% (95% CI:36.72, 42.65)] and with an individual monthly income between RM1000 to RM1999 [41.0% (95% CI:36.71, 45.52)]. (**Table 12.1.2.1.3**)

For obesity, the prevalence was higher among the pre-elderly living in rural areas [24.0% (95% CI: 21.90, 26.33)], females [30.6% (95% CI: 26.94, 34.50)], single [28.8% (95% CI: 23.20, 35.06)], those with tertiary education [23.3% (95% CI: 18.73, 28.54)], unemployed [28.4% (95% CI: 25.03, 31.95)] and with an individual monthly income of less than RM1000 [25.2% (95% CI: 22.07, 28.55)]. (**Table 12.1.2.1.4**)

Based on the WHO 1998 cut-off, the national prevalence of obese I (BMI 30.0 - 34.9 kg/m^2), obese II (BMI 35.0 - 39.9 kg/m^2) and obese III (BMI ≥ 40.0 kg/m^2) among the pre-elderly was 17.1% (95% CI: 15.49, 18.89), 4.4% (95% CI: 3.36, 5.73) and 1.3% (95% CI: 0.86, 1.97) respectively. (**Table 12.1.2.1.5**)

The prevalence of obese I was higher among the pre-elderly in rural areas [17.9% (95% CI: 16.12, 19.76)], females [21.2% (95% CI: 18.64, 24.02)], single [17.8% (95% CI:13.67, 22.95)], those with tertiary education [21.1% (95% CI: 16.45, 26.60)], unemployed [19.2% (95% CI: 16.56, 22.21)] and with an individual monthly income of less than RM1000 [18.5% (95% CI:15.95, 21.27)]. The prevalence of obese II was highest among pre-elderly from rural areas [4.8% (95% CI: 3.87, 5.96)], females [7.0% (95% CI: 5.34, 9.15)], single [8.4% (95% CI: 5.11, 13.44)], those with primary education [5.1% (95% CI: 3.56, 7.30)], unemployed [6.4% (95% CI: 5.01, 8.19)] and with an individual monthly income of less than RM1000 [4.9% (95% CI: 3.63, 6.66)]. (**Table 12.1.2.1.5**)

Based on the Malaysian Clinical Practice Guidelines of Obesity (2004) classifications, the national prevalence of underweight, normal weight, overweight and obesity among the pre-elderly was 1.9% (95% CI: 1.40, 2.50), 18.5% (95% CI: 16.74, 20.49), 38.9% (95% CI: 36.67, 41.10) and 40.7% (95% CI: 38.06, 43.49) respectively. (**Table 12.1.2.1.6 – Table 12.1.2.1.8**)

The prevalence of underweight was higher among pre-elderly who were single [3.9% (95% CI: 2.37, 6.39)] compared to those who were married [1.5% (95% CI: 1.05, 2.17)]. For normal weight, the prevalence was higher among males [21.8% (95% CI: 19.08, 24.82)] compared to females [15.2% (95% CI: 12.96, 17.80)]. The prevalence of overweight was higher among male pre-elderly [43.3% (95% CI: 40.20, 46.43)] compared to females [34.4% (95% CI: 31.21, 37.71)] and among those who were employed [41.4% (95% CI: 38.71, 44.20)] compared to the unemployed [34.8% (95% CI: 31.28, 38.54)]. For obesity, the prevalence was higher among females [48.2% (95% CI: 44.13, 52.36)] compared to males [33.3% (95% CI: 30.37, 36.45)] and among those unemployed [47.3% (95% CI: 43.21, 51.33)] compared to employed [36.6 (95% CI: 33.78, 39.54)]. (**Table 12.1.2.1.1, Table 12.1.2.1.6, Table 12.1.2.1.7, Table 12.1.2.1.8**)

12.1.2.2 Abdominal obesity among pre-elderly

Based on WHO (1998) cut-off, the national prevalence of abdominal obesity among the pre-elderly was 33.7% (95% CI: 31.40, 36.00). The prevalence of abdominal obesity was higher among the pre-elderly who were living in rural areas [35.3% (95% CI: 31.72, 38.97)], females [53.5% (95% CI: 49.59, 57.39)], single [43.6% (95% CI: 37.97, 49.50)], with no formal education [41.0% (95% CI: 33.22, 49.32)], unemployed [48.1% (95% CI: 44.11, 52.18)] and with an individual monthly income of less than RM1000 [43.0% (95% CI: 39.34, 46.67)]. (**Table 12.1.2.2.1**)

Based on WHO/IASO/IOTF (2000) cut-off, the national prevalence of abdominal obesity among the pre-elderly was 65.6% (95% CI: 62.34, 68.63). The prevalence of those with abdominal obesity was higher among the pre-elderly who were living in urban areas [65.9% (95% CI: 61.86, 69.71)], females [78.5% (95% CI: 74.71, 81.87)], single [70.2% (95% CI: 64.41, 75.34)], with no formal education [71.0% (95% CI: 63.37, 77.68)], unemployed [75.3% (95% CI: 70.91, 79.20)] and with an individual monthly income of less than RM1000 [70.8% (95% CI: 66.53, 74.67)]. (**Table 12.1.2.2.2**)

12.1.2.3 Nutritional status of elderly

Based on WHO 1998 classification, the national prevalence of underweight, normal weight, overweight and obesity among the elderly was 5.2% (95% CI: 4.18, 6.46), 40.2% (95% CI: 37.72, 42.72), 37.0% (95% CI: 34.96, 39.01) and 17.6% (95% CI: 15.81, 19.63) respectively. (**Table 12.1.2.1.1 – Table 12.1.2.1.4**)

The prevalence of underweight was higher among the elderly living in rural areas [7.5% (95% CI: 6.08, 9.25)], females [5.6% (95% CI: 4.08, 7.77)], single [8.1% (95% CI: 5.72, 11.35)], had no formal education [10.3% (95% CI: 7.75, 13.48)], unemployed [5.3% (95% CI: 4.09, 6.79)] and with an individual monthly income of less than RM1000 [7.2% (95% CI: 5.59, 9.32)]. (**Table 12.1.2.1.1**)

For the prevalence of normal weight among the elderly, it was highest among those from rural areas [42.5% (95% CI: 39.92, 45.14)], males [45.7% (95% CI: 42.18, 49.19)], single [41.1% (95% CI: 36.81, 45.49)], those with primary education [42.6% (95% CI: 39.36, 45.85)], employed [45.1% (95% CI: 40.24, 50.02)] and with an individual monthly income of less than RM1000 [41.7% (95% CI: 39.19, 44.28)]. (**Table 12.1.2.1.2**)

The highest prevalence of overweight was observed among the elderly from urban areas [38.2% (95% CI: 35.65, 40.78)], females [37.9% (95% CI: 35.20, 40.58)], married [38.3% (95% CI: 35.74, 40.96)], those with tertiary education [43.9% (95% CI: 38.15, 49.73)], unemployed [37.2% (95% CI: 34.83, 39.59)] and among those with individual monthly income of RM2000 or more [42.7% (95% CI: 37.80, 47.68)]. (**Table 12.1.2.1.3**)

The prevalence of obesity was higher among the elderly from urban areas [18.1% (95% CI: 15.72, 20.76)], females [21.7% (95% CI: 19.17, 24.42)], married [17.9% (95% CI: 15.93, 20.15)], those with tertiary education level [20.3% (95% CI: 14.80, 27.17)], unemployed [19.0% (95% CI: 16.87, 21.31)] and with an individual monthly income between RM1000 to RM1999 [21.6% (95% CI: 17.58, 26.33)]. (**Table 12.1.2.1.4**)

Based on WHO 1998 classification, national prevalence of obese I (BMI 30.0 - 34.9 kg/m2), obese II (BMI 35.0 - 39.9 kg/m²) and obese III (BMI ≥ 40.0 kg/m²) among the elderly was 13.8% (95% CI: 12.06, 15.74), 3.0% (95% CI: 2.18, 3.98) and 0.9% (95% CI: 0.56, 1.41) respectively. (**Table 12.1.2.1.5**)

The prevalence of obese I was higher among the elderly from urban areas [14.0% (95% CI: 11.73, 16.63)], females [16.2% (95% CI: 14.14, 18.59)], married [14.9% (95% CI: 13.08, 16.94)], with tertiary education level [16.6% (95% CI: 11.55, 23.27)], unemployed [14.5% (95% CI: 12.51, 16.77)] and had an individual monthly income between RM1000 to RM1999 [17.7% (95% CI: 13.96, 22.29)]. The prevalence of obese II was higher among the elderly from urban areas [3.2% (95% CI: 2.20, 4.60)], females [4.2% (95% CI: 2.78, 6.20)], single [4.6% (95% CI: 2.54, 8.10)], with primary education level [3.4% (95% CI: 2.06, 5.66)], unemployed [3.4% (95% CI: 2.42, 4.68)] and had an individual monthly income between RM1000 to RM1999 [3.6% (95% CI: 2.09, 6.15)]. The prevalence of obese III was higher among the elderly from rural areas [0.8% (95% CI: 0.49, 1.35)], females [1.3% (95% CI: 0.79, 2.06)], married [0.8% (95% CI: 0.45, 1.38)] and among unemployed [1.1% (95% CI: 0.68, 1.80)]. (**Table 12.1.2.1.5**)

Based on the Malaysian Clinical Practice Guidelines of Obesity (CPG 2004) classifications, the national prevalence of underweight, normal weight, overweight and obesity among Malaysian elderly was 5.2% (95% CI: 4.18, 6.46), 23.6% (95% CI: 21.44, 25.96), 38.6% (95% CI: 36.54, 40.74) and 32.6% (95% CI: 30.39, 34.79) respectively. (**Table 12.1.2.1.6 – Table 12.1.2.1.8**)

The prevalence of underweight was higher among elderly females [5.6% (95% CI: 4.08, 7.77)] compared to males [4.8% 95% CI: 3.64, 6.20)]. For overweight, the prevalence was higher among the males [42.2% (95% CI: 38.95, 45.62)] compared to females [35.1% (95% CI: 32.27, 37.94)] whereas for obesity, the prevalence was higher among females [37.8% (95% CI: 34.63, 41.07)] compared to males [27.2% (95% CI: 24.35, 30.28)]. (**Table 12.1.2.1.1, Table 12.1.2.1.7, Table 12.1.2.1.8**)

12.1.2.4 Abdominal obesity among elderly

Based on WHO (1998) cut-off, the national prevalence of abdominal obesity among the elderly was 36.4% (95% CI: 33.97, 38.85). The prevalence of abdominal obesity was higher among elderly from urban areas [37.9% (95% CI: 34.91, 41.01)], females [54.5% (95% CI: 50.67, 58.29)], single [42.2% (95% CI: 37.77, 46.83)], had no formal education [41.3% (95% CI: 36.73, 45.94)], unemployed [41.3% (95% CI: 38.57, 44.06)] and had a monthly income of less than RM1000 [39.2% (95% CI: 36.28, 42.25)]. (**Table 12.1.2.2.1**)

Based on the WHO/IASO/IOTF (2000) cut-off, the national prevalence of abdominal obesity among the elderly was 67.3% (95% CI: 64.48, 70.07). The prevalence of abdominal obesity was higher in urban areas [69.7% (95% CI: 66.01, 73.19)], among the females [78.4% (95% CI: 75.01, 81.39)], single [68.7% (95% CI: 64.43, 72.67)], with tertiary education level [73.6% (95% CI: 66.14, 79.86)], unemployed [70.9% (95% CI: 67.84, 73.78)] and among the elderly with a monthly income between RM1000 to RM1999 [70.2% (95% CI: 65.21, 74.72)]. (**Table 12.1.2.2.2**)

12.1.2.5 Risk of muscle wasting among elderly

Calf circumference was used to identify elderly individuals who were at risk of muscle wasting. The national prevalence of the risk of muscle wasting was 10.5% (95% CI: 9.01, 12.32). The prevalence was the highest among the elderly from rural areas [14.9% (95% CI: 12.52, 17.60)], males [11.9% (95% CI: 9.91, 14.27)], single [14.7% (95% CI: 12.03, 17.81)], had no formal education [17.1% (95% CI: 13.43, 21.59)], unemployed [10.7% (95% CI: 9.05, 12.50)] and with a monthly income of less than RM1000 [13.7% (95% CI: 11.46, 16.25). (**Table 12.1.2.5.1**)

12.1.3 Conclusion

Based on WHO (1998) classification, the national prevalence of underweight, normal weight, overweight and obesity among pre-elderly in Malaysia was 1.9%, 35.9%, 39.4% and 22.8% respectively. Findings from this study indicate the prevalence of underweight is higher compared to results from the NHANES 2015-2016 which shows the prevalence of underweight among pre-elderly in United States was 0.8%.[12] However, the prevalence of obesity among the pre-elderly in Malaysia is much lower compared to data from NHANES 2013-2014 (41.0%).[13] The prevalence of abdominal obesity based on WHO (1998) cut-off at 33.7% is lower compared to findings from Spain; Study on Nutrition and Cardiovascular Risk (ENRICA Study) (43.0%).[14]

Based on the WHO (1998) classification, the findings of the NHMS 2018 showed the national prevalence of underweight, normal weight, overweight and obesity among the elderly was 5.2%, 40.2%, 37.0% and 17.6% respectively. Findings from Well-Being of the Singapore Elderly (WiSE) Study showed the prevalence of underweight, normal weight, overweight and obesity among Singaporean elderly was 5.5%, 52.5%, 33.4% and 8.7% respectively.[15] By comparison to WiSE Study, it can be concluded that the prevalence of normal weight BMI of Malaysian elderly is noticeably lower while the prevalence of overweight is slightly higher.

On the other hand, the prevalence of obesity among Malaysian elderly is doubled compared to the Singaporean elderly. It should be noted that the current prevalence of overweight among the elderly at 37.0% had exceeded the target set in the National Plan of Action for Nutrition of Malaysia III, 2016-2025 (NPANM III) whereby the prevalence should not be more than 33.6% (Baseline data from NHMS 2015). Similarly, the current prevalence of obesity at 17.6% exceeded its target in NPANM III (no increase from 15.7%).[16] The prevalence of abdominal obesity based on WHO (1998) cut-off at 36.4% is lower compared to findings from ENRICA Study in Spain which was 61.6%.[14] However, the prevalence of abdominal obesity based on WHO/IASO/IOTF (2000) cut-off at 67.3% is much higher compared to findings from a study conducted among the elderly in South Korea (50.2%).[17] The prevalence of risk of muscle wasting among elderly in the present study is lower (10.5%) compared to NHMS 2015 which was 20.0%.[5] However, the current prevalence is slightly higher compared to findings from studies conducted in the Netherlands (6.0%)[18] and the United Kingdom (9.0%).[19]

12.1.4 Recommendations:

i. Improving healthcare system to systematically enable nutrition screening and appropriate intervention among the pre-elderly and elderly who are at risk for malnutrition.
ii. Integrating healthcare and other related systems to assure welfare and optimum nutrition delivery in the community for the elderly.
iii. Engage pre-elderly and elderly individuals vigorously in healthy eating and living campaigns and promotions as an approach to directly educate them.

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12.2 MALNUTRITION STATUS AMONG ELDERLY

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12.2.1 Introduction

Poor nutritional status in the elderly population is a public health concern. Malnutrition and unintended weight loss contribute to progressive decline in health, reduced physical and cognitive functional status, increased utilisation of health care services and increased mortality.[1] By identifying older persons who are malnourished or at risk of malnutrition in the community, this would allow policy makers to intervene earlier by providing adequate nutritional support and preventing further deterioration which might lead to undesirable health consequences. Anthropometric measurements in particular BMI have been commonly used to assess the nutritional status of the adult individuals. However, BMI assessment among older adults has some limitation. Therefore, in this study a more comprehensive nutritional screening using the Mini Nutritional Assessment (MNA) has been used. MNA is a globally accepted screening tool to identify elderly people who are malnourished or at risk of malnutrition. It can also be used to ensure that adequate healthcare is delivered to the population. The modified MNA-SF which is also known as the Mini Nutritional Assessment Short Form has been validated for usage among Malaysian older adults.[2]

In this survey, the MNA-SF used Calf Circumference (CC) instead of BMI.[3,4] CC is a simple, convenient and non-invasive tool recommended by the WHO[5] to assess the risk of malnutrition among elderly individuals. CC has the potential to serve as a malnutrition indicator.[6] A local cut-off point for CC was used to compute the final score of MNA-SF. An MNA-SF score of 12 to14 indicates elderly with a normal nutritional status[7]. Scores of 8 to 12 identify elderly at risk for malnutrition while with a score of less than 7, the elderly is categorised as having malnutrition. Although, there was no previous national population-based study on nutritional risk among older adults in Malaysia, data from a local study among Malay older adults in Felda Sungai Tengi, Selangor which was conducted in 2013 showed that 42.5% of elderly were at risk of malnutrition. Prevalence of malnutrition has been reported to be higher among rural elderly (17.7% - 37.7%) compared to the urban elderly (2.0% - 3.9%).[8]

Objective :

To determine the prevalence of malnutrition among elderly (aged 60 years old and above) by sociodemographic characteristics.

Variable Definitions :

Malnutrition score based on the Mini Nutritional Assessment – Short Form (MNA-SF) has been categorized into three categories, score 0 to 7 as malnutrition, score 8 to 11 as at risk of malnutrition and score 12 to 14 as normal.

Operational Definitions :

At risk of malnutrition and malnutrition were combined as malnutrition.

12.2.2 Findings

National findings revealed that the prevalence of malnutrition among elderly in Malaysia was 30.8% (95% CI: 27.96, 33.90) while 69.2% (95% CI: 66.10, 72.00) had normal nutritional status. Older adults in rural areas showed a higher prevalence of malnutrition [40.2% (95% CI: 36.46, 44.140] compared to urban areas [27.4% (95% CI: 23.83, 31.28)]. More female elderly were found to be malnourished [31.6% (95% CI: 27.94,35.47)] compared to male elderly [30.1% (95% CI: 26.93,33.43)]. (**Table 12.2.2.1**)

By marital status, the highest prevalence of elderly having malnutrition was found among those who were single [40.8% (95% CI: 36.62, 45.04)] compared to those who were married [26.2% (95% CI: 23.55, 28.99)]. Elderly with no formal education were more malnourished [46.4% (95% CI: 41.14, 51.48)], followed by those who had primary education [36.0% (95% CI: 32.18, 40.09)], secondary education [20.7% (95% CI: 17.28, 24.52)] and the lowest was among those with tertiary education [17.9% (95% CI: 13.04, 23.96)]. The highest prevalence of malnutrition was also noted among the unemployed elderly [31.9% (95% CI: 28.87, 35.17)]. **(Table 12.2.2.1**)

The results also showed that elderly with an individual monthly income of less than RM1000 had a higher prevalence of malnutrition [35.2% (95% CI: 31.82, 38.69)] compared to other categories of income. Individuals with a monthly income of RM 2000 and above were found to have a lower prevalence of malnutrition [19.0% (95%CI 14.48, 24.45)]. (**Table 12.2.2.1**).

12.2.3 Conclusion

In conclusion, malnutrition was notably higher among females, elderly living in rural areas, unemployed, elderly with no formal education and those with an individual monthly income of less than RM1000. Elderly who were single had a higher prevalence of malnutrition than those who were married at the time of the survey.

12.2.4 Recommendations

i. Improve and strengthen delivery of services of nutrition throughout the country particularly in remote and rural residencies.
ii. Government policies to support healthy aging population such as by having a one stop centre to ensure all facilities and needs of the elderly are in place, available and accessible.
iii. Screening of malnutrition status of elderly particularly in rural areas.
iv. Food vouchers or specially formulated supplementary food (in ready to eat forms) for those who were at risk of malnutrition.
v. Empowering the individuals and community by providing knowledge and skills to help the elderly in the community in order to maintain a healthy body weight.

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12.3 DIETARY PRACTICES

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12.3.1 Introduction

The Malaysian Dietary Guidelines (MDG) 2010[1] recommends overall good dietary practice, encouraging Malaysians to consume fewer calories, be more active and make wiser food choices. Besides the main recommendation on adequacy and a variety of food intake, the practice of adequate daily fruit and vegetable intake was also highlighted. Other recommendations by the World Health Organization (WHO), the US Department of Agriculture, and the Department of Health and Human Services are to improve and increase the intake of fruits and vegetables.[2,3]

Fruits and vegetables are a source of vitamins and minerals when consumed as it is, or in fluid form.[4] The benefits include reduced likelihood of chronic diseases,[4] improved physical function and walking speed, reduced walking disability and frailty among elders.[4,5,6] The MDG 2010 has recommended taking at least three servings of vegetables and at least two servings of fruits per day. Previous NHMS 2015 findings had shown that only 13.3% to 13.4% of pre-elderly and 9.8% to12.6% of elderly consumed at least two servings of fruits daily. Meanwhile, only 11.1% to 11.3% of pre-elderly and 8.1% to 12.1% of elderly consumed at least three servings of vegetables daily. NHMS 2015 findings also had shown that 92.5% to 93.1% of pre-elderly and 93.0% to 94.2% of elderly did not consume at least five servings of fruits and vegetables daily as recommended by WHO.

Drinking adequate amounts of fluid is essential for maintaining health and overall wellbeing. Many frail older people are not drinking sufficient fluid to maintain adequate hydration. MDG 2010[1] has recommended daily intake of six to eight glasses of plain water daily. NHMS 2015 findings found that 73.7% to 76.2% of pre-elderly and 54.7% to 72.8% of elderly had consumed adequate amounts of plain water (at least 6 glasses) daily. Elderly should also be encouraged to consume fluid from other sources such as fruits and vegetables, juices and soups.

Objective

To determine the prevalence of adequacy of fruit, vegetable and plain water intake among Malaysian pre-elderly (aged 50-59 years old) and elderly (aged 60 years old and above).

Variable Definitions

i. To eat at least 2 or more servings of fruits daily.
ii. To eat at least 3 or more servings of vegetables daily.
iii. To drink at least 6 or more glasses of water daily.

12.3.2 Findings

12.3.2.1 Prevalence of adequate fruit intake daily by sociodemographics among pre-elderly

WHO has recommended a daily intake of five servings of fruits and/or vegetables daily as a prevention of chronic diseases. Our findings showed that, only 12.5% (95% CI: 10.52, 14.75) of the pre-elderly adequately consumed fruits daily in the past 1 week. The highest prevalence of adequate fruit intake was from urban residents [12.9% (95% CI: 10.42, 15.79)] compared to rural residents

[11.2% (95% CI: 9.35, 13.25)]. Pre-elderly females [14.0% (95% CI: 11.59, 16.79)] had a higher prevalence of adequate fruit intake compared to the pre-elderly males [11.0% (95% CI: 8.71, 13.82)]. The highest prevalence of adequate fruit intake was from those who were married [12.6% (95% CI: 10.56, 14.96)] as compared to those who were single (never married/ separated/ divorced/ widowed) [11.8% (95% CI: 8.65, 15.87)]. Those with tertiary education had the highest prevalence of adequate daily fruit intake [17.3% (95% CI: 13.00, 22.67)], those who were unemployed (unemployed/retiree/homemaker) [14.2% (95% CI: 11.47, 17.40)] and individuals with a monthly income of RM 2000 and above [14.1% (95% CI:11.16, 17.69)]. (**Table 12.3.2.1.1**)

12.3.2.2 Prevalence of adequate fruit intake daily by sociodemographics among elderly

Our findings showed that, about 10.8% (95% CI: 9.15, 12.68) of the elderly consumed adequate fruits in a day in the past one week. The highest prevalence of adequate fruit intake was from urban residents [11.6% (95% CI: 9.53, 14.01)] compared to rural residents [8.6% (95% CI: 6.42, 11.49)]. Higher prevalence of male elderly [13.2 (95% CI: 10.69, 15.71)] consumed adequate fruits compared to the female elderly [8.7% (95% CI 6.96, 10.75)]. The highest prevalence of adequate fruit intake was from those who were married [12.3% (95% CI: 10.21, 14.81)], those with tertiary education [23.1% (95% CI: 16.60, 31.13), those who were employed [11.0% (95% CI:8.37, 14.42)], and individuals with a monthly income of RM 2000 and above [16.2% (95% CI:12.5, 20.74)]. (**Table 12.3.2.1.1**)

12.3.2.3 Prevalence of vegetable intake among pre-elderly

The overall prevalence of adequate vegetable intake (at least three servings per day) among pre-elderly was 11.4% (95% CI: 9.23, 13.90). A higher prevalence of elderly from rural areas [13.8% (95% CI: 11.15, 17.02)] compared to elderly from urban areas [10.6% (95% CI: 8.08, 13.84)] consumed adequate vegetables in a day. Those without formal education have the highest prevalence of adequate vegetable intake [18.0% (95% CI: 12.07, 26.07)] compared to those with higher education levels. (**Table 12.3.2.1.1**)

12.3.2.4 Prevalence of vegetable intake among elderly

The overall prevalence of adequate vegetable intake (at least three servings per day) among the elderly was 10.9% (95% CI: 8.47, 13.99). A higher prevalence of elderly from the urban areas [11.4% (95% CI: 8.22, 15.48)] compared to those living in rural areas [9.76% (95% CI: 7.21, 13.11)]. Prevalence of adequate vegetable intake was higher among those who were single [11.5% (95% CI: 8.55, 15.35)] compared to those who were married [10.7% (95% CI: 8.04, 13.99)]. Those with tertiary education had the highest prevalence of adequate vegetable intake in a day [13.5% (95% CI: 9.65, 18.64)] as compared to those with lower education levels. (**Table 12.3.2.1.1**)

12.3.2.5 Plain water intake among pre-elderly

About 17.1% (95% CI: 14.95, 19.49) of the pre-elderly drank less than six glasses of plain water per day, while 82.9% (95% CI: 80.51, 85.05) of them drank more than six glasses of plain water per day. The prevalence of adequate plain water intake in a day was similar between those from urban areas [83.6% (95% CI: 80.61, 86.21)] and those from rural areas [80.6% (95% CI: 77.71, 83.12)]. More females [19.2% (95% CI: 16.52, 22.23)] drank inadequate plain water (less than six glasses in a day) compared to males [15.0% (95% CI: 12.54, 17.91)].

Those without formal education reported the highest prevalence of inadequate plain water intake [20.6% (95% CI: 13.89, 29.36)] while those with tertiary education had the highest prevalence of adequate plain water intake [87.1% (95% CI: 82.1, 90.89)]. Those who were unemployed [22.8% (95% CI: 19.55, 26.48)] reported the highest prevalence of inadequate plain water intake compared to those who were employed. Those who earned less than RM1000 reported the highest prevalence of inadequate plain water intake [22.4 (95% CI: 19.33, 25.78)] compared to those who earned more. (**Table 12.3.2.5.1**)

12.3.2.6 Plain water intake among elderly

About 30.2% (95% CI: 27.26, 33.25) of the elderly drank inadequate plain water (less than six glasses per day) while [69.8% (95% CI: 66.74, 72.74)] of elderly drank adequate plain water (more than six glasses per day). Higher prevalence of those in rural areas [37.2% (95% CI: 33.56, 41.00)] drank inadequate plain water compared to those in urban areas [27.6% (95% CI: 23.95, 31.60)]. Higher prevalence of females [34.4% (95% CI: 30.52, 38.45)] drank inadequate plain water compared to males [25.8% (95% CI: 23.13, 28.64)]. Those who were married [73.8% (95% CI: 70.83, 76.50) reported higher prevalence of adequate plain water intake compared to those who were single [61.5% (95% CI: 57.18, 65.68)]. Those with tertiary education reported the highest prevalence of plain water intake [84.4% (95% CI: 78.55, 88.86)] compared to those with lower education levels. However, lower prevalence of adequate plain water intake was found among those who were unemployed [66.7% (95% CI: 63.03, 70.16)] compared to the employed [79.5% (95% CI: 76.00, 82.70)]. Individuals whose income was below RM 1000 reported the lowest prevalence of adequate plain water intake [62.5% (95% CI: 58.86, 66.09)] compared to those with higher income. (**Table 12.3.2.5.1**)

12.3.3 Conclusion

In conclusion, the prevalence of adequate fruit and vegetable intake among pre-elderly and elderly was lower compared to developed and developing countries such as Canada (53.0%)[6] and China (62.0%).[7] There is a crucial need for strategies and coordinated efforts from programme managers and policy makers at all levels to promote adequate intake of fruits, vegetables, and plain water among Malaysian elderly.

12.3.4 Recommendations

i. Malaysian elderly needs more attention and effort to improve their eating habits. Appropriate nutrition education programs using creative and innovative approaches should be carried out to focus on promoting healthy diets, specifically to increase consumption of fruits, vegetables and plain water.
ii. Further research should be conducted to identify more details on dietary behaviors among the pre-elderly in Malaysia.

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12.4 FOOD SECURITY STATUS

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12.4.1 Introduction

Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.[1] Meanwhile, food insecurity occurs whenever the availability of nutritionally adequate and safe foods or the ability to access acceptable foods in socially acceptable ways is limited or uncertain.[2] Food insecurity occurs in both of developing and developed countries, and it is recognised as a major public health problem. The prevalence of food insecurity among older adults in the United States and Australia was 19.0%[3] and 13.0%[4], respectively. Several studies have reported the prevalence of food insecurity among elderly in Malaysia.[5,6] It seems that the prevalence is higher in rural areas than the urban areas. The figures in rural areas is 22.9% among older adults at Mukim Panji, Kota Bharu Kelantan[5] and 27.7% at Lubuk Merbau, Kedah.[6] Whilst, in urban areas the prevalence is 6.9%[7] at Klang Valley and 19.5%[8] at Petaling District Selangor. However, this discrepancy could also be due to differences in tools used to assess food security and also the sampling technique of the subjects.

This survey measured food security at the individual level using the six-item Short Form of Food Security Status by the United States Department of Agriculture.[9] This six-item Short Form of Security Status is a shorter form of the 18-item U.S Household Food Security Module and 10-item U.S Adults Food Security Status Module. Those who responded affirmatively to none or one item were considered as having high or marginal food security. Those who responded affirmatively to two to four items reflected low food security and those who responded affirmatively to five to six items indicated very low food security. Low and very low food security scores were considered to indicate food insecurity.

Objective:

To determine the prevalence of food security among pre-elderly (aged 50-59 years old) and elderly (aged 60 years old and above) according to sociodemographic characteristics.

Variable Definitions:

- Three food security classifications were used in this study based on The United States Department of Agriculture (USDA) 2012.
- The classification was based on the three categories of the total score such as high and marginal food security (score 0 to 1), low food security (score 2 to 4) and very low food security (score 5 to 6).

Operational Definitions:

Low food secure and very low food secure were combined as food insecurity.

12.4.2 Findings

Overall, the national prevalence of food insecurity among pre-elderly was 11.5% (95%CI: 9.11, 14.34). The prevalence was higher in rural areas [20.4% (95%CI: 15.66, 26.17)] and males [12.1% (95%CI: 9.39,15.47 In addition, being single (never married/ separated/ divorced/ widowed) [17.7% (95%CI: 13.62, 22.56)], having no formal education [33.1% 95%CI: 24.57, 42.96)], being unemployed (unemployed/ retiree/

homemaker) [12.1% (95%CI: 9.19, 15.74)] and having an individual monthly income of less than RM1000 [17.2% (95%CI: 13.59, 21.53)] reported a higher prevalence of food insecurity among the pre-elderly group (**Table 12.4.2.1**).

Among the elderly group, the national prevalence of food insecurity was 10.4% (95%CI: 8.23, 12.98). The findings revealed that the prevalence was higher in rural areas [19.1% (95%CI: 14.43, 24.74)] and among females [10.8% (95%CI: 8.50, 13.52)]. In addition, being single [14.0% (95%CI: 10.76, 17.95)], having no formal education [20.4% (95%CI: 15.49, 26.30)], being unemployed [10.5% (95%CI: 8.20, 13.30)] and having individual monthly income of less than RM1000 [15.2% (95%CI: 12.00,19.09)] also had a higher prevalence of food insecurity (**Table 12.4.2.1**).

12.4.3 Conclusion

In conclusion, the national prevalence of food insecurity among pr-elderly (11.5%) and elderly (10.4%) was slightly lower than the prevalence reported in developed countries such as the United States (19.0 %)[10] and Australia (13.0%).[4] In addition, pre-elderly and elderly from rural areas, with no formal education, single, unemployed and with an individual monthly income of less than RM1000 had a higher prevalence of food insecurity and this might lead to an increased risk of poor health and nutritional status. These findings are consistent with other studies that indicated lower education levels, widowhood,[5] unemployment,[11] and lower income[8] to be associated with food insecurity. Strategies to prevent food insecurity should be implemented focusing on the pre-elderly and elderly who were at risk.

12.4.4 Recommendations

i. To evaluate the effectiveness of current policies, strategies and programmes in prevention and management of food insecurity.
ii. To develop effective and sustainable strategies and programmes at national, community and household levels to prevent food insecurity among elderly population.
iii. To collaborate with other agencies in planning and implementing strategies and intervention programmes in relation to food security that will benefit the elderly population.
iv. To identify factors and consequences of food insecurity among the elderly.

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13.0 NON-COMMUNICABLE DISEASES

13.1 Introduction

Non-communicable diseases (NCDs), in particular diabetes mellitus, hypertension and hypercholesterolemia have shown an increasing trend globally, and the prevalence of NCDs in Malaysia continues to rise.[1] The Second Burden of Disease Study for Malaysia showed that NCDs were the biggest contributors to both Disability-Adjusted Life Year (DALY) and deaths.[2] The National Health and Morbidity Survey (NHMS) 2015 showed that among those aged 50 years and above, one third had hypertension while more than half had both hypertension and high blood cholesterol.[1] Since the burden of NCDs continues to rise, coupled with a rapidly ageing population, it is important to assess the NCD status of the elderly. This module explored self-reported diabetes, hypertension and hypercholesterolemia, as well as the prevalence of screening of these diseases among the pre-elderly (aged 50-59 years old) and the elderly (aged 60 years old and above) in the past 12 months. We also explored types of treatment and advice received, and places where treatment and advice were received among the pre-elderly and elderly.

13.1.1 DIABETES MELLITUS

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13.1.1.1 Objectives and Definitions

Objectives:

i. To determine the prevalence of self-reported diabetes among the pre-elderly and elderly by sociodemographic characteristics.
ii. To determine the prevalence of the pre-elderly and elderly screened for diabetes in the past 12 months by sociodemographic characteristics.
iii. To determine the types of treatment or advice received by the pre-elderly and elderly with diabetes.
iv. To determine the places where treatment or advice were received by the pre-elderly and elderly with diabetes.

Definitions:

i. Self-reported diabetes - defined as being told to have diabetes by a doctor or assistant medical officer.
ii. Screened for diabetes - defined as those who had their blood sugar measured in the past 12 months either by themselves or by a healthcare worker.
iii. Types of treatments or advice for diabetes patients - drugs (medication) in the past two weeks, insulin, advice for diet control, advice for weight loss and advice to start or do more exercise and herbal/traditional remedies.
iv. Places where treatment or advice were received - government clinics, government hospitals, private clinics, private hospitals, traditional/herbal and complementary medicine, pharmacies (self-medicating)

13.1.1.2 Findings

Prevalence of self-reported diabetes among pre-elderly and elderly in malaysia

The prevalence of self-reported diabetes among the pre-elderly (aged 50-59 years old) was [18.8% (95% CI: 16.69, 21.03)] while among the elderly (aged 60 years old and above) was [27.7% (95% CI: 25.46, 29.99)]. (**Table 13.1.1.2.1**)

The prevalence of self-reported diabetes among the pre-elderly females [19.7% (95% CI: 16.60, 23.20)] was higher compared to males [17.9% (95% CI: 15.19, 20.88)]. This trend was seen among the elderly group as well. (**Table 13.1.1.2.1**)

The prevalence of self-reported diabetes among the pre-elderly was higher among the unemployed (unemployed/ retirees/ homemakers) [23.5% (95% CI: 20.74, 26.60)] compared to the employed [15.7% (95% CI: 13.38, 18.30)]. (**Table 13.1.1.2.1**)

Similarly, the prevalence of self-reported diabetes among the elderly was higher among the unemployed [30.0% (95% CI: 27.17, 32.93)] compared to the employed [20.5% (95% CI: 17.62, 23.62)]. (**Table 13.1.1.2.1**)

Prevalence of pre-elderly and elderly screened for diabetes in the past 12 months

The prevalence of pre-elderly screened for diabetes in the past 12 months was [77.1% (95% CI: 73.13, 80.63)] while the prevalence of elderly screened for diabetes in the past 12 months was [80.5% (95% CI: 76.79, 83.76)]. (**Table 13.1.1.2.2**)

The prevalence of elderly screened for diabetes in the past 12 months was higher among the unemployed [82.8% (95% CI: 79.25, 85.77)] compared to the employed [74.2% (95% CI: 68.08, 79.57)]. (**Table 13.1.1.2.2**)

Types of treatment or advice received by pre-elderly and elderly with diabetes

Most pre-elderly with diabetes received advice such as diet control/weight loss/exercise [93.3% (95% CI: 90.30, 95.45)], followed by prescribed drugs in the past 2 weeks [93.0% (95% CI: 89.89, 95.17)]. (**Table 13.1.1.2.3**)

Meanwhile, among the elderly, the majority were prescribed drugs in the past two weeks [92.4% (95% CI: 89.65, 94.44)], followed by received advice such as diet control/weight loss/ exercise [91.6% (95% CI: 88.49, 93.87)]. (**Table 13.1.1.2.3**)

Places where treatment or advice received by pre-elderly and elderly with diabetes in Malaysia

The survey also found that most pre-elderly received treatment or advice at government clinics [64.4% (95% CI: 57.48, 70.80)] followed by government hospitals [17.5% (95% CI: 12.85, 23.35)], private clinics [11.0% (95% CI: 7.86, 15.30)], private hospitals [4.2% (95% CI: 2.15, 7.89)], pharmacies (self-medicating) [1.8% (95% CI: 0.79, 4.22)], did not seek treatment [0.8% (95% CI: 0.26, 2.54)] and traditional, herbal and complementary medicine [0.2% (95% CI: 0.07, 0.82)]. (**Table 13.1.1.2.4**)

The elderly mostly received treatment or advice from government clinics (69.9%; 95% CI: 64.83, 74.52), followed by government hospitals (20.8%; 95% CI: 16.82, 25.5), private clinics (5.9%; 95% CI: 3.88, 8.74), private hospitals (2.5%;(95% CI: 1.54, 4.02), pharmacies (self-medicating) (0.6%; 95% CI: 0.23, 1.53), traditional, herbal and complementary medicine (0.2%; 95% CI: 0.03, 0.93) and did not seek treatment (0.2%; 95% CI: 0.03, 0.82). (**Table 13.1.1.2.4**)

13.1.2 HYPERTENSION

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13.1.2.1 Objectives And Definitions

Objectives:

i. To determine the prevalence of self-reported hypertension among the pre-elderly and elderly by sociodemographic characteristics.
ii. To determine the prevalence of pre-elderly and elderly screened for hypertension in the past 12 months by sociodemographic characteristics.
iii. To determine the types of treatment or advice received by the pre-elderly and elderly with hypertension by sociodemographic characteristics.
iv. To determine the places where treatment/advice were received by the pre-elderly and elderly with hypertension by sociodemographic characteristics.

Definitions:

i. Self-reported hypertension - was defined as being told to have hypertension by a doctor or assistant medical officer.
ii. Screened for hypertension - was defined as those who had their blood pressure measured in the past 12 months by themselves or by a healthcare worker.
iii. Types of treatment or advice for hypertension patients - drugs (medication) in the past two weeks, advice to reduce salt intake, advice for weight loss and advice to start or do more exercise and herbal/traditional remedies.
iv. Places where treatment or advice were received - government clinics, government hospitals, private clinics, private hospitals, traditional/herbal and complementary medicine, pharmacies (self-medicating)

13.1.2.2 Findings

Prevalence of self-reported hypertension and screening among pre-elderly and elderly in Malaysia

The prevalence of self-reported hypertension among the pre-elderly (aged 50-59 years old) was [32.7% (95% CI: 29.91, 35.64)] while the prevalence of self-reported hypertension among the elderly (aged 60 years old and above was [51.1% (95% CI: 48.88, 53.29)]. The prevalence of those screened for hypertension in the past 12 months was [77.3% (95% CI: 73.26, 80.98)] among the pre-elderly and [79.0% (95% CI: 75.39, 82.12)] among the elderly. (**Table 13.1.2.2.1 – Table 13.1.2.2.2**)

Types of treatment or advice, and places where treatment or advice was received by the pre-elderly and elderly with hypertension

The most common type of treatment received by the pre-elderly (94.8%; 95% CI 92.63, 96.40) and elderly (96.9%; 95% CI: 95.81, 97.69) was drugs (medication) in the past two weeks. The least common was herbal/traditional remedies for both pre-elderly (16.3%; 95% CI: 13.65, 19.43) and elderly (15.6%; 95% CI: 13.45, 17.94). (**Table 13.1.2.2.3**) Majority of the pre-elderly (62.8%; 95% CI: 56.53, 68.65) and elderly (65.9%; 95% CI: 59.80, 71.50) received treatment or advice for hypertension from government clinics. (**Table 13.1.2.2.4**)

13.1.3 HYPERCHOLESTEROLEMIA

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13.1.3.1 Objectives And Definitions

Objectives:

i. To determine the prevalence of the pre-elderly and elderly screened for hypercholesterolemia in the past 12 months.
ii. To determine the prevalence of self-reported hypercholesterolemia among the pre-elderly and elderly by sociodemographic characteristics.
iii. To determine the types of treatment or advice received by the pre-elderly and elderly with hypercholesterolemia.
iv. To determine the places where treatment or advice were received by the pre-elderly and elderly with hypercholesterolemia.

Definitions:

i. Self-reported hypercholesterolemia - defined as being told to have hypercholesterolemia by a doctor or assistant medical officer.
ii. Screened for hypercholesterolemia - defined as those who had their blood checked for cholesterol levels in the past 12 months by themselves or by a healthcare worker.
iii. Types of treatments or advice for hypercholesterolemia patients - drugs (medication) in the past two weeks, advice for special low fat or low cholesterol diet, advice to lose weight and advice to start or do more exercise and herbal/traditional remedies.
iv. Places where treatment or advice were received - government clinics, government hospitals, private clinics, private hospitals, traditional/herbal and complementary medicine, pharmacies (self-medicating).

13.1.3.2 Findings

Prevalence of self-reported hypercholesterolemia among pre-elderly and elderly

The prevalence of self-reported hypercholesterolemia among the pre-elderly (aged 50-59 years old) was [29.1% (95% CI: 26.44, 31.83)] while the prevalence of self-reported hypercholesterolemia among the elderly (aged 60 years old and above) was [41.8% (95% CI: 39.25, 44.43)]. (**Table 13.1.3.2.1**)

The prevalence of self-reported hypercholesterolemia among the pre-elderly was almost similar in urban areas and rural areas, while the prevalence of self-reported hypercholesterolemia among the elderly was higher in urban areas compared to rural areas.

Prevalence of pre-elderly and elderly screened for hypercholesterolemia in the past 12 months

The prevalence of the pre-elderly screened for hypercholesterolemia in the past 12 months was [72.1% (95% CI: 67.48, 76.38)], while for the elderly screened for hypercholesterolemia in the past 12 months was [75.5% (95% CI: 71.77, 78.86)]. (**Table 13.1.3.2.2**)

The prevalence of the pre-elderly screened for hypercholesterolemia in the past 12 months was higher in urban areas [73.2% (95% CI: 67.24, 78.46)] compared to rural areas [68.5% (95% CI: 64.36, 72.32)]. This finding was similar for the elderly group as well. (**Table 13.1.3.2.2**)

Types of treatment or advice received by pre-elderly and elderly with hypercholesterolemia in Malaysia

The percentage of pre-elderly who was prescribed drugs (medication) in the past two weeks was [85.5% (95% CI: 81.6, 88.7)] while those who received advice for special low fat or low cholesterol diet was [86.7% (95% CI: 83.9, 89.1)]. Meanwhile, the percentage of those who received advice to lose weight was [76.0% (95% CI: 70.7, 80.7)], and the percentage of those who received advice to start or do more exercise was [83.4% (95% CI: 78.4, 87.5)]. About [18.0% (95% CI: 14.9, 21.6)] had been taking herbal/traditional remedies for their hypercholesterolemia. (**Table 13.1.3.2.3**)

The percentage of elderly who was prescribed with drugs (medication) in the past two weeks was [92.3% (95% CI: 90.1, 94.1)] while those who received advice for special low fat or low cholesterol diet was [85.3% (95% CI: 81.8, 88.2)]. The percentage of those who received advice to lose weight was [69.6% (95% CI: 64.9, 74.0)], while the percentage of those who received advice to start or do more exercise was [78.5% (95% CI: 74.8, 81.8)]. About [17.3% (95% CI: 14.5, 20.6)] had been taking herbal/traditional remedies for their hypercholesterolemia. (**Table 13.1.3.2.3**)

Places where treatment or advice received by pre-elderly and elderly with hypercholesterolemia in Malaysia

The most common places where treatment or advice were received by the pre-elderly were government clinics [65.6% (95% CI: 59.65, 71.16), government hospitals [17.9% (95% CI: 13.07, 24.05) and private clinics [10.6% (95% CI: 8.25, 13.45). (**Table 13.1.3.2.4**)

The most common places where treatment or advice were received by the elderly were government clinics [65.6% (95% CI: 60.18, 70.68), government hospitals [21.9% (95% CI: 17.37, 27.31) and private clinics [0.2% (95% CI: 0.07, 0.74). (**Table 13.1.3.2.4**)

13.2 Conclusion

We can conclude that the prevalence of diabetes, hypertension and hypercholesterolemia was high among the Malaysian pre-elderly and elderly population. This is because NCDs increase with age. From the results, we could also see that the majority of the pre-elderly and elderly sought treatment at government facilities (government clinics and hospitals).

13.3 Recommendations

i. Lifestyle modifications should be recommended at the pre-elderly stage or earlier in order to reduce the morbidity and mortality associated with NCDs.
ii. Screening activities should be intensified to ensure timely treatment and prevention of complications.

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13.4 CANCER

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13.4.1 Introduction

According to the WHO (World Health Organisation) cancer is said to be the second leading cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. Alarmingly, approximately 70% of deaths from cancer happen in low- and middle-income countries. Around one third of deaths from cancer are due to the five leading behavioural and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use. Cancer causing infections, such as hepatitis and human papilloma virus (HPV), are responsible for up to 25% of cancer cases in low- and middle-income countries.[1]

In our country, according to the Malaysian National Cancer Registry Report 2007-2011, the top three cancers in Malaysia were Breast Cancer (17.7%), Colorectal Cancer (13.2%) and Lung, Trachea and Bronchus Cancer (10.2%). For both males and females, the incidence of cancer increased after the age of 30. The incidence rate in males exceeded the rate in females after the age of 60 years.[2] This module was formulated to identify the prevalence of self-reported cancer among the pre-elderly (aged 50-59 years old) and elderly (aged 60 years old and above) in Malaysia.

13.4.2 Findings

13.4.2.1 Prevalence of self-reported cancer among pre-elderly

The prevalence of self-reported cancer among the pre-elderly was [1.3% (95% CI: 0.90, 1.91)]. The prevalence was higher in urban areas [1.5% (95% CI: 0.98, 2.26)] compared to rural areas [0.7% (95% CI: 0.40, 1.26)]. Pre-elderly with an individual monthly income of less than RM1000 [2.0% (95% CI: 1.22, 3.41)] had a higher prevalence compared to those who earned more than RM1000. (**Table 13.4.2.1.1**)

13.4.2.2 Prevalence of self-reported cancer among elderly

Meanwhile, among the elderly, the prevalence of self-reported cancer was [1.6% (95%CI: 1.13, 2.38)]. Similarly, the prevalence was higher in urban areas [1.8% (95%CI: 1.17, 2.85)] compared to rural areas [1.1% (95% CI: 0.69, 1.88)]. On the contrary, the elderly group with an individual income of more than RM1000 was more prevalent [1.7% (95%CI: 0.71, 4.07)] compared to those with lesser income. (**Table 13.4.2.1.1**)

13.4.2.3 Most common types of cancers among pre-elderly

Overall, among the pre-elderly with cancer the three most common cancers were Breast cancer [22.7% (95% CI: 11.54, 39.87)], Blood cancer [13.5% (95% CI: 4.83, 32.61)] and Throat cancer [9.1% (95% CI: 2.56, 27.75)]. Among males, Intestinal cancer [15.7% (95% CI: 2.61, 56.34)], Liver cancer [14.3% (95% CI: 1.95, 58.44)] and Pancreas cancer [14.3% (95%CI: 1.95, 58.44)] were the three most common cancers. Meanwhile, among females the three most common cancers were Breast cancer [39.5% (95% CI: 21.49, 60.95)], Blood cancer (16.8%; 95% CI: 4.63,45.80) and Throat [13.3% (95% CI: 3.13, 42.17)].

13.4.2.4 Most common types of cancers among elderly

In the elderly group with cancer, the three most common cancers were Intestinal cancer [23.0% (95% CI: 10.42, 43.35)], Breast cancer [17.7% (95% CI: 8.90, 32.24)] and Prostate cancer [12.8% (95% CI: 5.46, 27.21)]. Among males, Intestinal cancer [35.2% (95% CI: 17.17, 58.67)] and Prostate cancer [20.8% (95% CI: 8.65, 42.25)] were the most common. Among females, Breast cancer [37.5% (95% CI: 18.84, 60.77)] and Cervical cancer [22.5% (95 % CI: 6.77, 53.82)] was the most common.

13.4.3 Conclusion

From our study, we can conclude that Intestinal cancer and Breast cancer were the top cancers for males and females respectively both in the pre-elderly and elderly group.

13.4.4 Recommendations

i. More focus should be given to the five leading behavioural and dietary risks of cancer as identified by the WHO.
ii. Continuous monitoring and appropriate measures should be taken to ensure the high coverage of Hepatitis B and Human Papilloma Virus vaccination are maintained, more awareness about the importance of these vaccines is needed among the community.

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[2] *Malaysian National Cancer Registry Report 2007-2011; National Cancer Registry Department; National Cancer Institute, Ministry of Health Malaysia; 2017.*

13.5 SMOKING

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13.5.1 Introduction

Tobacco use kills 6 million people worldwide each year and is expected to cause more than 8 million deaths per year by 2030.[1] The negative health effects of smoking among the elderly have been discussed extensively in literature.[2,3] The prevalence of smoking changes dramatically with age. Over the age of 50, current smoking prevalence declines both because of cessation and because smokers are dying faster than those who were never smokers.[4] In Malaysia, 11.1% of Malaysian adults aged 65 years and above were reported to be current smokers in 2015.[5] One study revealed that excess rates of smoking-induced disease increase as age increases, however, cessation of smoking at older age (>60 years) can have a positive effect on smoking-related diseases.[2] Therefore, it is crucial to monitor the trend of smoking among the elderly population in order to provide the latest data in assisting stakeholders and policymakers to formulate effective policies and strategies for tobacco control among the Malaysian elderly. The objectives of this module were to determine the prevalence of current tobacco product use (smoked and smokeless) among the pre-elderly and elderly, and to determine the prevalence of former smokers among the pre-elderly (aged 50-59 years old) and elderly (aged 60 years old and above) in Malaysia.

Definition:

i. Current smokers - Currently using any smoked tobacco product (manufactured cigarettes, hand-rolled cigarettes, kretek, cigars, shisha, bidis or tobacco pipes).
ii. Former smokers - Used any smoked tobacco product (manufactured cigarettes, hand-rolled cigarettes, kretek, cigars, shisha, bidis or tobacco pipes) in the past.
iii. Current smokeless tobacco product users - Currently using any smokeless tobacco product (e-cigarettes/vape, chewing tobacco or snuff).

13.5.2 Findings

13.5.2.1 Current smokers

Overall, one-fifth [21.8% (95% CI: 19.50, 24.36)] of the pre-elderly in Malaysia were current smokers, and the most commonly used products were manufactured cigarettes [19.5% (95% CI: 17.30, 21.85)], followed by hand-rolled cigarettes [3.4% (95% CI: 2.44, 4.79)] and kretek [1.9% (95% CI: 1.32, 2.76)].

More males [42.0% (95% CI: 37.93, 46.26)] compared to females [1.1% (95% CI: 0.68, 1.86)] were current smokers. (**Table 13.5.2.1.1**)

While among the elderly, approximately one in ten were current smokers [13.3% (95% CI: 11.74, 15.11)], and the most frequently used products were manufactured cigarettes [10.1% (95% CI: 8.69, 11.65)], followed by hand-rolled cigarettes [3.9% (95% CI: 2.88, 5.20)] and kretek [0.9% (95% CI: 0.57, 1.33)].

More males [25.6% (95% CI: 22.44, 29.00)] compared to females [1.6% (95% CI: 1.11, 2.29)] were current smokers. (**Table 13.5.2.1.1**)

13.5.2.2 Former smokers

This survey found that [6.6% (95% CI: 5.50, 7.82)] of the pre-elderly in Malaysia were former smokers. Male respondents reported higher prevalence [12.3% (95% CI: 10.42, 14.39)] as compared to females [0.7% (95% CI: 0.34, 1.56)].

About one tenth [12.5% (95% CI: 10.96, 14.23)] of the elderly in Malaysia were former smokers. More males [23.3% (95% CI: 20.23, 26.75)] compared to females [2.1% (95% CI: 1.34, 3.33)] were former smokers. (**Table 13.5.2.1.2**)

13.5.2.3 Current smokeless tobacco users

The study revealed that the prevalence of current smokeless tobacco use among the pre-elderly and elderly were relatively low. Only [0.70% (95% CI: 0.33, 1.35)] of the pre-elderly and [1.0% (95% CI: 0.41, 2.26)] of the elderly respondents were current smokeless tobacco users.

13.5.3 Conclusion

A substantial proportion of the pre-elderly (21.8%) were current smokers. This survey also revealed that the prevalence of current smoking was much higher in males compared to females, and the most popular smoked tobacco product used among current smokers was manufactured cigarettes.

13.5.4 Recommendations

There was a study that showed older smokers who made an attempt to quit had higher successful rate in their attempt.[2] This warrants further research in Malaysia to identify the best approaches and strategies in motivating older smokers to quit smoking. In addition, smoking cessation programmes and services should be enhanced to target the older population to reduce smoking and promoting a healthier lifestyle.

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14.0 ELDER ABUSE

14.1 ELDERLY ABUSE AND NEGLECT

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14.1.1 Introduction

Malaysia has an increasing ageing population, and abuse is a public health problem with significant health, social and financial impact to the health and welfare system.[1] According to the World Report on Violence and Health, elder abuse is defined as "a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person.

Based on the best available evidence from 52 studies in 28 countries from diverse regions, including 12 low and middle-income countries, it was estimated that 15.7% of people aged 60 years and older were subjected to some form of abuse over the past year.[2] In comparison, a previous study conducted in Kuala Pilah district, Negeri Sembilan state had identified a lower prevalence of elder abuse, estimated to be 4.5%, among rural community dwelling elderly.[3] In Malaysia, there is little information about the extent of the issue at the national level.

The objective of this study was to examine the prevalence of self-reported elder abuse, determine its types and the occurrence of clustering of abuse among community dwelling elderly (60 years old and above) in Malaysia. In addition, elderly's perception of abuse and their reporting of abuse were explored. In this study, overall abuse was defined as any occurrence of neglect, financial abuse, psychological abuse, physical abuse or sexual abuse occurring among the elderly in the past 12 months. The instrument used for this purpose was adapted from the National Irish Prevalence Survey on elder abuse and neglect with permission[4] and previously validated for the Malaysian population.[5]

14.1.2 Findings

The overall prevalence of elder abuse in Malaysia was found to be 9.0% (95% CI: 6.93, 11.56). The prevalence in urban areas was 8.3% (95% CI: 5.87, 11.71) with 10.7% (95% CI: 7.76, 14.68) in rural areas. Almost similar prevalence of elder abuse was reported by males [9.9% (95% CI: 7.15, 13.44)] and females [8.1% (95% CI: 6.20, 10.48)]. Highest prevalence was found among those single (never married/ separated/ divorced/ widowed) [11.0% (95%CI: 8.22, 14.56)]. Abuse was lowest among those with tertiary education [6.1%, (95% CI: 3.43, 10.79)] and highest among those who were unemployed (unemployed/retiree/homemaker) [9.3% (95% CI: 7.09, 12.02)] (**Table 14.1.2.1**).

Among the various types of abuse, neglect was the most common [7.5%, (95% CI: 5.54, 10.07], followed by psychological abuse [0.8% (95% CI: 0.52, 1.35)] and financial abuse [0.7% (95% CI: 0.41, 1.31)] (Table 14.1.2.2). Majority (95.1%) who self-reported abuse in the past 12 months experienced one type of abuse. A small proportion of elderly (4.9%) experienced clustering of abuse, defined as the occurrence of more than one type of abuse (**Table 14.1.2.3**).

Approximately 28.5% did not report the abuse to anyone (**Table 14.1.2.2**). The major reasons for not reporting included not wanting to implicate their family members (56.7%) while others (24.8%) did not feel that they were abused or neglected (**Table 14.1.2.3**). When asked about their opinions toward the various specific abusive behaviours enquired during the interview, most elderly (>85%) perceived them as abusive (**Table 14.1.2.4**).

14.1.3 Conclusion

Elder abuse is not uncommon in the Malaysian population, with prevalence estimated at 9.0% (95% CI: 6.93, 11.56). Higher prevalence was found among those with higher monthly individual income, with no gender differences seen. Most elderly who were abused experienced one type of abuse, with neglect being the most common. One in four abused elderly do not report the abuse.

14.1.4 Recommendations

In order to protect the elder person from possible abuse or neglect whether intended or not, the following suggestions are proposed:

i. Create awareness on elder rights and abuse among the community and elderly themselves.
ii. Create awareness by training and sensitization on elder abuse issues for health personnel and caregivers.
iii. Strengthen interagency collaboration by providing elder friendly places (for recreation, work, social activities and income generating activities) and encourage community involvement.
iv. Develop respite care programs for caregivers through public-private partnerships.
v. Guidelines for detection and management for cases of elder abuse.
vi. Specific legal provisions for elderly such as an Elder Act.

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APPENDIX 9

TABLE OF FINDINGS

Table 4.1.2.1: Mean Quality of Life score among pre-elderly and elderly in Malaysia, 2018 [a]

Sociodemographic characteristics	Quality of Life (CASP-19 score range: 0 - 57)					
	Pre-elderly aged 50-59 years (N=3,045)			Elderly aged 60+ years (N=3,750)		
	Unweighted count	Estimated Population	Mean, 95% CI	Unweighted count	Estimated Population	Mean, 95% CI
Malaysia	**3,045**	**2,945,395**	**48.65 (47.99, 49.30)**	**3,750**	**3,040,197**	**46.76 (46.06, 47.45)**
Strata						
Urban	1,373	2,272,664	49.01 (48.20, 49.82)	1,590	2,216,120	47.24 (46.42, 48.07)
Rural	1,672	672,731	47.43 (46.60, 48.26)	2,160	824,076	45.44 (44.24, 46.64)
Sex						
Male	1,398	1,469,767	48.71 (47.98, 49.44)	1,772	1,491,601	47.08 (46.38, 47.78)
Female	1,647	1,475,628	48.59 (47.90, 49.28)	1,978	1,548,596	46.44 (45.66, 47.22)
Marital status						
Married	2,567	2,523,593	48.78 (48.11, 49.46)	2,510	2,093,288	47.47 (46.81, 48.13)
Never married / separated / divorced / widowed	477	420,659	47.83 (46.85, 48.81)	1,237	945,437	45.17 (44.23, 46.11)
Education level						
No formal education	216	135,304	44.91 (43.27, 46.56)	720	411,752	43.71 (42.87, 44.55)
Primary education	829	684,380	47.47 (46.55, 48.38)	1,828	1,320,779	45.63 (44.72, 46.54)
Secondary education	1,613	1,647,977	48.94 (48.22, 49.66)	945	1,005,475	48.36 (47.73, 48.99)
Tertiary education	387	477,734	50.39 (49.54, 51.25)	257	302,191	50.51 (49.76, 51.26)
Occupation						
Employed	1,794	1,786,244	49.20 (48.56, 49.85)	1,014	753,534	47.97 (47.09, 48.86)
Unemployed / retiree / homemaker	1,251	1,159,151	47.80 (46.99, 48.61)	2,736	2,286,663	46.35 (45.64, 47.06)
Individual monthly income (RM)						
< 1000	1,391	1,109,551	47.31 (46.62, 47.99)	2,360	1,727,041	45.38 (44.55, 46.21)
1000 - 1999	779	706,026	48.36 (47.53, 49.18	811	661,002	47.54 (46.70, 48.37)
≥ 2000	849	1,094,996	50.12 (49.31, 50.93)	548	616,348	49.73 (49.11, 50.36)

[a] *Possible total scores range from 0 to 57. Higher score, closer to 57 indicates better Quality of Life*

Table 4.1.2.2 : Quality of life, measured as mean CASP-19 by domains among pre-elderly and elderly in Malaysia, 2018

CASP-19: Quality of Life Domain	Range	Quality of Life by domains			
		Pre-elderly aged 50 to 59, N=3,045		Elderly aged 60 years and above, N=3,750	
		Unweighted count	Mean, 95% CI	Unweighted count	Mean, 95% CI
Control	0 - 12	3,045	9.89 (9.67, 10.12)	3,750	9.14 (8.91, 9.37)
Autonomy	0 - 15	3,045	12.79 (12.56, 13.02)	3,750	12.38 (12.17, 12.58)
Pleasure	0 - 15	3,045	13.43 (13.23, 13.63)	3,750	13.23 (12.99, 13.47)
Self-realization	0 - 15	3,045	12.54 (12.39, 12.69)	3,750	12.01 (11.85, 12.17)
Total scale CASP-19	0 - 57	3,045	48.65 (47.99, 49.30)	3,750	46.76 (46.06, 47.45)

Table 4.1.2.3: Prevalence of Quality of Life (Lowest tertile) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Quality of Life (Lowest tertile) [a]					
	Pre-elderly aged 50 to 59, N=1,020			Elderly aged 60 years and above, N=1,283		
	Unweighted count	Estimated Population	Mean, 95% CI	Unweighted count	Estimated Population	Mean, 95% CI
Malaysia	**1,020**	**832,350**	**28.3 (24.4, 32.5)**	**1,283**	**868,670**	**28.6 (25.0, 32.5)**
Strata						
Urban	396	586,131	25.8 (21.1, 31.1)	443	566,282	25.6 (21.3, 30.3)
Rural	624	246,219	36.6 (31.3, 42.3)	840	302,389	36.7 (30.6, 43.2)
Sex						
Male	470	401,554	27.3 (22.9, 32.3)	582	414,155	27.8 (24.0, 31.9)
Female	550	430,796	29.2 (24.8, 34.0)	701	454,516	29.4 (25.3, 33.7)
Marital status						
Married	841	702,648	27.8 (23.8, 32.3)	767	521,471	24.9 (21.4, 28.8)
Never married / separated / divorced / widowed	179	129,702	30.8 (25.1, 37.2)	515	346,923	36.7 (32.0, 41.7)
Education level						
No formal education	118	71,284	52.7 (43.4, 61.8)	380	205,233	49.8 (44.7, 55.0)
Primary education	326	242,928	35.5 (29.8, 41.6)	652	446,486	33.8 (29.0, 39.0)
Secondary education	485	431,135	26.2 (21.9, 31.0)	217	190,093	18.9 (15.8, 22.4)
Tertiary education	91	87,004	18.2 (12.8, 25.2)	34	26,858	8.9 (5.4, 14.3)
Occupation						
Employed	553	431,318	24.1 (20.3, 28.5)	282	172,675	22.9 (18.5, 28.1)
Unemployed / retiree / homemaker	467	401,032	34.6 (29.4, 40.2)	1,001	695,995	30.4 (26.7, 34.5)
Individual monthly income (RM)						
< 1000	566	412,094	37.1 (32.7, 41.8)	956	621,500	36.0 (31.8, 40.4)
1000 - 1999	260	213,025	30.2 (24.7, 36.2)	232	157,535	23.8 (19.0, 29.4)
≥ 2000	186	197,670	18.1 (13.8, 23.2)	84	78,585	12.8 (9.4, 17.0)

[a] *Note:*
1. Respondents in the lowest tertile group are classified as Perceived poor Quality of Life.
2. For the pre-elderly, cut-off for the lowest tertile = CASP-19 score ≤ 46.
3. For the elderly, cut-off for the lowest tertile = CASP-19 score ≤ 44.

Table 5.1.2.1: Prevalence of probable dementia among elderly in Malaysia, 2018 (N=3,774)

Sociodemographic characteristics	Probable Dementia		
	Unweighted count	Estimated population	Prevalence (%)*, 95% CI
Malaysia	**408**	**260,345**	**8.5 (6.97, 10.22)**
Strata			
Urban	110	153,007	6.8 (5.11, 9.00)
Rural	298	107,338	12.9 (10.50, 15.84)
Sex			
Male	166	107,771	7.1 (5.53, 9.14)
Female	242	152,574	9.7 (7.66, 12.30)
Marital status			
Married	185	115,250	5.4 (4.31, 6.87)
Never married / separated / divorced / widowed	223	145,095	15.1 (12.04, 18.71)
Education level			
No formal education	185	92,415	22.0 (17.36, 27.55)
Primary education	193	121,049	9.1 (7.06, 11.55)
Secondary education	28	44,610	4.4 (2.46, 7.64)
Tertiary education	2	2,271	0.8* (0.15, 3.59)
Occupation			
Employed	67	37,614	5.0 (3.40, 7.18)
Unemployed / retiree / homemaker	341	222,731	9.6 (7.90, 11.61)
Individual monthly income (RM)			
< 1000	324	206,188	11.8 (9.41, 14.69)
1000 - 1999	62	35,516	5.4 (3.77, 7.55)
≥ 2000	16	15,469	2.4* (1.06, 5.53)

**Prevalence should be interpreted with caution due to high relative standard error*

Table 5.2.2.1: Prevalence of depression among elderly in Malaysia, 2018 (N=3,772)

Sociodemographic characteristics	Depressive symptoms (score 6 and more)			Probable/suspected Major Depression (score 8 and more)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**485**	**346,126**	**11.2 (9.37, 13.40)**	**217**	**162,524**	**5.3 (4.05, 6.83)**
Strata						
Urban	164	226,563	10.1 (7.79, 12.88)	73	108,504	4.8 (3.30, 6.96)
Rural	321	119,563	14.4 (12.04, 17.22)	144	54,020	6.5 (5.17, 8.21)
Sex						
Male	229	162,795	10.7 (8.86, 12.96)	113	84,904	5.6 (4.32, 7.24)
Female	256	183,331	11.7 (9.39, 14.50)	104	77,620	5.0 (3.56, 6.86)
Marital status						
Married	262	182,800	8.6 (7.14, 10.40)	118	89,104	4.2 (3.28, 5.38)
Never married / separated / divorced / widowed	223	163,326	17.0 (13.48, 21.11)	99	73,420	7.6 (5.28, 10.89)
Education level						
No formal education	156	86,895	20.6 (16.78, 25.13)	69	36,371	8.6 (6.23, 11.87)
Primary education	245	170,253	12.7 (10.61, 15.23)	110	84,949	6.4 (4.74, 8.47)
Secondary education	71	76,816	7.5 (5.27, 10.55)	32	34,521	3.4 (2.11, 5.34)
Tertiary education	13	12,162	4.0* (2.05, 7.81)	6	6,683	2.2* (0.84, 5.74)
Occupation						
Employed	90	51,265	6.8 (4.90, 9.28)	41	23,810	3.1 (2.06, 4.78)
Unemployed / retiree / homemaker	395	294,861	12.7 (10.58, 15.13)	176	138,713	6.0 (4.49, 7.88)
Individual monthly income (RM)						
< 1000	380	255,540	14.6 (12.14, 17.43)	176	126,472	7.2 (5.66, 9.18)
1000 - 1999	76	62,400	9.4 (6.43, 13.59)	27	19,596	3.0 (1.72, 5.03)
≥ 2000	27	26,541	4.2 (2.38, 7.31)	14	16,456	2.6* (1.18, 5.63)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 6.1.2.1: Prevalence of functional limitation in Activities of Daily Living (ADL) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Functional limitation in ADL[a]					
	Pre-elderly aged 50-59 years (N = 3,133)			Elderly aged 60+ years (N=3,965)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**124**	**115,195**	**3.8 (3.04, 4.74)**	**683**	**547,881**	**17.0 (14.99, 19.23)**
Strata						
Urban	56	89,653	3.8 (2.93, 4.99)	274	392,734	16.7 (14.08, 19.63)
Rural	68	25,542	3.7 (2.60, 5.25)	409	155,146	17.9 (15.00, 20.36)
Sex						
Male	50	50,068	3.3 (2.32, 4.57)	253	199,922	12.7 (10.82, 14.78)
Female	74	65,127	4.3 (3.19, 5.89)	430	3,479,958	21.2 (18.16, 24.52)
Marital status						
Married	39	31,540	7.3 (4.81,10.63)	339	263,270	25.5 (22.29,20.09)
Never married / separated / divorced / widowed	85	83,655	3.2 (2.53,4.11)	342	283,848	12.96 (11.08,15.11)
Education level						
No formal education	16	11,863	8.4* (4.53, 15.18)	228	138,151	29.5 (24.22, 35.34)
Primary education	46	41,628	5.9 (4.20, 8.16)	329	264,879	18.9 (15.92, 22.25)
Secondary education	56	54,592	3.2 (2.39, 4.38)	109	127,834	12.3 (9.65, 15.60)
Tertiary education	6	7,112	1.4* (0.55, 3.66)	17	17,017	5.5 (3.33, 8.86)
Occupation						
Employed	36	34,773	1.9 (1.26,2.83)	58	41,851	5.4 (3.77,7.55)
Unemployed / retiree / homemaker	88	80,421	6.8 (5.09,8.94)	625	506,029	20.7 (18.23,23.48)
Individual monthly income (RM)						
< 1000	90	75,217	6.6 (4.93,8.83)	512	375,275	20.3 (17.61,23.33)
1000 - 1999	20	19,547	2.7 (1.53,4.68)	119	104,737	15.4 (11.92,19.59)
≥ 2000	14	20,430	1.8 (1.03,3.17)	45	58,122	9.0 (6.53,12.39)

** Prevalence should be interpreted with caution due to high relative standard error*

[a] Total Score for Barthel Index is 20

Table 6.2.2.1.1: Prevalence of dependency in Instrumental Activities of Daily Living (IADL) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Dependency in IADL					
	Pre-elderly aged 50-59 years (N = 3,134)			Elderly aged 60+ years (N = 3,967)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**707**	**647,066**	**21.3 (18.84,24,09)**	**1,925**	**1,384,111**	**42.9 (39.91,45.98)**
Strata						
Urban	284	477,260	20.4 (17.38,23.78)	675	913,550	38.73 (35.03,42.56)
Rural	423	169,806	24.6 (21.09,28.48)	1,250	470,561	54.32 (50.92,57.69)
Sex						
Male	312	325,257	21.2 (17.98,24.72)	745	571,838	36.2 (33.23,39.29)
Female	395	321,809	21.6 (18.69,24.71)	1,180	812,273	49.4 (45.31,53.43)
Marital status						
Married	135	110,072	25.3 (20.47,30.87)	868	607,080	58.8 (54.91,62.57)
Never married / separated / divorced / widowed	572	536,994	20.7 (18.09,23.57)	1,055	776,046	35.4 (32.64,38.31)
Education level						
No formal education	84	57,916	41.1 (32.83,49.92)	583	325,182	69.4 (63.98,74.26)
Primary education	243	188,076	26.6 (22.22,31.39)	998	694,227	49.4 (45.81,53.07)
Secondary education	343	357,498	21.2 (18.35,24.34)	290	305,395	29.3 (25.73,33.25)
Tertiary education	37	43,576	8.8 (5.73,13.32)	54	59,307	19.1 (13.86,25.62)
Occupation						
Employed	343	331,723	18.0 (15.20,21.22)	336	209,279	26.7 (22.94,30.90)
Unemployed / retiree / homemaker	364	315,343	26.5 (23.18,30.14)	1,589	1,174,832	48.1 (44.54,51.70)
Individual monthly income (RM)						
< 1000	408	314,547	27.6 (23.98,31.60)	1,432	982,864	53.2 (49.89,56.50)
1000 - 1999	166	147,264	20.2 (16.79,24.19)	329	226,985	33.3 (28.33,38.63)
≥ 2000	129	180,146	16.0 (12.50,20.26)	145	157,120	24.4 (19.73,29.67)

Table 6.2.2.2.1: Dependency of elderly on others at health care facilities among pre-elderly in Malaysia, 2018 (N=95)

Sociodemographic characteristics	Dependency in IADL								
	Clinic area			Toilet area			Car park area		
	Unweighted count	Estimated population	Prevalence (%), 95% CI	Unweighted count	Estimated population	Prevalence (%), 95% CI	Unweighted count	Estimated population	Prevalence (%), 95% CI
Malaysia	**95**	**89,902**	**3.0 (2.13, 4.10)**	**83**	**75,158**	**2.5 (1.72, 3.54)**	**94**	**84,819**	**2.8 (2.00, 3.88)**
Strata									
Urban	44	69,430	3.0 (1.96, 4.44)	36	56,712	2.4 (1.53, 3.80)	39	60,812	2.6 (1.67, 3.99)
Rural	51	20,472	3.0 (2.03, 4.30)	47	18,446	2.7 (1.73, 4.08)	55	24,007	3.5 (2.35, 5.11)

Table 6.2.2.2.2: Dependency of elderly on others at health care facilities among elderly in Malaysia, 2018 (N=481)

Sociodemographic characteristics	Dependency in IADL								
	Clinic area			Toilet area			Car park area		
	Unweighted count	Estimated population	Prevalence (%), 95% CI	Unweighted count	Estimated population	Prevalence (%), 95% CI	Unweighted count	Estimated population	Prevalence (%), 95% CI
Malaysia	**481**	**377,187**	**11.7 (9.37, 14.46)**	**459**	**359,097**	**11.1 (8.88, 13.83)**	**513**	**400,178**	**12.4 (9.99, 15.26)**
Strata									
Urban	181	266,726	11.3 (8.33, 15.13)	170	253,043	10.7 (7.83, 14.49)	185	275,192	11.7 (8.64, 15.53)
Rural	300	110,461	12.7 (10.70, 15.06)	289	106,054	12.2 (10.44, 14.24)	328	124,986	14.4 (11.64, 17.67)

Table 6.3.2.1: Prevalence of falls among pre-elderly and elderly in the past 12 months in Malaysia, 2018

Sociodemographic characteristics	Falls within past 12 months					
	Pre elderly aged 50-59 (N=3,139)			Elderly aged 60+ years (N=3,969)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	283	267,129	8.8 (7.55, 10.22)	560	453,675	14.1 (12.47, 15.83)
Strata						
Urban	124	197,591	8.4 (6.98, 10.13)	247	332,925	14.1 (12.09, 16.42)
Rural	159	69,539	10.1 (7.84, 12.81)	313	120,750	13.9 (11.95, 16.19)
Sex						
Male	113	117,970	7.7 (5.99, 9.77)	252	211,131	13.4 (11.52, 15.46)
Female	170	149,159	9.9 (8.25, 11.95)	307	242,544	14.7 (12.73, 16.99)
Marital status						
Married	49	8,538	20.4* (10.06,37.07)	196	140,947	13.7 (11.16,16.60)
Never married / separated / divorced / widowed	69	42,460	18.8 (13.62,25.48)	363	312,019	14.2 (12.50,16.17)
Education level						
No formal education	25	17,193	12.2 (7.43, 19.40)	131	75,933	16.2 (12.66, 20.49)
Primary education	97	74,625	10.5 (8.24, 13.37)	280	208,197	14.8 (12.63, 17.33)
Secondary education	129	136,572	8.1 (6.60, 9.85)	111	123,898	11.9 (9.61, 14.67)
Tertiary education	32	38,740	7.8 (5.20, 11.55)	38	45,647	14.7 (10.88, 19.47)
Occupation						
Employed	34	27,893	18.5 (12.06,27.36)	122	89,858	11.5 (9.17,14.28)
Unemployed / retiree / homemaker	30	23,105	19.8 (13.15,28.79)	438	363,817	14.9 (13.06,16.94)
Individual monthly income (RM)						
< 1000	157	122,511	10.8 (8.43,13.62)	374	280,058	15.2 (13.27,17.26)
1000 - 1999	63	66,251	9.1 (6.83,12.03)	122	103,582	15.2 (12.24,18.69)
≥ 2000	62	77,515	6.8 (5.08,9.16)	59	66,146	10.3 (7.51,13.85)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 6.3.2.1.1: Fall characteristics among pre-elderly and elderly with history of a fall in the past 12 months in Malaysia, 2018

Sociodemographic characteristics	Falls within past 12 months			
	Pre-elderly aged 50-59 (N=283)		Elderly aged 60+ years (N=560)	
	Unweighted count	Mean, 95% CI	Unweighted count	Mean, 95% CI
Frequency of falls				
1	219	80.9	398	72.5
≥ 2	64	19.1	161	27.5
Types of injury				
Uninjured	121	40.3	195	36.5
Minor injury	112	40.5	262	45.1
Severe injury	49	19.2	101	18.4
Medical treatment				
Outpatient	64	39.8	146	40.4
Hospitalised	17	13.0	58	16.0
Self-treated	80	47.1	160	43.6
Place of last fall				
Indoors	80	30.2	178	33.9
Outside the house	31	7.9	90	15.1
Outdoors	145	51.9	246	43.9
In the bathroom / toilet	27	9.9	46	7.1

Table 7.1.2.1: Prevalence of stress and urge urinary incontinence among elderly aged 60 years and above in Malaysia, 2018

Sociodemographic characteristics	Stress urinary incontinence (N=3,716)			Urge urinary incontinence (N=3,716)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**121**	**87,055**	**2.9 (2.33, 3.65)**	**122**	**102,822**	**3.4 (2.18, 5.29)**
Strata						
Urban	44	57,956	2.7 (1.97, 3.64)	43	71,085	3.3* (1.73, 6.16)
Rural	77	29,099	3.5 (2.74, 4.56)	79	31,756	3.9 (2.78, 5.33)
Sex						
Male	29	19,953	1.4 (0.89, 2.07)	51	40,688	2.8 (1.84, 4.12)
Female	92	67,101	4.4 (3.42, 5.73)	71	62,174	4.1* (2.04, 8.08)
Marital status						
Married	60	44,413	2.2 (1,58,2.93)	63	59,778	2.9 (1.82,4.56)
Never married / separated / divorced / widowed	61	42,642	4.7 (3.20,6.70)	59	43,044	4.7 (2.72,7.97)
Education level						
No formal education	39	20,059	4.9 (3.25, 7.42)	36	17,913	4.4 (2.96, 6.52)
Primary education	62	44,183	3.4 (2.50, 4.69)	64	60,132	4.7* (2.29, 9.26)
Secondary education	19	21,602	2.2 (1.39, 3.42)	18	28,192	2.2 (1.23, 3.92)
Tertiary education	1	1,141	0.4* (0.05, 2.79)	4	2,886	1.0* (0.32, 2.88)
Occupation						
Employed	15	8,724	1.2* (0.62,2.21)	16	9,448	1.3* (0.67,2.39)
Unemployed / retiree / homemaker	106	78,331	3.5 (2.76,4.42)	106	93,374	4.2* (2.53,6.79)
Individual monthly income (RM)						
< 1000	96	62,291	3.7 (2.80, 4.84)	95	75,249	4.5 (2.48, 7.88)
1000 - 1999	16	16,401	2.5 (1.43, 4.44)	15	13,875	2.1* (1.16, 3.93)
≥ 2000	9	8,362	1.3* (0.57, 2.91)	12	13,697	2.1* (0.92, 4.76)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 7.1.2.2: Positive Responses of urinary incontinence for each question among elderly in Malaysia, 2018

Questionnaire	Count	Percentage (%)
Leak urine during cough or sneeze	756	19.3
Leak urine when bend over of lifting something up	216	5.2
Leak urine when walk quickly,jog or exercise	137	3.0
Leak urine during undressing to use the toilet	291	6.8
Leak urine before reaching the toilet when getting such a strong and uncomfortable need to urinate	520	12.5
Leak urine when rushing to toilet as one experiences sudden, strong need to urinate	596	14.8

Table 8.1.2.1: Prevalence of vision disability among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Vision disability[a]					
	Pre-elderly aged 50-59 years (N=3,140)			Elderly aged 60+ years (N=3,968)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**61**	**2,984,424**	**1.8 (1.18,2.67)**	**214**	**3,079,051**	**4.5 (3.45,5.90)**
Strata						
Urban	24	37,547	1.6 (0.92,2.76)	72	89,857	3.8 (2.57,5.62)
Rural	37	16,494	2.4 (1.49,3.80	142	55,869	6.5 (4.80,8.61)
Sex						
Male	27	29,621	1.9 (1.07,3.43)	96	69,651	4.4 (3.11,6.22)
Female	34	24,419	1.6 (1.06,2.50)	118	76,075	4.6 (3.35,6.35)
Marital status						
Married	51	49,408	1.9 (1.23,2.91)	118	85,908	3.9 (2.88,5.32)
Never married / separated / divorced / widowed	10	4,633	1.1* (0.49,2.31)	96	59,818	5.8 (4.14,8.06)
Education level						
No formal education	12	5,520	3.9* (1.79,8.35)	73	44,015	9.4 (6.84,12.71)
Primary education	25	19,416	2.7 (1.53,4.85)	115	74,815	5.3 (3.97,7.13)
Secondary education	22	27,435	1.6 (0.92,2.84)	22	23,440	2.3* (1.09,4.59)
Tertiary education	2	1,670	0.3* (0.08,1.45)	4	3,456	1.1* (0.37,3.32)
Occupation						
Employed	38	35,521	1.9 (1.13,3.24)	26	13,326	1.7 (0.96,3.02)
Unemployed / retiree / homemaker	23	18,519	1.6 (0.91,2.66)	188	132,399	5.4 (4.15,7.05)
Individual monthly income (RM)						
< 1000	31	18,227	1.6 (1.02,2.50)	155	106,480	5.8 (4.33,7.63)
1000 - 1999	15	15,334	2.1* (1.12,3.92)	43	25,260	3.7 (2.42,5.62)
≥ 2000	13	18,725	1.7* (0.73,3.69)	12	11294	1.8* (0.58,5.18)

** Prevalence should be interpreted with caution due to high relative standard error.*

[a] Includes a lot of difficulty and cannot at all

Table 8.2.2.1.1: Prevalence of using hearing aid among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Pre-elderly aged 50-59 years (N=3,130)			Elderly aged 60+ years (N=3,961)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**7**	**5,298**	**0.2* (0.07,0.41)**	**38**	**48,685**	**1.5 (0.90,2.53)**
Strata						
Urban	3	3,752	0.2* (0.05,0.50)	25	44,213	1.9 (1.07,3.29)
Rural	4	1,546	0.2* (0.08,0.60)	13	4,471	0.5* (0.24,1.12)
Sex						
Male	3	2,954	0.2* (0.06,0.67)	14	16,658	1.1 (0.61,1.84)
Female	4	2,344	0.2* (0.05,0.49)	24	32,027	1.9* (0.92,4.08)
Marital status						
Married	6	4,707	0.2* (0.07,0.46)	21	23,901	1.1 (0.67,1.78)
Never married / separated / divorced / widowed	1	591	0.1* (0.02,0.97)	17	24,784	2.4* (0.97,5.83)
Education level						
No formal education	2	1,488	1.1* (0.21,5.07)	8	4,397	0.9* (0.35,2.52)
Primary education	2	1,954	0.3* (0.06,1.21)	14	14,885	1.1* (0.56,2.00)
Secondary education	2	1,593	0.1* (0.02,0.47)	14	26,182	2.5* (1.07,5.82)
Tertiary education	1	264	0.1* (0.01,0.39)	2	3,221	1.0* (0.28,3.81)
Occupation						
Employed	5	3,808	0.2 * (0.07,0.57)	5	5,808	0.7* (0.25,2.16)
Unemployed / retiree / homemaker	2	1,490	0.1* (0.03,0.62)	33	42,877	1.8 (0.98,3.13)
Individual monthly income (RM)						
< 1000	3	3,097	0.3* (0.08,0.89)	21	29,338	1.6* (0.71,3.53)
1000 - 1999	4	2,201	0.3* (0.09,1.03)	8	10,158	1.5* (0.54,4.04)
≥ 2000	0	-	-	8	9,048	1.4* (0.68,2.91)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 8.2.2.2.1: Prevalence of hearing disability among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Hearing disability[a]					
	Pre-elderly aged 50-59 years (N=3136)			Elderly aged 60+ years (N=3965)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**37**	**3,007,124**	**0.9 (0.55,1.33)**	**235**	**3,015,629**	**6.4 (5.00,8.26)**
Strata						
Urban	9	14,563	0.6* (0.32,1.20)	83	147,213	6.2 (4.45,8.70)
Rural	28	11,451	1.7 (0.99,2.77)	152	60,399	7.0 (5.32,9.09)
Sex						
Male	21	15,173	1.0 (0.55,1.76)	126	99,045	6.3 (4.91,7.98)
Female	16	10,841	0.7* (0.38,1.37)	109	108,568	6.6 (4.23,10.17)
Marital status						
Married	28	21,121	0.8 (0.50,1.33)	137	125,070	5.7 (4.47,7.27)
Never married / separated / divorced / widowed	9	4,894	1.1* (0.52,2.43)	98	82,543	8.0 (5.46,11.58)
Education level						
No formal education	8	3,143	2.2* (0.98,4.99)	84	52,932	11.3 (8.38,15.04)
Primary education	19	14,836	2.1 (1.17,3.73)	117	100,446	7.2 (4.67,10.83)
Secondary education	9	6,789	0.4* (0.16,1.03)	32	49,841	4.8 (3.00,7.56)
Tertiary education	1	1,246	0.3* (0.03,1.80)	2	4,394	1.4* (0.34,5.66)
Occupation						
Employed	25	17,129	0.9 (0.55,1.56)	34	22,625	2.9 (1.66,4.98)
Unemployed / retiree / homemaker	12	8,886	0.7* (0.34,1.64)	201	184,988	7.6 (5.79,9.88)
Individual monthly income (RM)						
< 1000	23	14,181	1.2 (0.72,2.16)	169	152,995	8.3 (5.95,11.44)
1000 - 1999	10	8,661	1.2* (0.53,2.67)	43	34,299	5.0 (3.50,7.16)
≥ 2000	3	2,506	0.2* (0.05,1.04)	17	15,778	2.4 (1.44,4.13)

** Prevalence should be interpreted with caution due to high relative standard error.*

[a] Includes a lot of difficulty and cannot at all

Table 9.1.2.1.1: Prevalence of being physically active among pre-elderly and elderly by sociodemographic characteristics in Malaysia, 2018

Sociodemographic characteristics	Physically active[a]					
	Pre-elderly aged 50-59 years (N=3,139)			Elderly aged 60+ years (N=3,977)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**2,599**	**2,531,740**	**83.3 (80.30, 85.99)**	**2,671**	**2,263,127**	**70.2 (66.89, 73.24)**
Strata						
Urban	1,173	1,968,457	83.9 (80.11, 87.04)	1,211	1,718,427	72.9 (68.76, 76.59)
Rural	1,426	563,282	81.5 (77.21, 85.17)	1,460	544,700	62.8 (57.79, 67.63)
Sex						
Male	1,168	1,233,808	80.2 (76.45, 83.55)	1,254	1,087,838	68.8 (65.26, 72.21)
Female	1,431	1,297,932	86.5 (83.10, 89.34)	1,417	1,175,288	71.4 (67.44, 75.13)
Marital status						
Married	2,197	2,170,233	83.4 (80.29, 86.12)	1,887	1,626,055	74.2 (71.07, 77.11)
Never married / separated / divorced / widowed	401	360,364	82.9 (77.33, 87.29)	781	635,600	61.5 (56.00, 66.81)
Education level						
No formal education	188	119,751	85.0 (78.04, 90.03)	420	244,238	52.0 (47.00, 56.96)
Primary education	723	585,537	82.7 (77.40, 86.92)	1,300	943,140	67.2 (63.02, 71.09)
Secondary education	1,367	1,412,459	83.5 (79.98, 86.51)	761	847,385	81.4 (77.16, 85.06)
Tertiary education	321	413,993	83.3 (77.63, 87.68)	190	228,365	73.3 (65.65, 79.84)
Occupation						
Employed	1,545	1,552,961	84.1 (80.32, 87.21)	839	638,447	81.5 (77.54, 84.93)
Unemployed / retiree / homemaker	1,054	978,778	82.2 (78.76, 85.20)	1,822	1,624,680	66.5 (62.58, 70.25)
Individual monthly income (RM)						
< 1000	1,174	927,674	81.5 (77.73, 84.75)	1,589	1,192,627	64.6 (60.66, 68.29)
1000 - 1999	685	631,924	86.8 (82.44, 90.25)	613	513,855	75.3 (70.69, 79.36)
≥ 2000	711	935,602	82.6 (77.85, 86.51)	442	523,444	81.1 (77.24, 84.51)

[a] *Is defined as doing at least*

i) 30 minutes of moderate-intensity activity or walking per day on at least 5 days per week; or

ii) 20 minutes of vigorous-intensity activity per day on at least 3 days per week; or

iii) 5 days of any combination of walking and moderate- or vigorous-intensity activities achieving a minimum of at least 600 MET-minutes per week.

Table 9.1.2.2.1: Prevalence of being physically active among pre-elderly and elderly by domains in Malaysia, 2018

Physical activity domains	Pre-elderly aged 50-59 years (N=3139)			Elderly aged 60+ years (N=3977)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Overall	2,599	2,531,740	83.3 (80.30, 85.99)	2,671	2,263,127	70.2 (66.89, 73.24)
Work-related domain	2,245	2,177,234	71.7 (67.95, 75.11)	2,116	1,754,822	54.3 (51.20, 57.41)
Travel-related domain	541	528,848	17.4 (15.41, 19.60)	573	491,596	15.2 (13.38, 17.25)
Leisure time domain	427	474,220	15.6 (13.30, 18.24)	464	442,722	13.7 (11.80, 15.88)

Table 9.1.2.3.1: Prevalence of high level of sedentary behaviour (≥8 hours of total sedentary time/day) among pre-elderly and elderly by sociodemographic characteristics in Malaysia, 2018

Sociodemographic characteristics	High level of sedentary behaviour (≥8 hours of total sedentary time/day) [a]					
	Pre-elderly aged 50-59 years (N=3,139)			Elderly aged 60+ years (N=3,977)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**550**	**527,773**	**17.4 (12.45, 23.82)**	**959**	**745,306**	**23.2 (17.61, 29.97)**
Strata						
Urban	238	406,043	17.3 (11.40, 25.48)	417	540,310	23.0 (16.11, 31.83)
Rural	312	121,730	17.7 (11.45, 26.28)	542	204,995	23.7 (16.34, 33.11)
Sex						
Male	253	279,698	18.2 (12.82, 25.29)	453	359,224	22.9 (17.11, 29.85)
Female	297	248,075	16.6 (11.68, 22.97)	506	386,082	23.6 (17.74, 30.60)
Marital status						
Married	448	449,015	17.3 (12.20, 23.95)	587	487,493	22.4 (16.61, 29.43)
Never married / separated / divorced / widowed	102	78,758	18.2 (12.31, 25.97)	372	257,813	25.1 (18.98, 32.30)
Education level						
No formal education	50	22,953	16.3 (9.60, 26.29)	264	147,445	31.6 (25.02, 38.99)
Primary education	164	135,321	19.1 (13.41, 26.55)	426	309,344	22.2 (16.37, 29.27)
Secondary education	266	285,514	16.9 (11.21, 24.78)	218	226,135	21.8 (14.94, 30.72)
Tertiary education	70	83,985	16.9 (9.86, 27.40)	51	62,381	20.1 (12.15, 31.47)
Occupation						
Employed	284	297,176	16.1 (11.34, 22.40)	181	132,686	17.0 (12.09, 23.30)
Unemployed / retiree / homemaker	266	230,597	19.4 (13.59, 27.00)	778	612,619	25.2 (19.26, 32.33)
Individual monthly income (RM)						
< 1000	314	240,675	21.2 (15.20, 28.68)	701	488,935	26.6 (20.64, 33.60)
1000 - 1999	105	107,381	14.8 (9.43, 22.50)	133	111,994	16.5 (11.16, 23.60)
≥ 2000	127	171,820	15.2 (9.94, 22.59)	113	132,484	20.5 (13.17, 30.57)

** Prevalence should be interpreted with caution due to high relative standard error.*

[a] Includes a lot of difficulty and cannot at all

Table 9.1.2.4.1: Prevalence of high level of sedentary behaviour (≥8 hours of total sedentary time/day) among pre-elderly and elderly by physical activity status and sociodemographic characteristics in Malaysia, 2018

Sociodemographic characteristics	High level of sedentary behaviour (≥8 hours of total sedentary time/day)											
	Pre-elderly aged 50-59 years (N=3,139)						Elderly aged 60+ years (N=3,977)					
	Active			Inactive			Active			Inactive		
	Unweighted count	Est. pop.	Prevalence (%), 95% CI	Unweighted count	Est. pop.	Prevalence (%), 95% CI	Unweighted count	Est. pop.	Prevalence (%), 95% CI	Unweighted count	Est. pop.	Prevalence (%), 95% CI
Malaysia	**430**	**417,544**	**16.5 (11.41, 23.33)**	**120**	**110,229**	**21.9 (15.12, 30.61)**	**536**	**440,971**	**19.5 (13.89, 26.72)**	**423**	**304,335**	**32.0 (24.55, 40.57)**
Strata												
Urban	197	336,461	17.1 (10.95, 25.75)	41	69,582	18.5 (11.43, 28.48)	256	344,870	20.1 (13.29, 29.24)	161	195,441	31.0 (21.48, 42.50)
Rural	233	81,083	14.4 (8.77, 22.84)	79	40,647	32.0 (19.12, 48.45)	280	96,101	17.7 (10.55, 28.07)	262	108,894	34.0 (23.80, 46.00)
Sex												
Male	179	201,663	16.4 (10.79, 24.12)	74	78,035	25.7 (17.38, 36.37)	235	199,937	18.4 (12.74, 25.77)	218	159,287	32.9 (25.11, 41.85)
Female	251	215,881	16.6 (11.52, 23.45)	46	32,194	16.1 (9.77, 25.29)	301	241,034	20.6 (14.49, 28.38)	205	145,048	31.1 (23.00, 40.53)
Marital status												
Married	359	359,467	16.6 (11.28, 23.73)	89	89,547	20.9 (14.14, 29.70)	352	31,052	19.1 (13.37, 26.63)	235	176,981	31.8 (23.81, 41.09)
Never married / separated / divorced / widowed	71	58,077	16.2 (10.58, 23.91)	31	20,681	27.8 (16.16, 43.43)	184	130,459	20.5 (14.27, 28.66)	188	127,353	32.3 (23.77, 42.24)
Education level												
No formal education	39	16,344	13.6 (7.71, 23.01)	11	6,609	31.3* (13.08, 57.91)	106	54,970	22.5 (16.28, 30.26)	158	92,475	41.6 (31.71, 52.14)
Primary education	113	92,932	15.9 (10.61, 23.10)	51	42,389	34.7 (21.94, 50.10)	233	174,308	18.5 (12.64, 26.35)	193	135,036	29.6 (21.44, 39.41)
Secondary education	220	237,442	16.9 (10.74, 25.47)	46	48,071	17.4 (11.20, 25.93)	167	176,246	20.8 (13.91, 29.91)	51	49,889	26.4 (16.78, 38.92)

Sociodemographic characteristics	High level of sedentary behaviour (≥8 hours of total sedentary time/day)											
	Pre-elderly aged 50-59 years (N=3,139)						Elderly aged 60+ years (N=3,977)					
	Active			Inactive			Active			Inactive		
	Unweighted count	Est. pop.	Prevalence (%), 95% CI	Unweighted count	Est. pop.	Prevalence (%), 95% CI	Unweighted count	Est. pop.	Prevalence (%), 95% CI	Unweighted count	Est. pop.	Prevalence (%), 95% CI
Tertiary education	58	70,827	17.1 (9.88, 27.99)	12	13,158	15.8* (7.35, 30.75)	30	35,447	15.6 (9.33, 24.99)	21	26,934	32.4 (16.61, 53.67)
Occupation												
Employed	229	243,763	15.7 (10.62, 22.62)	55	53,413	18.3 (11.88, 27.12)	127	89,986	14.1 (9.68, 20.16)	54	42,700	29.5 (18.71, 43.21)
Unemployed / retiree / homemaker	201	173,781	17.8 (12.01, 25.62)	65	56,816	26.9 (17.22, 39.33)	409	350,984	21.6 (15.29, 29.70)	369	261,635	32.5 (24.86, 41.17)
Individual monthly income (RM)												
< 1000	237	175,582	18.9 (13.12, 26.58)	77	65,093	30.9 (20.18, 44.15)	364	261,205	22.0 (15.65, 29.89)	337	227,731	35.2 (27.29, 44.09)
1000 - 1999	88	91,216	14.4 (8.77, 22.87)	17	16,165	17.3* (8.68, 31.41)	83	72,183	14.0 (8.86, 21.55)	50	39,811	23.9 (15.25, 35.37)
≥ 2000	101	142,849	15.3 (9.68, 23.38)	26	28,971	14.7 (8.76, 23.73)	83	100,176	19.1 (12.39, 28.37)	30	32,308	26.6 (14.82, 42.92)

Table 10.1.2.1.1: Prevalence of Oral Health Related Quality of Life (OHRQoL) among elderly in Malaysia, 2018, (N=3,865)[a]

Sociodemographic characteristics	Total Estimated Population	Good OHRQoL			Fair OHRQoL			Poor OHRQoL		
		Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**3,148,457**	**1,455**	**1,283,959**	**40.8 (36.72, 44.97)**	**975**	**792,619**	**25.2 (22.79, 27.72)**	**1,435**	**1,071,879**	**34.0 (30.25, 38.06)**
Strata										
Urban	2,311,402	719	999,953	43.3 (37.95, 48.73)	394	569,687	24.6 (21.62, 27.94)	533	741,762	32.1 (27.26, 37.34)
Rural	837,055	736	284,006	33.9 (29.94, 38.16)	581	222,932	26.6 (23.55, 29.96)	902	330,117	39.4 (35.15, 43.89)
Sex										
Male	1,540,819	677	637,863	41.4 (36.90, 46.09)	459	380,727	24.7 (21.87, 27.78)	681	522,229	33.9 (29.92, 38.11)
Female	1,607,638	778	646,096	40.2 (35.85, 44.68)	516	411,892	25.6 (22.90, 28.55)	754	549,650	34.2 (29.83, 38.84)
Marital status										
Married	762,895	246	229,695	30.1 (23.74, 37.34)	215	181,213	23.8 (19.85, 28.16)	447	351,987	46.1 (39.60, 52.82)
Never married / separated / divorced / widowed	2,383,207	1,208	1,053,123	44.2 (39.65, 48.85)	760	611,406	25.7 (22.78, 28.75)	987	718,678	30.2 (26.08, 34.57)
Education level										
No formal education	450,405	237	143,227	31.8 (26.35, 37.80)	187	111,486	24.8 (21.02, 28.90)	348	195,692	43.4 (37.93, 49.13)
Primary education	1,367,972	664	511,825	37.4 (32.78, 42.49)	488	360,164	26.3 (23.23, 29.68)	731	495,983	36.3 (32.28, 40.43)
Secondary education	1,024,601	430	478,832	46.7 (40.95, 52.61)	226	237,688	23.2 (19.83, 26.95)	294	308,081	30.1 (23.88, 37.08)
Tertiary education	305,479	124	150,075	49.1 (41.18, 57.12)	74	83,281	27.3 (21.13, 34.40)	62	72,123	23.6 (17.31, 31.33)

Sociodemographic characteristics	Total Estimated Population	Good OHRQoL			Fair OHRQoL			Poor OHRQoL		
		Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Occupation										
Employed	766,424	402	342,601	44.7 (38.76, 50.79)	256	197,657	25.8 (21.84, 30.18)	365	226,166	29.5 (24.76, 34.75)
Unemployed / retiree / homemaker	2,385,310	1,053	941,358	39.5 (35.51, 43.56)	719	598,239	25.1 (22.54, 27.81)	1,070	845,713	35.5 (31.26, 39.89)
Individual monthly income (RM)										
< 1000	1,798,259	869	677,678	37.7 (33.35, 42.23)	612	462,097	25.7 (22.94, 28.66)	962	658,484	36.6 (32.50, 40.94)
1000 - 1999	670,833	300	268,966	40.1 (34.13, 46.36)	226	174,029	25.9 (22.37, 29.87)	300	227,838	34.0 (27.95, 40.54)
≥ 2000	639,011	274	321,673	50.3 (44.19, 56.48)	130	150,008	23.5 (18.91, 28.75)	156	167,330	26.2 (20.93, 32.22)

[a] Good OHRQOL defined as individual scoring 57 point and above; Fair OHRQOL defined as individual scoring 51 to 56 points; Poor OHRQOL defined as individual scoring 50 points and below.

Table 10.1.2.2.1: Prevalence of self-rated general health among elderly in Malaysia, 2018 (N=3,926)

Sociodemographic characteristics	Healthy general health		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**2,488**	**2,145,065**	**67.4 (63.32, 71.17)**
Strata			
Urban	1,121	1,607,359	69.2 (63.97, 73.89)
Rural	1,367	537,707	62.5 (57.02, 67.75)
Sex			
Male	1,168	1,068,443	68.8 (64.90, 72.39)
Female	1,320	1,076,622	66.0 (60.95, 70.77)
Marital status			
Married	562	499,927	63.0 (55.93, 69.63)
Never married / separated / divorced / widowed	1,925	1,643,997	68.8 (63.98, 73.28)
Education level			
No formal education	436	265,764	57.2 (51.83, 62.41)
Primary education	1,183	878,180	63.3 (57.87, 68.45)
Secondary education	673	755,004	73.7 (67.72, 78.96)
Tertiary education	196	246,117	79.7 (72.06, 85.73)
Occupation			
Employed	711	570,157	73.1 (67.57, 77.94)
Unemployed / retiree / homemaker	1,781	1,577,055	65.5 (61.38, 69.36)
Individual monthly income (RM)			
< 1000	1,476	1,133,526	62.1 (57.29, 66.67)
1000 - 1999	556	472,637	69.9 (65.33, 74.15)
≥ 2000	425	503,446	79.1 (73.27, 84.00)

Table 10.1.2.3.1: Prevalence of self - rated oral health among elderly in Malaysia, 2018 (N=3,922)

Sociodemographic characteristics	Healthy oral health		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**2,618**	**2,268,030**	**71.2 (67.18, 74.85)**
Strata			
Urban	1,188	1,712,445	73.5 (68.40, 78.08)
Rural	1,430	555,584	64.8 (59.55, 69.67)
Sex			
Male	1,202	1,114,190	71.4 (67.27, 75.23)
Female	1,416	1,153,839	70.9 (65.88, 75.52)
Marital status			
Married	602	542,404	68.6 (60.73, 75.57)
Never married / separated / divorced / widowed	2,016	1,725,625	72.1 (67.42, 76.30)
Education level			
No formal education	475	286,493	61.9 (56.71, 66.74)
Primary education	1,237	926,639	67.0 (61.90, 71.66)
Secondary education	706	803,004	77.9 (71.99, 82.80)
Tertiary education	200	251,895	81.6 (72.98, 87.95)
Occupation			
Employed	710	579,763	74.3 (68.91, 79.03)
Unemployed / retiree / homemaker	1,908	1,690,413	70.1 (65.75, 74.13)
Individual monthly income (RM)			
< 1000	1,575	1,210,842	66.5 (61.66, 70.99)
1000 - 1999	563	484,694	71.6 (66.11, 76.48)
≥ 2000	452	541,138	84.3 (78.75, 88.62)

Table 10.1.2.4.1: Prevalence of perceived need for dental treatment among elderly in Malaysia, 2018 (N=3,912)

Sociodemographic characteristics	Need dental treatment		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**747**	**597,462**	**18.8 (15.91, 22.00)**
Strata			
Urban	324	441,995	19.0 (15.32, 23.26)
Rural	423	155,467	18.2 (15.02, 21.90)
Sex			
Male	376	305,019	19.6 (16.43, 23.12)
Female	371	292,443	18.0 (14.68, 21.91)
Marital status			
Married	218	421,412	22.1 (19.05, 25.56)
Never married / separated / divorced / widowed	528	174,836	17.6 (14.08, 21.85)
Education level			
No formal education	140	84,517	18.3 (14.19, 23.19)
Primary education	340	253,862	18.4 (15.02, 22.29)
Secondary education	201	186,030	18.0 (14.24, 22.61)
Tertiary education	66	73,052	23.7 (16.44, 32.92)
Occupation			
Employed	205	157,848	20.2 (16.48, 24.50)
Unemployed / retiree / homemaker	542	439,613	18.3 (15.28, 21.70)
Individual monthly income (RM)			
< 1000	438	321,914	17.7 (14.44, 21.50)
1000 - 1999	174	132,285	19.5 (15.52, 24.30)
≥ 2000	124	128,307	20.0 (15.09, 25.96)

Table 10.1.2.5.1: Prevalence of oral health care utilization in the last 3 months among elderly in Malaysia, 2018 (N=3,929)

Sociodemographic characteristics	Oral health care utilisation		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**281**	**299,829**	**9.4 (7.80, 11.26)**
Strata			
Urban	160	252,021	10.8 (8.73, 13.28)
Rural	121	47,808	5.6 (4.15, 7.43)
Sex			
Male	129	139,555	8.9 (7.15, 11.10)
Female	152	160,274	9.8 (7.28, 13.15)
Marital status			
Married	205	229,314	9.6 (7.17, 10.96)
Never married / separated / divorced / widowed	76	70,515	8.9 (7.56, 12.04)
Education level			
No formal education	44	26,364	5.7 (3.93, 8.13)
Primary education	120	122,966	8.9 (6.15, 12.62)
Secondary education	84	110,236	10.7 (8.42, 13.43)
Tertiary education	33	40,263	13.0 (9.47, 17.70)
Occupation			
Employed	81	78,978	10.1 (7.88, 12.85)
Unemployed / retiree / homemaker	200	220,851	9.1 (7.31, 11.38)
Individual monthly income (RM)			
< 1000	127	124,545	6.8 (4.77, 9.67)
1000 - 1999	72	74,708	11.0 (8.22, 14.61)
≥ 2000	78	95,331	14.8 (11.31, 19.19)

Table 11.1.2.1.1 : Prevalence of poor social support among pre-elderly and elderly in Malaysia, 2018 [a]

Sociodemographic characteristics	Pre-elderly aged 50-59 years (N= 3,133)			Elderly aged 60+ years (N= 3,959)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**771**	**737,181**	**24.3 (21.07, 27.87)**	**1,261**	**834,397**	**30.8 (27.24, 34.52)**
Strata						
Urban	335	564,898	24.1 (20.10, 28.64)	509	706,443	30.0 (25.53, 34.96)
Rural	436	172,284	25.0 (21.54, 28.75)	752	283,363	32.7 (28.48, 37.31)
Sex						
Male	354	368,391	24.0 (20.10, 28.31)	547	430,938	27.4 (23.37, 31.88)
Female	417	368,790	24.7 (21.23, 28.44)	714	558,868	34.0 (29.88, 38.29)
Marital status						
Married	611	592,040	22.8 (19.66, 26.28)	723	575,904	26.4 (22.57, 30.52)
Never married / separated / divorced / widowed	160	145,141	33.4 (26.93, 40.52)	537	413,626	40.1 (35.01, 45.47)
Education level						
No formal education	79	46,389	32.9 (23.13, 44.47)	365	214,605	45.7 (39.84, 51.67)
Primary education	244	204,173	28.9 (24.05, 34.20)	608	444,024	31.7 (27.62, 36.10)
Secondary education	388	406,132	24.1 (20.36, 28.23)	237	276,247	26.7 (21.35, 32.75)
Tertiary education	60	80,487	16.2 (11.29, 22.67)	51	54,930	17.6 (11.72, 25.67)
Occupation						
Employed	435	423,959	23.0 (19.46, 26.87)	284	192,373	24.6 (20.37, 29.37)
Unemployed / retiree / homemaker	336	313,223	26.4 (22.34, 30.95)	977	797,433	32.7 (28.95, 36.78)
Individual monthly income (RM)						
< 1000	427	335,818	29.6 (25.38, 34.22)	929	689,387	37.4 (33.10, 41.82)
1000 - 1999	182	172,708	23.7 (19.31, 28.80)	217	174,415	25.6 (21.17, 30.69)
≥ 2000	153	219,224	19.4 (15.48, 23.97)	97	111,846	17.4 (12.64, 23.43)

[a] *Poor social support was based on low score of Duke Social Support Index (DSSI)*

Table 11.1.2.2.1 : Social interaction among pre-elderly and elderly in Malaysia, 2018 *

Sociodemographic characteristics	Pre-elderly aged 50-59 years (N= 3,133)			Elderly aged 60+ years (N= 3,959)		
	Unweighted count	Estimated Population	Prevalence[a] (%), 95% CI	Unweighted count	Estimated Population	Prevalence[a] (%), 95% CI
Malaysia	**3,133**	**3,032,429**	**8.6 (8.43, 8.79)**	**3,959**	**3,217,564**	**19.3 (19.11, 19.49)**
Strata						
Urban	1,411	2,342,431	8.6 (8.37, 8.83)	1,682	2,352,141	19.4 (19.14, 19.61)
Rural	1,722	689,998	8.6 (8.44, 8.79)	2,277	865,424	19.1 (18.85, 19.37)
Sex						
Male	1,452	1,537,188	8.8 (8.56, 8.97)	1,861	1,571,765	19.3 (19.12, 19.51)
Female	1,681	1,495,241	8.4 (8.25, 8.64)	2,098	1,645,799	19.3 (19.07, 19.49)
Marital status						
Married	494	434,812	8.3 (8.08, 8.60)	1,345	1,030,836	18.8 (18.57, 19.08)
Never married / separated / divorced / widowed	2,638	2,596,475	8.7 (8.46, 8.84)	2,611	2,185,256	19.5 (19.35, 19.71)
Education level						
No formal education	229	140,885	8.1 (7.66, 8.44)	805	469,654	18.8 (18.53, 19.12)
Primary education	854	707,412	8.3 (8.07, 8.56)	1,925	1,400,480	19.2 (19.00, 19.44)
Secondary education	1,648	1,686,862	8.6 (8.42, 8.82)	964	1,036,053	19.5 (19.19, 19.71)
Tertiary education	402	497,269	9.1 (8.79, 9.49)	265	311,378	19.9 (19.60, 20.11)
Occupation						
Employed	1,844	1,846,788	8.7 (8.52, 8.91)	1,045	782,229	19.4 (19.19, 19.63)
Unemployed / retiree / homemaker	1,289	1,185,641	8.4 (8.20, 8.65)	2,914	2,435,336	19.3 (19.07, 19.46)
Individual monthly income (RM)						
< 1000	1,431	1,134,106	8.2 (8.03, 8.44)	2,510	1,845,399	19.1 (18.85, 19.31)
1000 - 1999	800	727,773	8.6 (8.39, 8.78)	840	680,265	19.4 (19.23, 19.65)
≥ 2000	871	1,131,418	9.0 (8.69, 9.24)	565	643,244	19.8 (19.52, 20.06)

[a] Social Interaction Subscale : measures the size and structure of the social network (Question 1-4 from Duke Social Support Index questionaire), Full marks = 12. A higher score was an indication of higher levels of social interaction.

Table 11.1.2.3.1 : Subjective support among pre-elderly and elderly in Malaysia, 2018 [a]

Sociodemographic characteristics	Pre-elderly aged 50-59 years (N= 3,133)			Elderly aged 60+ years (N= 3,959)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**3,133**	**3,032,429**	**19.7 (19.55, 19.82)**	**3,959**	**3,217,564**	**19.3 (19.11, 19.49)**
Strata						
Urban	1,411	2,342,431	19.7 (19.54, 19.88)	1,682	2,352,141	19.4 (19.14, 19.61)
Rural	1,722	689,998	19.6 (19.41, 19.78)	2,277	865,424	19.1 (18.85, 19.37)
Sex						
Male	1,452	1,537,188	19.6 (19.44, 19.77)	1,861	1,571,765	19.3 (19.12, 19.51)
Female	1,681	1,495,241	19.8 (19.61, 19.92)	2,098	1,645,799	19.3 (19.07, 19.49)
Marital status						
Married	494	434,812	19.1 (18.76, 19.45)	1,345	1,030,836	18.8 (18.57, 19.08)
Never married / separated / divorced / widowed	2,683	2,596,474	19.8 (19.65, 19.92)	2,611	2,185,256	19.5 (19.35, 19.71)
Education level						
No formal education	229	140,885	19.4 (18.95, 19.87)	805	469,654	18.8 (18.53, 19.12)
Primary education	854	707,412	19.5 (19.34, 19.72)	1,925	1,400,480	19.2 (19.00, 19.44)
Secondary education	1,648	1,686,862	19.7 (19.56, 19.86)	964	1,036,053	19.5 (19.19, 19.71)
Tertiary education	402	497,269	19.9 (19.66, 20.16)	265	311,378	19.9 (19.60, 20.11)
Occupation						
Employed	1,844	1,846,788	19.7 (19.55, 19.85)	1,045	782,229	19.4 (19.19, 19.63)
Unemployed / retiree / homemaker	1,289	1,185,641	19.7 (19.48, 19.85)	2,914	2,435,336	19.3 (19.07, 19.46)
Individual monthly income (RM)						
< 1000	1,431	1,134,106	19.5 (19.35, 19.74)	2,510	1,845,399	19.1 (18.85, 19.31)
1000 - 1999	800	727,773	19.6 (19.45, 19.82)	840	680,265	19.4 (19.23, 19.65)
≥ 2000	871	1,131,418	19.9 (19.69, 20.05)	565	643,244	19.8 (19.52, 20.06)

[a] Subjective Support Subscale : measures the perceived satisfaction with the behavioural or emotional support obtained from the network (Question 5-11 from Duke Social Support Index questionaire), Full marks = 21. A higher score was an indication of higher levels of social interaction.

Table 12.1.2.1.1: Prevalence of underweight BMI among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	WHO 1998 (BMI < 18.5 kg/m²)					
	Pre-elderly aged 50-59 years (N=72)			Elderly aged 60+ years (N=221)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**72**	**54,927**	**1.9 (1.40, 2.50)**	**221**	**154,999**	**5.2 (4.18, 6.46)**
Strata						
Urban	26	36,240	1.6 (1.06, 2.35)	67	95,089	4.4 (3.14, 6.02)
Rural	46	18,688	2.8 (1.95, 3.91)	154	59,910	7.5 (6.08, 9.25)
Sex						
Male	31	23,145	1.6 (0.99, 2.44)	107	70,226	4.8 (3.64, 6.20)
Female	41	31,783	2.2 (1.44, 3.22)	114	84,773	5.6 (4.08, 7.77)
Marital status						
Married	50	38,521	1.5 (1.05, 2.17)	122	81,905	3.9 (3.07, 5.07)
Never married / separated / divorced / widowed	22	16,406	3.9 (2.37, 6.39)	99	73,094	8.1 (5.72, 11.35)
Education level						
No formal education	12	6,459	4.8 (2.81, 8.20)	81	41,055	10.3 (7.75, 13.48)
Primary education	24	16,469	2.4 (1.49, 3.84)	108	74,610	5.8 (4.40, 7.71)
Secondary education	32	28,146	1.7 (1.14, 2.52)	28	36,843	3.7* (1.96, 6.73)
Tertiary education	4	3,853	0.8* (0.24, 2.61)	4	2,491	0.8* (0.23, 3.05)
Occupation						
Employed	32	25,390	1.4 (0.92, 2.13)	57	37,302	5.0 (3.37, 7.30)
Unemployed / retiree / homemaker	40	29,538	2.6 (1.77, 3.69)	164	117,697	5.3 (4.09, 6.79)
Individual monthly income (RM)						
< 1000	44	31,712	2.9 (1.99, 4.11)	178	121,108	7.2 (5.59, 9.32)
1000 - 1999	15	9,319	1.3* (0.68, 2.51)	23	16,631	2.6 (1.46, 4.53)
≥ 2000	12	13,230	1.2* (0.62, 2.28)	18	16,285	2.6 (1.56, 4.37)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.2: Prevalence of normal BMI (WHO 1998) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	WHO 1998 (BMI 18.5 - 24.9 kg/m²)					
	Pre-elderly aged 50-59 years (N=1,062)			Elderly aged 60+ years (N=1,525)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**1,062**	**1,066,189**	**35.9 (32.90, 39.10)**	**1,525**	**1,197,044**	**40.2 (37.72, 42.72)**
Strata						
Urban	497	833,922	36.4 (32.54, 40.47)	627	858,276	39.4 (36.14, 42.65)
Rural	563	230,830	34.2 (31.87, 36.52)	898	338,768	42.5 (39.92, 45.14)
Sex						
Male	576	616,296	41.3 (37.90, 44.87)	830	674,132	45.7 (42.18, 49.19)
Female	484	448,456	30.4 (26.32, 34.81)	695	522,912	34.8 (32.03, 37.71)
Marital status						
Married	901	918,144	36.1 (32.88, 39.38)	1022	825,112	39.8 (37.02, 42.63)
Never married / separated / divorced / widowed	161	148,045	35.3 (30.53, 40.40)	501	370,946	41.1 (36.81, 45.49)
Education level						
No formal education	82	46,940	35.1 (27.13, 44.08)	301	167,173	41.8 (37.21, 46.53)
Primary education	291	241,400	35.2 (30.97, 39.66)	773	544,205	42.6 (39.36, 45.85)
Secondary education	577	620,317	37.3 (33.35, 41.48)	364	383,008	38.1 (33.15, 43.21)
Tertiary education	110	156,097	32.2 (26.71, 38.29)	87	102,657	35.0 (29.09, 41.41)
Occupation						
Employed	696	718,678	39.6 (36.46, 42.91)	484	337,604	45.1 (40.24, 50.02)
Unemployed / retiree / homemaker	366	347,511	30.1 (25.81, 34.86)	1041	859,440	38.6 (35.97, 41.21)
Individual monthly income (RM)						
< 1000	468	378,681	34.2 (30.21, 38.39)	966	698,013	41.7 (39.19, 44.28)
1000 - 1999	286	251,951	35.4 (30.35, 40.75)	326	242,172	37.6 (31.83, 43.72)
≥ 2000	297	422,341	38.1 (34.27, 42.08)	214	232,591	37.5 (31.99, 43.36)

Table 12.1.2.1.3: Prevalence of overweight (WHO 1998) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	WHO 1998 (BMI 25.0 - 29.9 kg/m²)					
	Pre-elderly aged 50-59 years (N=1,197)			Elderly aged 60+ years (N=1,292)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**1,197**	**1,167,642**	**39.4 (36.70, 42.10)**	**1,292**	**1,100,775**	**37.0 (34.96, 39.01)**
Strata						
Urban	542	905,214	39.5 (36.21, 42.94)	584	832,836	38.2 (35.65, 40.78)
Rural	655	263,224	39.0 (36.46, 41.51)	708	267,938	33.6 (31.24, 36.09)
Sex						
Male	573	624,772	41.9 (38.35, 45.56)	585	532,266	36.1 (33.13, 39.09)
Female	624	543,666	36.9 (33.11, 40.77)	707	568,508	37.9 (35.20, 40.58)
Marital status						
Married	1,038	1,033,454	40.6 (37.79, 43.47)	893	794,453	38.3 (35.74, 40.96)
Never married / separated / divorced / widowed	159	134,189	32.0 (26.77, 37.74)	399	306,321	33.9 (30.10, 37.97)
Education level						
No formal education	75	53,289	39.9 (31.97, 48.37)	210	128,384	32.1 (27.57, 36.98)
Primary education	318	272,242	39.7 (34.88, 44.70)	606	449,399	35.2 (32.41, 38.01)
Secondary education	630	631,248	38.0 (35.02, 41.04)	372	394,370	39.2 (36.09, 42.36)
Tertiary education	174	211,660	43.7 (38.55, 48.99)	104	128,621	43.9 (38.15, 49.73)
Occupation						
Employed	706	718,787	39.6 (36.72, 42.65)	336	272,018	36.3 (31.87, 41.02)
Unemployed / retiree / homemaker	491	448,855	38.9 (34.73, 43.31)	956	828,757	37.2 (34.83, 39.59)
Individual monthly income (RM)						
< 1000	526	418,597	37.8 (34.29, 41.41)	758	579,921	34.7 (32.20, 37.20)
1000 - 1999	318	292,324	41.0 (36.71, 45.52)	306	246,075	38.2 (33.84, 42.75)
≥ 2000	340	439,689	39.7 (36.09, 43.35)	219	264,651	42.7 (37.80, 47.68)

Table 12.1.2.1.4: Prevalence of obesity (WHO 1998) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	WHO 1998 (BMI ≥ 30.0 kg/m²)					
	Pre-elderly aged 50-59 years (N=731)			Elderly aged 60+ years (N=610)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**731**	**677,091**	**22.8 (20.70, 25.10)**	**610**	**525,242**	**17.6 (15.81, 19.63)**
Strata						
Urban	316	514,776	22.5 (19.81, 25.39)	284	394,880	18.1 (15.72, 20.76)
Rural	415	162,315	24.0 (21.90, 26.33)	326	130,362	16.4 (14.65, 18.22)
Sex						
Male	229	226,225	15.2 (13.12, 17.54)	217	199,623	13.5 (11.30, 16.10)
Female	502	450,866	30.6 (26.94, 34.50)	393	325,619	21.7 (19.17, 24.42)
Marital status						
Married	599	555,339	21.8 (19.69, 24.11)	431	372,135	17.9 (15.93, 20.15)
Never married / separated / divorced / widowed	131	120,610	28.8 (23.20, 35.06)	178	152,620	16.9 (13.44, 21.04)
Education level						
No formal education	45	26,562	20.1 (14.82, 26.78)	91	63,395	15.8 (12.60, 19.75)
Primary education	198	155,585	22.7 (19.49, 26.32)	291	210,032	16.4 (14.29, 18.82)
Secondary education	384	382,183	23.0 (19.84, 26.48)	170	192,299	19.1 (15.31, 23.58)
Tertiary education	104	112,762	23.3 (18.73, 28.54)	58	59,515	20.3 (14.80, 27.17)
Occupation						
Employed	379	350,135	19.3 (17.08, 21.76)	133	101,946	13.6 (11.11, 16.58)
Unemployed / retiree / homemaker	352	326,956	28.4 (25.03, 31.95)	477	423,295	19.0 (16.87, 21.31)
Individual monthly income (RM)						
< 1000	351	278,856	25.2 (22.07, 28.55)	367	274,288	16.4 (14.52, 18.46)
1000 - 1999	169	158,595	22.3 (18.31, 26.80)	140	139,388	21.6 (17.58, 26.33)
≥ 2000	207	233,187	21.0 (18.01, 24.43)	98	106,688	17.2 (13.04, 22.35)

Table 12.1.2.1.5a: Prevalence of obesity I to III (WHO 1998) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Obese I (BMI 30.0 - 34.9 kg/m²)					
	Pre-elderly aged 50-59 years (N=547)			Elderly aged 60+ years (N=482)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**547**	**507,971**	**17.1 (15.49, 18.89)**	**482**	**410,970**	**13.8 (12.06, 15.74)**
Strata						
Urban	236	387,244	16.9 (14.88, 19.15)	220	305,329	14.0 (11.73, 16.63)
Rural	311	120,727	17.9 (16.12, 19.76)	262	105,641	13.3 (11.74, 14.94)
Sex						
Male	195	195,187	13.1 (11.21, 15.24)	178	167,082	11.3 (9.22, 13.82)
Female	352	312,784	21.2 (18.64, 24.02)	304	243,888	16.2 (14.14, 18.59)
Marital status						
Married	459	432,022	17.0 (15.14, 18.97)	354	309,177	14.9 (13.08, 16.94)
Never married / separated / divorced / widowed	87	74,807	17.8 (13.67, 22.95)	127	101,307	11.2 (8.75, 14.28)
Education level						
No formal education	32	20,107	15.1 (10.13, 21.79)	71	50,016	12.5 (9.45, 16.37)
Primary education	142	109,960	16.0 (13.05, 19.53)	234	160,483	12.6 (10.66, 14.73)
Secondary education	282	275,786	16.6 (14.47, 18.96)	131	151,799	15.1 (11.61, 19.37)
Tertiary education	91	102,118	21.1 (16.45, 26.60)	46	48,672	16.6 (11.55, 23.27)
Occupation						
Employed	307	286,300	15.8 (13.81, 18.00)	109	87,514	11.7 (9.25, 14.66)
Unemployed / retiree / homemaker	240	221,672	19.2 (16.56, 22.21)	373	323,456	14.5 (12.51, 16.77)
Individual monthly income (RM)						
< 1000	258	204,555	18.5 (15.95, 21.27)	290	203,315	12.2 (10.57, 13.94)
1000 - 1999	121	109,251	15.3 (11.77, 19.74)	111	114,319	17.7 (13.96, 22.29)
≥ 2000	165	189,636	17.1 (14.46, 20.13)	76	88,458	14.3 (10.46, 19.15)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.5b: Prevalence of obesity I to III (WHO 1998) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Obese II (BMI 35.0 - 39.9 kg/m²)					
	Pre-elderly aged 50-59 years (N=547)			Elderly aged 60+ years (N=482)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**142**	**130,382**	**4.4 (3.36, 5.73)**	**98**	**87,891**	**3.0 (2.18, 3.98)**
Strata						
Urban	63	97,889	4.3 (3.01, 6.03)	49	69,652	3.2 (2.20, 4.60)
Rural	79	32,493	4.8 (3.87, 5.96)	49	18,239	2.3 (1.66, 3.15)
Sex						
Male	24	27,001	1.8 (1.05, 3.09)	31	25,358	1.7 (1.09, 2.69)
Female	118	103,381	7.0 (5.34, 9.15)	67	62,533	4.2 (2.78, 6.20)
Marital status						
Married	108	95,258	3.7 (2.82, 4.96)	59	46,568	2.2 (1.70, 2.97)
Never married / separated / divorced / widowed	34	35,124	8.4 (5.11, 13.44)	39	41,323	4.6 (2.54, 8.10)
Education level						
No formal education	9	4,549	3.4* (1.61, 7.04)	15	11,381	2.8 (1.62, 4.95)
Primary education	44	35,095	5.1 (3.56, 7.30)	49	43,898	3.4 (2.06, 5.66)
Secondary education	78	80,820	4.9 (3.41, 6.89)	27	26,016	2.6 (1.60, 4.14)
Tertiary education	11	9,918	2.0* (1.02, 4.06)	7	6,596	2.2* (0.93, 5.35)
Occupation						
Employed	59	56,361	3.1 (2.10, 4.57)	23	12,700	1.7 (1.02, 2.81)
Unemployed / retiree / homemaker	83	74,021	6.4 (5.01, 8.19)	75	75,191	3.4 (2.42, 4.68)
Individual monthly income (RM)						
< 1000	70	54,589	4.9 (3.63, 6.66)	59	57,704	3.4 (2.31, 5.12)
1000 - 1999	36	33,857	4.8 (2.99, 7.48)	27	23,225	3.6 (2.09, 6.15)
≥ 2000	35	40,011	3.6 (2.37, 5.45)	12	6,963	1.1* (0.57, 2.20)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.5c: Prevalence of obesity I to III (WHO 1998) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Obese III (BMI ≥ 40.0 kg/m²)					
	Pre-elderly aged 50-59 years (N=42)			Elderly aged 60+ years (N=30)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**42**	**38,738**	**1.3 (0.86, 1.97)**	**30**	**26,381**	**0.9 (0.56, 1.41)**
Strata						
Urban	17	29,644	1.3 (0.76, 2.18)	15	19,899	0.9* (0.50, 1.65)
Rural	25	9,094	1.3 (0.87, 2.08)	15	6,482	0.8 (0.49, 1.35)
Sex						
Male	10	4,037	0.3* (0.13, 0.58)	8	1,476,247	100.0 (100.00, 100.00)
Female	32	34,701	2.4 (1.49, 3.69)	22	19,198	1.3 (0.79, 2.06)
Marital status						
Married	32	28,058	1.1 (0.69, 1.77)	18	16,390	0.8 (0.45, 1.38)
Never married / separated / divorced / widowed	10	10,679	2.5* (1.23, 5.19)	12	9,990	1.1* (0.57, 2.14)
Education level						
No formal education	4	1,906	1.4* (0.44, 4.51)	5	1,998	0.5* (0.20, 1.22)
Primary education	12	10,529	1.5* (0.80, 2.94)	8	5,651	0.4* (0.21, 0.95)
Secondary education	24	25,577	1.5 (0.93, 2.52)	12	14,484	1.4* (0.69, 2.98)
Tertiary education	2	726	0.1* (0.03, 0.76)	5	4,247	1.4* (0.54, 3.80)
Occupation						
Employed	13	7,475	0.4* (0.20, 0.87)	1	1,733	0.2* (0.03, 1.66)
Unemployed / retiree / homemaker	29	31,263	2.7 (1.66, 4.39)	29	24,648	1.1 (0.68, 1.80)
Individual monthly income (RM)						
< 1000	23	19,711	1.8 (0.98, 3.20)	18	13,269	0.8* (0.40, 1.58)
1000 - 1999	12	15,487	2.2* (1.16, 4.03)	2	1,845	0.3* (0.05, 1.50)
≥ 2000	7	3,540	0.3* (0.13, 0.79)	10	11,267	1.8* (0.92, 3.56)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.6: Prevalence of normal BMI (CPG 2004) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	CPG 2004 (BMI 18.5 - 22.9 kg/m²)					
	Pre-elderly aged 50-59 years (N=553)			Elderly aged 60+ years (N=922)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**553**	**549,855**	**18.5 (16.74, 20.49)**	**922**	**703,594**	**23.6 (21.44, 25.96)**
Strata						
Urban	249	422,700	18.5 (16.23, 20.92)	355	487,880	22.4 (19.57, 25.44)
Rural	304	127,155	18.8 (16.85, 20.96)	567	215,714	27.1 (24.78, 29.48)
Sex						
Male	310	325,243	21.8 (19.08, 24.82)	498	380,657	25.8 (22.51, 29.36)
Female	243	224,612	15.2 (12.96, 17.80)	424	322,937	21.5 (19.28, 23.91)
Marital status						
Married	461	468,905	18.4 (16.46, 20.56)	608	474,994	22.9 (20.44, 25.57)
Never married / separated / divorced / widowed	92	80,949	19.3 (15.14, 24.30)	313	228,324	25.3 (21.53, 29.46)
Education level						
No formal education	42	23,578	17.6 (12.44, 24.42)	199	108,373	27.1 (23.20, 31.37)
Primary education	168	134,418	19.6 (16.34, 23.32)	477	325,681	25.5 (22.98, 28.15)
Secondary education	303	336,015	20.2 (17.24, 23.57)	206	223,515	22.2 (18.24, 26.75)
Tertiary education	40	55,844	11.5 (8.05, 16.25)	40	46,026	15.7 (11.32, 21.35)
Occupation						
Employed	365	372,795	20.6 (18.27, 23.06)	288	197,555	26.4 (22.77, 30.34)
Unemployed / retiree / homemaker	188	177,060	15.4 (12.63, 18.55)	634	506,039	22.7 (20.24, 25.37)
Individual monthly income (RM)						
< 1000	269	211,639	19.1 (16.56, 21.94)	621	435,566	26.0 (23.72, 28.48)
1000 - 1999	136	126,244	17.7 (14.54, 21.44)	181	133,335	20.7 (16.45, 25.70)
≥ 2000	141	202,952	18.3 (15.67, 21.28)	107	118,753	19.1 (15.19, 23.85)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.7: Prevalence of overweight (CPG 2004) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	CPG 2004 (BMI 23.0 - 27.4 kg/m²)					
	Pre-elderly aged 50-59 years (N=1,158)			Elderly aged 60+ years (N=1,369)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**1,158**	**1,152,543**	**38.9 (36.67, 41.10)**	**1,369**	**1,150,079**	**38.6 (36.54, 40.74)**
Strata						
Urban	545	905,542	39.5 (36.82, 42.33)	622	866,271	39.7 (37.06, 42.44)
Rural	613	247,001	36.6 (34.07, 39.11)	747	283,807	35.6 (33.05, 38.26)
Sex						
Male	596	645,300	43.3 (40.20, 46.43)	691	623,643	42.2 (38.95, 45.62)
Female	562	507,244	34.4 (31.21, 37.71)	678	526,435	35.1 (32.27, 37.94)
Marital status						
Married	1,005	1,015,265	39.9 (37.34, 42.49)	942	824,767	39.8 (37.07, 42.54)
Never married / separated / divorced / widowed	153	137,278	32.7 (26.87, 39.21)	426	324,602	35.9 (31.75, 40.37)
Education level						
No formal education	75	48,783	36.5 (27.76, 46.26)	227	135,444	33.9 (29.59, 38.41)
Primary education	297	254,349	37.1 (32.33, 42.09)	649	489,480	38.3 (35.05, 41.64)
Secondary education	622	633,839	38.1 (35.28, 41.08)	384	393,691	39.1 (35.84, 42.49)
Tertiary education	164	215,571	44.5 (38.15, 51.05)	109	131,463	44.8 (38.33, 51.50)
Occupation						
Employed	731	751,042	41.4 (38.71, 44.20)	391	294,983	39.4 (35.55, 43.36)
Unemployed / retiree / homemaker	427	401,501	34.8 (31.28, 38.54)	978	855,095	38.4 (35.92, 40.86)
Individual monthly income (RM)						
< 1000	472	391,655	35.4 (32.31, 38.52)	789	603,826	36.1 (33.51, 38.74)
1000 - 1999	336	291,704	41.0 (36.89, 45.16)	335	266,901	41.4 (36.85, 46.15)
≥ 2000	340	456,540	41.2 (37.09, 45.41)	232	262,192	42.3 (37.52, 47.17)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.8: Prevalence of obesity (CPG 2004) among pre-elderly and elderly by sociodemographic characteristics in Malaysia, 2018

Sociodemographic characteristics	CPG 2004 (BMI ≥ 27.5 kg/m²)					
	Pre-elderly aged 50-59 years (N=1,279)			Elderly aged 60+ years (N=1,136)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**1,279**	**1,208,525**	**40.7 (38.06, 43.49)**	**1,136**	**969,388**	**32.6 (30.39, 34.79)**
Strata						
Urban	561	925,671	40.4 (37.04, 43.90)	518	731,841	33.6 (30.80, 36.43)
Rural	718	282,854	41.9 (39.23, 44.54)	618	237,547	29.8 (27.28, 32.46)
Sex						
Male	473	497,045	33.3 (30.37, 36.45)	443	401,721	27.2 (24.35, 30.28)
Female	806	711,480	48.2 (44.13, 52.36)	693	567,667	37.8 (34.63, 41.07)
Marital status						
Married	1,072	1,022,767	40.2 (37.36, 43.07)	796	691,939	33.4 (30.91, 35.92)
Never married / separated / divorced / widowed	206	184,616	44.0 (38.67, 49.54)	339	276,963	30.7 (26.49, 35.20)
Education level						
No formal education	86	54,776	41.0 (31.74, 50.95)	176	115,136	28.8 (24.67, 33.28)
Primary education	343	280,753	40.9 (36.83, 45.15)	544	388,476	30.4 (27.20, 33.78)
Secondary education	666	663,893	39.9 (36.09, 43.93)	316	352,471	35.0 (30.53, 39.79)
Tertiary education	184	209,103	43.2 (37.28, 49.26)	100	113,305	38.6 (30.16, 47.86)
Occupation						
Employed	685	663,763	36.6 (33.78, 39.54)	274	219,030	29.2 (25.16, 33.70)
Unemployed / retiree / homemaker	594	544,763	47.3 (43.21, 51.33)	862	750,358	33.7 (31.57, 35.82)
Individual monthly income (RM)						
< 1000	604	472,841	42.7 (39.10, 46.34)	681	512,830	30.6 (28.39, 33.00)
1000 - 1999	301	284,922	40.0 (35.69, 44.49)	256	227,400	35.3 (30.88, 39.98)
≥ 2000	363	435,726	39.3 (35.28, 43.49)	192	222,985	36.0 (30.40, 41.91)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.9a: Prevalence of obesity I to III (CPG 2004) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Obese I (BMI 27.5 - 34.9 kg/m²)					
	Pre-elderly aged 50-59 years (N=1,095)			Elderly aged 60+ years (N=1,008)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**1,095**	**1,039,406**	**35.0 (32.64, 37.53)**	**1,008**	**855,116**	**28.7 (26.59, 30.93)**
Strata						
Urban	481	798,139	34.9 (31.82, 38.01)	454	642,290	29.4 (26.71, 32.34)
Rural	614	241,267	35.7 (33.48, 37.99)	554	212,826	26.7 (24.37, 29.18)
Sex						
Male	439	466,008	31.3 (28.22, 34.48)	404	369,180	25.0 (22.34, 27.89)
Female	656	573,398	38.9 (35.70, 42.15)	604	485,935	32.4 (29.36, 35.51)
Marital status						
Married	932	899,450	35.3 (32.71, 38.05)	719	628,981	30.3 (28.02, 32.74)
Never married / separated / divorced / widowed	162	138,813	33.1 (28.26, 38.35)	288	225,649	25.0 (21.46, 28.89)
Education level						
No formal education	73	48,321	36.2 (27.04, 46.42)	156	101,757	25.4 (21.15, 30.26)
Primary education	287	235,128	34.3 (30.14, 38.66)	487	338,927	26.5 (23.28, 30.03)
Secondary education	564	557,496	33.5 (30.52, 36.71)	277	311,971	31.0 (26.80, 35.53)
Tertiary education	171	198,459	41.0 (35.03, 47.20)	88	102,461	34.9 (26.57, 44.34)
Occupation						
Employed	613	599,928	33.1 (30.43, 35.86)	250	204,597	27.3 (23.26, 31.80)
Unemployed / retiree / homemaker	482	439,478	38.1 (34.68, 41.69)	758	650,518	29.2 (26.98, 31.49)
Individual monthly income (RM)						
< 1000	511	398,540	36.0 (32.93, 39.14)	604	441,857	26.4 (24.03, 28.93)
1000 - 1999	253	235,578	33.1 (28.72, 37.75)	227	202,330	31.4 (26.99, 36.19)
≥ 2000	321	392,174	35.4 (31.48, 39.49)	170	204,754	33.0 (27.51, 39.03)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.9b: Prevalence of obesity I to III (CPG 2004) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Obese II (BMI 35.0 - 39.9 kg/m²)					
	Pre-elderly aged 50-59 years (N=142)			Elderly aged 60+ years (N=98)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**142**	**130,382**	**4.4 (3.36, 5.73)**	**98**	**87,891**	**3.0 (2.18, 3.98)**
Strata						
Urban	63	97,889	4.3 (3.01, 6.03)	49	69,652	3.2 (2.20, 4.60)
Rural	79	32,493	4.8 (3.87, 5.96)	49	18,239	2.3 (1.66, 3.15)
Sex						
Male	24	27,001	1.8 (1.05, 3.09)	31	25,358	1.7 (1.09, 2.69)
Female	118	103,381	7.0 (5.34, 9.15)	67	62,533	4.2 (2.78, 6.20)
Marital status						
Married	108	95,258	3.7 (2.82, 4.96)	59	46,568	2.2 (1.70, 2.97)
Never married / separated / divorced / widowed	34	35,124	8.4 (5.11, 13.44)	39	41,323	4.6 (2.54, 8.10)
Education level						
No formal education	9	4,549	3.4* (1.61, 7.04)	15	11,381	2.8 (1.62, 4.95)
Primary education	44	35,095	5.1 (3.56, 7.30)	49	43,898	3.4 (2.06, 5.66)
Secondary education	78	80,820	4.9 (3.41, 6.89)	27	26,016	2.6 (1.60, 4.14)
Tertiary education	11	9,918	2.0* (1.02, 4.06)	7	6,596	2.2* (0.93, 5.35)
Occupation						
Employed	59	56,361	3.1 (2.10, 4.57)	23	12,700	1.7 (1.02, 2.81)
Unemployed / retiree / homemaker	83	74,021	6.4 (5.01, 8.19)	75	75,191	3.4 (2.42, 4.68)
Individual monthly income (RM)						
< 1000	70	54,589	4.9 (3.63, 6.66)	59	57,704	3.4 (2.31, 5.12)
1000 - 1999	36	33,857	4.8 (2.99, 7.48)	27	23,225	3.6 (2.09, 6.15)
≥ 2000	35	40,011	3.6 (2.37, 5.45)	12	6,963	1.1* (0.57, 2.20)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.1.9c: Prevalence of obesity I to III (CPG 2004) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Obese III (BMI ≥ 40.0 kg/m²)					
	Pre-elderly aged 50-59 years (N=42)			Elderly aged 60+ years (N=30)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**42**	**38,738**	**1.3 (0.86, 1.97)**	**30**	**26,381**	**0.9 (0.56, 1.41)**
Strata						
Urban	17	29,644	1.3 (0.76, 2.18)	15	19,899	0.9* (0.50, 1.65)
Rural	25	9,094	1.3 (0.87, 2.08)	15	6,482	0.8 (0.49, 1.35)
Sex						
Male	10	4,037	0.3* (0.13, 0.58)	8	7,183	0.5* (0.21, 1.11)
Female	32	34,701	2.4 (1.49, 3.69)	22	19,198	1.3 (0.79, 2.06)
Marital status						
Married	32	28,058	1.1 (0.69, 1.77)	18	16,390	0.8 (0.45, 1.38)
Never married / separated / divorced / widowed	10	10,679	2.5 (1.23, 5.19)	12	9,990	1.1* (0.57, 2.14)
Education level						
No formal education	4	1,906	1.4* (0.44, 4.51)	5	1,998	0.5* (0.20, 1.22)
Primary education	12	10,529	1.5* (0.80, 2.94)	8	5,651	0.4* (0.21, 0.95)
Secondary education	24	25,577	1.5 (0.93, 2.52)	12	14,484	1.4* (0.69, 2.98)
Tertiary education	2	726	0.1* (0.03, 0.76)	5	4,247	1.4* (0.54, 3.80)
Occupation						
Employed	13	7,475	0.4* (0.20, 0.87)	1	1,733	0.2* (0.03, 1.66)
Unemployed / retiree / homemaker	29	31,263	2.7 (1.66, 4.39)	29	24,648	1.1 (0.68, 1.80)
Individual monthly income (RM)						
< 1000	23	19,711	1.8 (0.98, 3.20)	18	13,269	0.8* (0.40, 1.58)
1000 - 1999	12	15,487	2.2* (1.16, 4.03)	2	1,845	0.3* (0.05, 1.50)
≥ 2000	7	3,540	0.3* (0.13, 0.79)	10	11,267	1.8* (0.92, 3.56)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.2.1: Prevalence of abdominal obesity (WHO 1998) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	WHO 1998 (Waist circumference for Men >102cm, Women >88cm)					
	Pre-elderly aged 50-59 years (N=1,008)			Elderly aged 60+ years (N=1,275)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**1,088**	**995,714**	**33.7 (31.40, 36.00)**	**1,275**	**1,087,328**	**36.4 (33.97, 38.85)**
Strata						
Urban	474	757,606	33.2 (30.42, 36.04)	589	828,315	37.9 (34.91, 41.01)
Rural	614	238,108	35.3 (31.72, 38.97)	686	259,013	32.2 (29.15, 35.41)
Sex						
Male	197	210,705	14.1 (12.18, 16.32)	277	262,100	17.8 (15.28, 20.55)
Female	891	785,009	53.5 (49.59, 57.39)	998	825,228	54.5 (50.67, 58.29)
Marital status						
Married	875	811,345	32.0 (29.69, 34.34)	789	700,599	33.8 (31.18, 36.47)
Never married / separated / divorced / widowed	212	183,226	43.6 (37.97, 49.50)	484	385,743	42.2 (37.77, 46.83)
Education level						
No formal education	90	55,037	41.0 (33.22, 49.32)	265	167,222	41.3 (36.73, 45.94)
Primary education	314	253,919	37.2 (33.38, 41.16)	598	450,686	35.0 (31.62, 38.58)
Secondary education	559	533,057	32.2 (28.90, 35.60)	316	359,422	35.6 (30.58, 40.93)
Tertiary education	125	153,700	31.7 (27.30, 36.50)	96	109,998	38.3 (30.76, 46.46)
Occupation						
Employed	481	444,415	24.5 (22.35, 26.80)	201	161,062	21.6 (17.99, 25.68)
Unemployed / retiree / homemaker	607	551,299	48.1 (44.11, 52.18)	1,074	926,266	41.3 (38.57, 44.06)
Individual monthly income (RM)						
< 1000	590	474,004	43.0 (39.34, 46.67)	870	663,169	39.2 (36.28, 42.25)
1000 - 1999	241	221,785	31.1 (27.67, 34.84)	227	214,559	33.4 (28.69, 38.46)
≥ 2000	247	287,020	25.9 (23.06, 29.06)	172	201,717	32.5 (26.52, 39.16)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.2.2: Prevalence of abdominal obesity (WHO 2000) among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	WHO 2000 (Waist circumference for Men ≥90cm, Women ≥80cm)					
	Pre-elderly aged 50-59 years (N=2,035)			Elderly aged 60+ years (N=2,371)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**2,035**	**1,939,694**	**65.6 (62.34, 68.63)**	**2,371**	**2,013,089**	**67.3 (64.48, 70.07)**
Strata						
Urban	922	1,504,813	65.9 (61.86, 69.71)	1,090	1,523,449	69.7 (66.01, 73.19)
Rural	1,113	434,881	64.4 (60.73, 67.92)	1,281	489,640	60.9 (57.77, 63.89)
Sex						
Male	725	788,019	52.8 (48.70, 56.90)	896	826,601	56.0 (52.27, 59.71)
Female	1,310	1,151,675	78.5 (74.71, 81.87)	1,475	1,186,487	78.4 (75.01, 81.39)
Marital status						
Married	1,703	1,644,012	64.8 (61.46, 67.95)	1,564	1,384,176	66.7 (63.57, 69.73)
Never married / separated / divorced / widowed	331	294,540	70.2 (64.41, 75.34)	804	627,441	68.7 (64.43, 72.67)
Education level						
No formal education	146	95,306	71.0 (63.37, 77.68)	430	268,835	66.3 (61.72, 70.64)
Primary education	548	450,864	66.0 (61.63, 70.18)	1,111	831,193	64.6 (61.27, 67.76)
Secondary education	1,067	1,070,883	64.6 (60.49, 68.51)	650	701,829	69.5 (63.17, 75.16)
Tertiary education	274	322,641	66.6 (60.58, 72.14)	180	211,232	73.6 (66.14, 79.86)
Occupation						
Employed	1,083	1,077,364	59.4 (55.88, 62.84)	539	422,428	56.6 (52.01, 61.13)
Unemployed / retiree / homemaker	952	862,330	75.3 (70.91, 79.20)	1,832	1,590,661	70.9 (67.84, 73.78)
Individual monthly income (RM)						
< 1000	982	780,653	70.8 (66.53, 74.67)	1,474	1,133,989	67.1 (63.98, 70.04)
1000 - 1999	502	471,786	66.2 (61.52, 70.66)	521	450,942	70.2 (65.21, 74.72)
≥ 2000	532	665,225	60.1 (55.81, 64.31)	361	410,150	66.1 (59.13, 72.49)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.1.2.5.1: Prevalence of risk of muscle wasting among elderly in Malaysia, 2018

Sociodemographic characteristics	Normal			Wasting (Calf circumference for Men < 30.1cm, Women < 27.3cm)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**3,223**	**2,679,516**	**89.5 (87.68, 90.99)**	**477**	**315,984**	**10.5 (9.01, 12.32)**
Strata						
Urban	1,425	1,990,529	91.1 (88.78, 92.91)	148	195,527	8.9 (7.09, 11.22)
Rural	1,798	688,987	85.1 (82.40, 87.48)	329	120,458	14.9 (12.52, 17.60)
Sex						
Male	1,495	1,296,354	88.1 (85.73, 90.09)	257	175,374	11.9 (9.91, 14.27)
Female	1,728	1,383,162	90.8 (88.31, 92.76)	220	140,610	9.2 (7.24, 11.69)
Marital status						
Married	2,203	1,886,440	91.3 (89.53, 92.80)	276	179,723	8.7 (7.20, 10.47)
Never married / separated / divorced / widowed	1,017	791,604	85.3 (82.19, 87.97)	201	136,261	14.7 (12.03, 17.81)
Education level						
No formal education	567	339,339	82.9 (78.41, 86.57)	144	70,142	17.1 (13.43, 21.59)
Primary education	1,549	1,127,473	86.8 (84.02, 89.24)	257	170,728	13.2 (10.76, 15.98)
Secondary education	873	939,045	93.7 (90.69, 95.85)	61	62,627	6.3 (4.15, 9.31)
Tertiary education	234	273,659	95.6 (92.13, 97.62)	15	12,487	4.4* (2.38, 7.87)
Occupation						
Employed	879	662,554	89.8 (86.72, 92.17)	130	75,545	10.2 (7.83, 13.28)
Unemployed / retiree / homemaker	2,344	2,016,962	89.3 (87.50, 90.95)	347	240,439	10.7 (9.05, 12.50)
Individual monthly income (RM)						
< 1000	1960	1,472,413	86.3 (83.75, 88.54)	365	233,328	13.7 (11.46, 16.25)
1000 - 1999	722	591,357	91.9 (89.30, 93.97)	75	51,856	8.1 (6.03, 10.70)
≥ 2000	513	582,848	95.2 (92.81, 86.82)	34	29,393	4.8 (3.18, 7.19)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.2.2.1 : Malnutrition status based on Mini Nutritional Asssessment (MNA-SF) among elderly in Malaysia, 2018

Sociodemographic characteristics	Normal nutritional status			Malnutrition		
	Unweighted count	Estimated population	Prevalence (%), 95% CI	Unweighted count	Estimated population	Prevalence (%), 95% CI
Malaysia	2,558	2,233,784	69.2 (66.10, 72.00)	1,419	996,556	30.8 (27.96,33.90)
Strata						
Urban	1,222	1,714,926	72.6 (68.72, 76.17)	467.00	647,197	27.4 (23.83,31.28)
Rural	1,336	518,857	59.8 (55.86, 63.54)	952.00	349359	40.2 (36.46, 44.14)
Age category (years)						
60 - 69	1,837	1,623,614	75.6 (72.25, 78.62)	726	524665	24.4 (21.38,27.75)
70 - 79	607	509,686	60.8 (55.93, 65.39)	726	329,174	39.2 (34.61,44.07)
≥ 80	114	100,484	41.3 (34.31, 48.70)	726	142,718	58.7 (51.30,65.69)
Sex						
Male	1,216	1,104,867	69.9 (66.57, 73.07)	656	475358	30.1 (26.93,33.43)
Female	1,342	1,128,916	68.4 (64.53, 72.06)	763	521,198	31.6 (27.94,35.47)
Marital status						
Married	757	613,254	59.2 (54.96, 63.38)	593	422,011	40.8 (36.62,45.04)
Never married / separated / divorced / widowed	1,799	1,619,334	73.8 (71.01, 76.45)	825	574,270	26.2 (23.55,28.99)
Education level						
No formal education	405	251,584	53.6 (48.16, 58.86)	401	218,210	46.4 (41.14,51.48)
Primary education	1,187	900,934	64.0 (59.91, 67.82)	752	507,690	36.0 (32.18,40.09)
Secondary education	753	825,485	79.3 (75.48, 82.72)	214	215,059	20.7 (17.28,24.52)
Tertiary education	213	255,781	82.1 (76.04, 86.96)	52	55,597	17.9 (13.04,23.96)
Occupation						
Employed	709	569,256	72.5 (68.45,76.29)	341	215,556	27.5 (23.71,31.57)
Unemployed / retiree / homemaker	1,849	1,664,527	68.1 (64.83,71.13)	1,078	781,000	31.9 (28.87,35.17)
Individual monthly income (RM)						
< 1000	1,532	1,199,835	64.8 (61.31, 68.18)	987	651,198	35.2 (31.82,38.69)
1000 - 1999	556	483,714	70.9 (66.06, 75.25)	289	198855	29.1 (24.75,33.94)
≥ 2000	446	522,717	81.0 (75.55, 85.52)	121	122,379	19.0 (14.48,24.45)

Table 12.3.2.1.1: Fruits and vegetable consumption in a day according to Malaysian Dietary Guideline 2010 by socio-demographic characteristics among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Fruits/ fruit juice						Vegetables					
	≥ 2 servings						≥ 3 servings					
	Pre-elderly aged 50-59 years (N=385)			Elderly aged 60+ years (N=398)			Pre-elderly aged 50-59 years (n=387)			Elderly aged 60+ years (N=427)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	385	379,155	12.5 (10.52,14.75)	398	348,422	10.8 (9.15,12.68)	387	342,436	11.4 (9.23,13.90)	427	351,985	10.9 (8.47,13.99)
Strata												
Urban	191	302,018	12.9 (10.42,15.79)	195	273,573	11.6 (9.53,14.01)	151	246,816	10.6 (8.08,13.84)	192	267,381	11.4 (8.22,15.48)
Rural	194	77,137	11.2 (9.354,13.25)	203	74,848	8.6 (6.42,11.49)	236	95,620	13.8 (11.15,17.02)	235	84,604	9.8 (7.21,13.11)
Marital status												
Married	334	327,908	12.6 (10.56,14.96)	292	270,314	12.3 (10.21,14.80)	320	293,260	11.3 (9.17,13.95)	294	233,070	10.7 (8.04,13.99)
Never married / separated / divorced / widowed	51	51,248	11.8* (8.65,15.87)	106	78,108	7.5 (5.79,9.78)	67	49,175	11.5* (8.15,15.88)	133	118,915	11.5 (8.55,15.35)
Education level												
No formal education	11	4,301	3.1* (1.525,6.015)	53	28,801	6.1 (4.09,9.09)	47	25,201	18.0 (12.07,26.07)	82	49,330	10.5 (7.41,14.74)
Primary education	81	70,304	9.91 (7.079,13.72)	165	126,303	9.0 (6.99,11.44)	97	67,547	9.6 (6.98,13.01)	194	134,937	9.6 (6.71,13.63)
Secondary education	216	218,472	12.9 (10.57,15.68)	116	121,473	11.7 (9.49,14.28)	190	191,445	11.4 (8.99,14.45)	114	125,606	12.1 (8.88,16.24)
Tertiary education	77	86,078	17.3 (13,22.67)	64	71,845	23.1 (16.60,31.13)	53	58,244	11.7 (8.28,16.30)	37	42,112	13.5 (9.65,18.64)
Occupation												
Employed	224	1,021,780	11.4 (9.19,14.02)	116	2,183,698	11.0 (8.37,14.42)	231	209,463	11.4 (9.03,14.38)	125	85,506	10.9 (7.94,14.82)
Unemployed / retiree / homemaker	161	168,808	14.2 (11.47,17.40)	282	261,830	10.7 (8.89,12.84)	156	132,972	11.2 (8.57,14.60)	302	266,479	10.9 (8.33,14.23)
Individual monthly income (RM)												
< 1000	160	145723	12.8 (10.34,15.72)	202	154,414	8.3 (6.58,10.51)	173	130230	11.5 (8.70,15.00)	253	191,893	10.4 (7.57,14.11)
1000 - 1999	82	69317	9.52 (6.821,13.14)	87	76,067	11.1 (8.54,14.4)	88	76092	10.6 (7.72,14.28)	98	79,294	11.6 (8.36,15.97)
≥ 2000	139	159843	14.1 (11.16,17.68)	98	104,591	16.2 (12.5,20.74)	123	133922	11.9 (9.21,15.34)	71	568,725	11.8 (8.36,16.50)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 12.3.2.5.1: Plain water intake by sociodemographic characteristics among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	< 6 glasses						> 6 glasses					
	Pre-elderly aged 50-59 years (N=584)			Elderly aged 60+ years (N=1,344)			Pre-elderly aged 50-59 years (N=2,525)			Elderly aged 60+ years (N=2606)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	584	513,941	17.1 (14.93,19.45)	1,344	968,997	30.2 (27.26,33.25)	2,525	2,491,942	82.9 (80.51,85.05)	2,602	2,242,339	69.8 (66.74,72.74)
Strata												
Urban	247	379,977	16.4 (13.77,19.37)	484	649,641	27.6 (23.93,31.62)	1,142	1,937,036	83.6 (80.61,86.21)	1,198	1,703,308	72.4 (68.40,76.05)
Rural	337	133,964	19.4 (16.83,22.27)	860	319,355	37.2 (33.51,41.01)	1,383	554,906	80.6 (77.71,83.12)	1,404	539,031	62.8 (59.00,66.46)
Marital status												
Married	484	442,721	17.2 (14.98,19.58)	575	396,158	38.5 (34.30,42.85)	2,138	2,134,187	83.4 (79.17,86.84)	764	633,230	61.5 (57.18,65.68)
Never married / separated / divorced / widowed	100	71,220	16.6 (13.13,20.83)	768	572,129	26.2 (23.48,29.19)	386	356,612	82.8 (80.40,85.00)	1,836	1,608,347	73.8 (70.83,76.50)
Education level												
No formal education	48	28,745	20.6 (13.89,29.36)	363	199,101	42.7 (37.69,47.77)	386	356,612	79.4 (70.69,86.08)	435	267,682	57.3 (52.26,62.28)
Primary education	159	119,726	17.0 (14.25,20.18)	705	486,059	34.8 (30.92,39.98)	2,138	2,134,187	83.0 (79.82,85.73)	1,214	908,648	65.1 (61.04,69.05)
Secondary education	311	301,841	18.0 (15.32,21.14)	228	235,223	22.7 (18.99,26.78)	1,320	1,366,888	81.9 (78.81, 84.65)	736	803,244	77.3 (73.25,80.99)
Tertiary education	66	63,629	12.9 (9.09,17.94)	48	48,613	15.6 (11.12,21.48)	333	430,281	87.1 (82.10,90.89)	217	430,281	84.4 (78.55,88.86)
Occupation												
Employed	271	243,931	13.3 (11.11,15.96)	246	159,853	20.5 (17.27,24.05)	1,553	1,579,262	86.6 (84.01,88.86)	797	621,273	79.5 (76.00,82.70)
Unemployed /retiree / homemaker	313	270,010	22.8 (19.53,26.51)	1,098	809,144	33.3 (29.82,36.97)	972	912,680	77.2 (73.52,80.45)	1,805	1,621,067	66.7 (63.06,70.16)
Individual monthly income (RM)												
< 1000	328	253,754	22.4 (19.33,25.78)	992	688,190	37.5 (33.88,41.15)	1,097	878,644	77.6 (74.22,80.64)	1,503	1,149,154	62.5 (58.86,66.09)
1000 - 1999	118	98,846	13.8 (10.42,17.98)	237	167,173	24.6 (20.79,28.78)	673	618,555	86.2 (82.03,89.56)	604	513,342	75.4 (71.25,79.19)
≥ 2000	129	152,945	13.6 (10.66,17.31)	100	100,123	15.5 (12.26,19.48)	734	965,014	86.3 (82.65,89.31)	466	544,697	69.8 (80.55,87.73)

Table 12.4.2.1: Status of food security among pre-elderly and elderly by sociodemographic characteristics in Malaysia, 2018

Sociodemographic characteristics	High or marginal food security						Food insecurity					
	Pre-elderly aged 50-59 years (N=2,679)			Elderly aged 60+ years (N=3,434)			Pre-elderly aged 50-59 years (N=461)			Elderly aged 60+ years (N=535)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**2,679**	**2,690,046**	**88.5 (85.66, 90.88)**	**3,434**	**2,889,042**	**89.6 (87.02, 91.77)**	**461**	**348,419**	**11.5 (9.11,14.34)**	**535**	**334,087**	**10.4 (8.23,12.98)**
Strata												
Urban	1,272	2,139,677	91.2 (87.86, 93.64)	1,552	2,186,872	92.8 (89.99, 94.92)	141	207,262	8.8 (6.36,12.34)	132	168,785	7.2 (5.08,10.01)
Rural	1,407	550,369	79.6 (73.83, 84.34)	1,882	702,170	80.9 (75.26, 85.57)	320	141,157	20.41 (15.66, 26.17)	403	165,302	19.1 (14.43, 24.74)
Sex												
Male	1,227	1,352,097	87.9 (84.53, 90.61)	1,610	1,419,853	90.0 (87.19, 92.32)	228	186,180	12.1 (9.39,15.47)	259	157,020	10.0 (7.68,12.81)
Female	1,452	1,337,949	89.2 (86.36, 91.48)	1,824	1,469,189	89.2 (86.48, 91.50)	233	162,239	10.8 (8.52,13.64)	276	177,067	10.8 (8.50,13.52)
Marital status												
Married	2,288	2,330,837	89.6 (86.65, 91.89)	2,303	1,999,556	91.4 (89.08, 93.20)	357	271,674	10.4 (8.11,13.35)	315	189,026	8.6 (6.80,10.92)
Never married / separated / divorced / widowed	390	358,066	82.3 (77.44, 86.38)	1,129	888,724	86.0 (82.05, 89.24)	104	76,746	17.7 (13.62,22.56)	219	144,352	14.0 (10.76, 17.95),
Education level												
No formal education	149	94,218	66.9 (57.04, 75.43)	613	373,993	79.6 (73.70, 84.51)	80	46,667	33.1 (24.57,42.96)	152	9,566,003	20.4 (15.49,26.30)
Primary education	663	566,110	79.9 (74.22, 84.54)	1,657	1,216,486	86.7 (83.25, 89.59)	195	14,268,590	20.1 (15.46,25.78)	276	18,604,214	13.3 (10.41,16.75)
Secondary education	1,479	1,545,019	91.3 (88.99, 93.23)	903	988,953	95.1 (93.03, 96.62)	172	14,649,522	8.7 (6.77,11.01)	63	5,061,638	4.9 (3.38,6.97)
Tertiary education	388	484,698	97.5 (94.77, 98.80)	261	309,610	99.4 (98.25, 99.82)	14	1,257,141	2.5* (1.20, 5.23)	4	176,857	0.6* (0.18,1.75)

Sociodemographic characteristics	High food security						Food insecurity					
	Pre-elderly aged 50-59 years (N=2,679)			Elderly aged 60+ years (N=3,434)			Pre-elderly aged 50-59 years (N=461)			Elderly aged 60+ years (N=535)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Occupation												
Employed	1,574	1,643,359	88.9 (85.94,91.35)	901	704,844	90.0 (86.66,92.56)	273	20,451,749	11.1 (8.65,14.06)	147	14,390,176	10.0 (7.44,13.34)
Unemployed / retiree / homemaker	1,105	1,046,686	87.9 (84.26,90.81)	2,522	2,184,198	89.5 (86.70,91.80)	188	14,390,176	12.1 (9.19,15.74)	388	25,570,023	10.5 (8.20,13.30)
Individual monthly income (RM)												
< 1000	1,135	943,018	82.8 (78.47, 86.41)	2,062	1,567,048	84.8 (80.91, 88.00)	299	19,586,462	17.2 (13.59,21.53)	453	28,106,211	15.2 (12.00,19.09)
1000 - 1999	680	620,924	85.3 (81.59, 88.40)	773	637,799	93.6 (91.55, 95.21)	120	10,684,926	14.7 (11.60,18.41)	70	4,346,785	6.4 (4.79,8.45)
≥ 2000	837	1,089,979	96.2 (93.87, 97.70)	558	637,101	98.8 (97.06, 99.48)	38	4,269,857	3.8 (2.30,6.13)	9	799,587	1.2* (0.52,2.94)

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 13.1.1.2.1: Prevalence of self-reported diabetes among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Self-reported diabetes					
	Pre-elderly aged 50-59 years (N=3,138)			Elderly aged 60+ years (N=3,966)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**570**	**569,885**	**18.8 (16.69, 21.03)**	**1,018**	**891,213**	**27.7 (25.46, 29.99)**
Strata						
Urban	267	443,549	18.9 (16.34, 21.76)	478	682,846	29.0 (26.17, 32.01)
Rural	303	126,336	18.3 (15.91, 20.97)	540	208,367	24.0 (21.61, 26.66)
Sex						
Male	242	274,541	17.9 (15.19, 20.88)	446	417,463	26.5 (24.00, 29.10)
Female	328	295,343	19.7 (16.60, 23.20)	572	473,750	28.8 (26.09, 31.69)
Marital status						
Married	492	502,263	19.3 (17.16, 21.66)	681	621,154	28.4 (25.81, 31.15)
Never married / separated / divorced / widowed	78	67,622	15.6 (11.61, 20.52)	335	269,073	26.1 (22.70, 29.72)
Education level						
No formal education	34	32,189	22.8 (16.37, 30.94)	197	127,946	27.2 (23.55, 31.27)
Primary education	164	134,709	19.0 (16.22, 22.19)	480	382,131	27.2 (24.23, 30.43)
Secondary education	303	331,385	19.6 (16.86, 22.66)	248	269,755	25.9 (22.09, 30.21)
Tertiary education	69	71,602	14.4 (10.34, 19.70)	93	111,382	36.1 (30.77, 41.89)
Occupation						
Employed	276	289,688	15.7 (13.38, 18.30)	194	159,464	20.5 (17.62, 23.62)
Unemployed / retiree / homemaker	294	280,197	23.5 (20.74, 26.60)	824	731,749	30.0 (27.17, 32.93)
Individual monthly income (RM)						
< 1000	276	232,416	20.4 (17.67, 23.45)	643	513,076	27.8 (25.06, 30.65)
1000 - 1999	139	134,954	18.6 (15.14, 22.56)	219	190,555	28.0 (23.52, 32.94)
≥ 2000	149	194,010	17.1 (14.03, 20.75)	150	180,656	28.0 (24.74, 31.52)

Table 13.1.1.2.2: Prevalence of pre-elderly and elderly screened for diabetes in the past 12 months in Malaysia, 2018

Sociodemographic characteristics	Screened for diabetes					
	Pre-elderly aged 50-59 years (N=2,703)			Elderly aged 60+ years (3,085)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**2,028**	**2,010,828**	**77.1 (73.13, 80.63)**	**2,419**	**1,963,350**	**80.5 (76.79, 83.76)**
Strata						
Urban	935	1,575,072	78.1 (73.03, 82.44)	1,022	1,445,337	82.6 (77.70, 86.63)
Rural	1,093	435,756	73.7 (69.97, 77.07)	1,397	518,013	75.2 (70.43, 79.38)
Sex						
Male	884	982,791	74.5 (70.27, 78.29)	1,116	939,196	77.4 (72.75, 81.42)
Female	1,144	1,028,037	79.8 (74.93, 83.88)	1,303	1,024,153	83.6 (80.00, 86.68)
Marital status						
Married	1,710	1,723,548	77.8 (73.81, 81.30)	1,600	1,335,104	81.2 (77.07, 84.79)
Never married / separated / divorced / widowed	317	286,138	73.1 (65.61, 79.55)	818	627,759	79.0 (75.11, 82.44)
Education level						
No formal education	146	92,794	79.0 (71.06, 85.28)	483	279,480	77.1 (71.40, 81.98)
Primary education	534	453,144	74.0 (68.53, 78.79)	1,163	826,898	77.7 (73.01, 81.82)
Secondary education	1,065	1,100,342	76.7 (72.22, 80.66)	616	678,781	84.3 (80.43, 87.47)
Tertiary education	283	364,549	82.1 (75.07, 87.53)	157	178,191	86.2 (77.93, 91.65)
Occupation						
Employed	1,204	1,258,052	76.8 (72.42, 80.62)	633	476,483	74.2 (68.08, 79.57)
Unemployed / retiree / homemaker	824	752,777	77.6 (72.85, 81.80)	1,786	1,486,867	82.8 (79.25, 85.77)
Individual monthly income (RM)						
< 1000	899	729,514	75.8 (71.29, 79.76)	1518	1,105,782	79.4 (75.44, 82.82)
1000 - 1999	503	472,455	75.2 (69.61, 80.13)	510	417,366	81.2 (75.20, 85.95)
≥ 2000	612	789,714	80.0 (75.04, 84.21)	362	404,958	83.3 (76.72, 88.24)

Table 13.1.1.2.3: Types of treatment or advice received by pre-elderly and elderly with diabetes in Malaysia, 2018

Types of treatment	Pre-elderly aged 50-59 years (N=570)			Elderly 60+ years (N=1,018)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Drugs in the past 2 weeks	518	529,839	93.0 (89.89, 95.17)	938	823,348	92.4 (89.65, 94.44)
Insulin	143	116,387	20.5 (16.19, 25.54)	263	228,333	25.7 (22.41, 29.31)
Advice for diet control	515	510,760	89.6 (85.98, 92.41)	877	772,837	86.9 (83.29, 89.90)
Advice to lose weight	463	455,878	80.1 (75.64, 83.90)	729	633,838	71.4 (66.58, 75.80)
Advice to start or do more exercise	497	494,608	86.8 (82.34, 90.33)	785	706,329	79.7 (75.44, 83.36)
Received any advice (Diet control/lose weight/exercise)	536	531,854	93.3 (90.30, 95.45)	916	815,993	91.6 (88.49, 93.87)
Herbal/traditional remedies	133	123,640	21.7 (17.20, 26.99)	199	166,039	18.7 (15.54, 22.28)

Table 13.1.1.2.4: Places where treatment or advice was received by pre-elderly and elderly with diabetes in Malaysia, 2018

Places of treatment	Pre-elderly aged 50-59 years (N=570)			Elderly 60+ years (N=1,018)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Government clinic	388	367,133	64.4 (57.48, 70.80)	741	622,917	69.9 (64.83, 74.52)
Government hospital	107	99,669	17.5 (12.85, 23.35)	199	185,620	20.8 (16.82, 25.50)
Traditional, herbal and complimentary medicine	3	1,345	0.2 (0.07, 0.82)	2	1,557	0.2 (0.03, 0.93)
Private clinic	46	62,931	11.0 (7.86, 15.30)	50	52,201	5.9 (3.88, 8.74)
Private hospital	12	23,684	4.2 (2.15, 7.89)	19	22,218	2.5 (1.54, 4.02)
Pharmacy (self medicating)	9	10,469	1.8 (0.79, 4.22)	5	5,280	0.6 (0.23, 1.53)
Did not seek treatment	5	4,654	0.8 (0.26, 2.54)	2	1,420	0.2 (0.03, 0.82)

Table 13.1.2.2.1: Prevalence of self-reported hypertension among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Self-reported hypertension					
	Pre-elderly aged 50-59 years (N=3,138)			Elderly aged 60+ years (N=3,966)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**1,022**	**993,126**	**32.7 (29.91, 35.64)**	**2,027**	**1,645,628**	**51.1 (48.88, 53.29)**
Strata						
Urban	460	1,587,916	32.3 (28.92, 35.96)	858	1,189,310	50.5 (47.79, 53.23)
Rural	563	235,246	34.1 (30.31, 38.08)	1,169	456,318	52.6 (49.14, 56.13)
Sex						
Male	406	448,743	29.2 (25.88, 32.73)	861	739,574	46.9 (43.95, 49.88)
Female	617	545,526	36.4 (32.45, 40.49)	1,166	906,054	55.1 (52.15, 58.02)
Marital status						
Married	162	148,214	34.1 (28.50, 40.16)	724	557,396	54.0 (50.11, 57.79)
Never married / separated / divorced / widowed	860	844,912	32.5 (29.45, 35.67)	1,300	1,086,761	49.7 (47.20, 52.19)
Education level						
No formal education	75	54,866	38.9 (31.35, 47.12)	463	280,057	59.6 (55.26, 63.86)
Primary education	307	254,184	35.9 (31.88, 40.14)	962	701,361	50.0 (46.79, 53.14)
Secondary education	537	561,316	33.2 (29.41, 37.21)	475	515,934	49.6 (46.13, 53.14)
Tertiary education	104	123,902	24.9 (20.01, 30.57)	127	148,276	48.1 (40.22, 56.11)
Occupation						
Employed	276	289,688	15.7 (13.38, 18.30)	194	159,464	20.5 (17.62, 23.62)
Unemployed / retiree / homemaker	294	280,197	23.5 (20.74, 26.60)	824	731,749	30.0 (27.17, 32.93)
Individual monthly income (RM)						
< 1000	507	416,624	36.6 (32.81, 40.53)	1,335	978,485	53.0 (49.88, 56.01)
1000 - 1999	234	222,257	30.6 (26.08, 35.48)	420	353,848	52.0 (46.25, 57.64)
≥ 2000	268	337,648	29.8 (25.82, 34.14)	254	292,673	45.4 (40.40, 50.43)

Table 13.1.2.2.2: Prevalence of pre-elderly and elderly screened for hypertension in the past 12 months in Malaysia, 2018

Sociodemographic characteristics	Screened for hypertension					
	Pre-elderly aged 50-59 years (N=2,318)			Elderly aged 60+ years (N=2,223)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**1,755**	**1,715,504**	**77.3 (73.26, 80.98)**	**1,716**	**1,425,108**	**79.0 (75.39, 82.12)**
Strata						
Urban	800	1,345,687	78.4 (73.19, 82.87)	1,478	2,091,202	88.8 (85.98, 91.14)
Rural	955	369,817	73.7 (69.71, 77.30)	1,948	737,754	85.1 (82.64, 87.30)
Sex						
Male	800	872,492	74.7 (70.53, 78.51)	868	730,234	76.9 (72.74, 80.65)
Female	955	843,012	80.3 (75.27, 84.45)	848	694,873	81.2 (77.37, 84.51)
Marital status						
Married	1,489	1,484,677	78.0 (73.77, 81.71)	1,175	1,002,730	79.8 (75.97, 83.21)
Never married / separated / divorced / widowed	266	230,827	73.4 (65.98, 79.76)	541	422,377	76.9 (72.48, 80.87)
Education level						
No formal education	127	81,177	83.4 (76.17, 88.79)	286	169,297	73.9 (67.04, 79.77)
Primary education	445	369,285	74.5 (68.82, 79.53)	836	608,171	76.3 (71.66, 80.36)
Secondary education	925	936,869	76.3 (71.24, 80.66)	458	491,530	82.5 (78.19, 86.14)
Tertiary education	258	328,173	82.7 (74.84, 88.47)	136	156,110	85.3 (77.10, 90.91)
Occupation						
Employed	1,064	1,085,745	76.6 (72.23, 80.47)	506	374,858	73.8 (67.78, 79.01)
Unemployed / retiree / homemaker	691	629,760	78.7 (73.36, 83.17)	1,210	1,050,250	81.0 (77.33, 84.16)
Individual monthly income (RM)						
< 1000	755	602,818	76.1 (71.78, 80.03)	1,025	775,662	77.4 (73.18, 81.07)
1000 - 1999	455	410,878	75.1 (69.32, 80.03)	385	304,493	80.6 (74.69, 85.47)
≥ 2000	534	685,971	80.2 (74.71, 84.71)	288	323,247	81.7 (76.03, 86.31)

Table 13.1.2.2.3: Types of treatment or advice received by pre-elderly and elderly with hypertension in Malaysia, 2018

Types of treatment	Pre-elderly aged 50-59 years (N=1,022)			Elderly aged 60+ years (N=2,027)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Drugs in the past 2 weeks	955	942,345	94.8 (92.63, 96.40)	1,953	1,594,396	96.9 (95.81, 97.69)
Advice to reduce salt intake	900	865,114	87.2 (83.54, 90.16)	1,763	1,425,777	86.8 (83.75, 89.35)
Advice to lose weight	778	729,145	73.6 (68.48, 78.08)	1,422	1,152,062	70.2 (66.11, 73.97)
Advice to start or do more exercise	846	813,721	82.1 (77.37, 85.98)	1,574	1,310,790	79.8 (76.52, 82.76)
Received any advice (Reduce salt intake/lose weight/exercise)	933	905,824	91.1 (88.00, 93.46)	1,821	1,487,030	90.4 (88.15, 92.20)
Herbal/traditional remedies	199	162,070	16.3 (13.65, 19.43)	360	253,536	15.6 (13.45, 17.94)

Table 13.1.2.2.4: Places where treatment or advice received by pre-elderly and elderly with hypertensions in Malaysia, 2018

Places of treatment	Pre-elderly aged 50-59 years (N=1,022)			Elderly aged 60+ years (N=2,027)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Government clinic	656	624,201	62.8 (56.53, 68.65)	1,407	1,084,313	65.9 (59.80, 71.50)
Government hospital	226	182,891	18.4 (13.35, 24.81)	450	366,874	22.3 (17.53, 27.91)
Traditional, herbal and complimentari medicine	3	1,792	0.2 (0.05, 0.68)	2	1,893	0.1 (0.03, 0.51)
Private clinic	96	128,933	13.0 (9.45, 17.55)	116	132,608	8.1 (5.46, 11.74)
Private hospital	15	25,030	2.5 (1.37, 4.58)	28	35,715	2.2 (1.28, 3.66)
Pharmacy (self medicating)	16	23,329	2.3 (1.24, 4.39)	20	22,716	1.4 (0.79, 2.39)
Did not seek treatment	10	7,922	0.8 (0.33, 1.91)	4	1,509	0.1 (0.03, 0.25)

Table 13.1.3.2.1: Prevalence of self-reported hypercholesterolaemia among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Self-reported hypercholesterolaemia					
	Pre-elderly aged 50-59 years (N=3,139)			Elderly aged 60+ years (N=3,966)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**900**	**882,728**	**29.1 (26.44, 31.83)**	**1,576**	**1,347,075**	**41.8 (39.25, 44.43)**
Strata						
Urban	406	677,129	28.9 (25.61, 32.33)	728	1,019,530	43.3 (39.95, 46.72)
Rural	494	205,599	29.8 (26.71, 33.02)	848	327,546	37.8 (34.98, 40.69)
Sex						
Male	371	411,285	26.8 (23.63, 30.13)	670	595,237	37.8 (34.76, 40.84)
Female	529	471,442	31.4 (28.07, 34.98)	906	751,839	45.7 (42.10, 49.39)
Marital status						
Married	768	773,989	29.7 (27.06, 32.59)	1,060	929,531	42.5 (39.86, 45.19)
Never married / separated / divorced / widowed	131	107,596	24.7 (20.11, 30.05)	513	416,072	40.3 (35.67, 45.08)
Education level						
No formal education	53	40,423	28.7 (19.99, 39.32)	298	185,150	39.4 (34.83, 44.21)
Primary education	271	214,644	30.3 (26.64, 34.27)	759	574,428	40.9 (37.51, 44.42)
Secondary education	467	500,835	29.6 (26.34, 33.10)	420	469,552	45.2 (41.27, 49.12)
Tertiary education	109	126,825	25.5 (19.99, 31.94)	99	117,946	38.3 (31.82, 45.18)
Occupation						
Employed	464	480,090	26.0 (23.22, 28.97)	333	265,103	34.0 (29.72, 38.56)
Unemployed / retiree / homemaker	436	402,637	33.8 (29.81, 38.07)	1,243	1,081,973	44.3 (41.46, 47.21)
Individual monthly income (RM)						
< 1000	421	346,377	30.4 (26.78, 34.31)	1,008	784,161	42.4 (39.08, 45.87)
1000 - 1999	217	194,834	26.8 (22.67, 31.38)	342	300,376	44.1 (38.95, 49.41)
≥ 2000	252	328,565	29.0 (25.00, 33.37)	213	246,215	38.2 (33.88, 42.65)

Table 13.1.3.2.2: Prevalence of pre-elderly and elderly screened for hypercholesterolaemia in the past 12 months in Malaysia, 2018

Sociodemographic characteristics	Screened for hypercholesterolaemia					
	Pre-elderly aged 50-59 years (N=2,232)			Elderly aged 60+ years (N=2,379)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**1,559**	**1,546,049**	**72.1 (67.48, 76.38)**	**1,722**	**1,409,450**	**75.5 (71.77, 78.86)**
Strata						
Urban	722	1,214,243	73.2 (67.24, 78.46)	730	1,039,888	78.1 (73.27, 82.26)
Rural	837	331,806	68.5 (64.36, 72.32)	992	369,562	69.0 (64.00, 73.58)
Sex						
Male	698	778,230	69.6 (64.47, 74.35)	853	724,442	74.1 (69.78, 78.06)
Female	861	767,820	74.9 (69.36, 79.70)	869	685,008	77.0 (72.91, 80.59)
Marital status						
Married	1,314	1,313,289	72.3 (67.41, 76.76)	1,148	968,846	77.3 (73.14, 80.91)
Never married / separated / divorced / widowed	245	232,760	71.1 (63.76, 77.53)	574	440,604	71.9 (67.27, 76.03)
Education level						
No formal education	124	77,629	77.3 (69.61, 83.46)	333	193,791	68.7 (61.90, 74.74)
Primary education	396	339,073	69.2 (62.95, 74.74)	826	602,755	73.1 (68.48, 77.24)
Secondary education	822	843,041	71.2 (66.04, 75.78)	428	455,610	79.9 (75.22, 83.94)
Tertiary education	217	286,306	77.9 (68.02, 85.41)	135	157,294	82.7 (75.27, 88.24)
Occupation						
Employed	940	976,074	71.9 (66.81, 76.52)	477	364,902	71.1 (65.65, 76.02)
Unemployed / retiree / homemaker	619	569,976	72.5 (66.56, 77.81)	1,245	1,044,548	77.1 (72.85, 80.94)
Individual monthly income (RM)						
< 1000	686	556,517	70.4 (65.55, 74.90)	1,054	774,430	73.2 (68.72, 77.31)
1000 - 1999	386	359,247	68.0 (61.51, 73.95)	375	299,443	78.8 (73.07, 83.52)
≥ 2000	475	616,696	77.2 (70.74, 82.60)	272	311,566	78.1 (71.62, 83.50)

Table 13.1.3.2.3: Types of treatment or advice received by pre-elderly and elderly with hypercholesterolaemia in Malaysia, 2018

Types of treatment	Pre-elderly aged 50-59 years (N=900)			Elderly aged 60+ years (N=1,576)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Drugs in the past 2 weeks	778	753,049	85.5 (81.55, 88.72)	1,462	1,243,618	92.3 (90.06, 94.10)
Advice to reduce salt intake	788	764,008	86.7 (83.92, 89.14)	1,352	1,147,459	85.3 (81.82, 88.22)
Advice to lose weight	699	671,035	76.0 (70.73, 80.66)	1,102	936,206	69.6 (64.89, 74.02)
Advice to start or do more exercise	753	733,237	83.4 (78.42, 87.49)	1,223	1,054,793	78.5 (74.76, 81.76)
Received any advice (Reduce salt intake/lose weight/exercise)	817	793,350	89.9 (86.91, 92.23)	1,396	1,191,029	88.4 (1.24, 85.72)
Herbal/traditional remedies	182	158,306	18.0 (14.88, 21.57)	305	232,381	17.3 (14.48, 20.56)

Table 13.1.3.2.4: Places where treatment or advice was received by pre-elderly and elderly with hypercholesterolaemia in Malaysia, 2018

Places of treatment	Pre-elderly aged 50-59 years (N=900)			Elderly aged 60+ years (N=1,576)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Government clinic	606	579,367	65.6 (59.65, 71.16)	1,111	883,959	65.6 (60.18, 70.68)
Government hospital	189	158,076	17.9 (13.07, 24.05)	331	295,546	21.9 (17.37, 27.31)
Traditional, herbal and complimentari medicine	0	-	-	3	3,027	0.2 (0.07, 0.74)
Private clinic	67	93,313	10.6 (8.25, 13.45)	91	112,343	8.3 (5.66, 12.13)
Private hospital	19	31,786	3.6 (2.13, 6.02)	22	33,358	2.5 (1.46, 4.16)
Pharmacy (self medicating)	9	11,878	1.3 (0.66, 2.71)	14	14,917	1.1 (0.62, 1.96)
Did not seek treatment	10	8,308	0.9 (0.46, 1.93)	4	3,926	0.3 (0.09, 0.93)

Table 13.4.2.1.1: Prevalence of self-reported cancer among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Self-reported cancer [a]					
	Pre-elderly aged 50-59 years (N=3,130)			Elderly aged 60+ years (3,945)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**38**	**39,646**	**1.3 (0.90, 1.91)**	**51**	**52,497**	**1.6 (1.13, 2.38)**
Strata						
Urban	23	34,751	1.5 (0.98, 2.26)	27	42,699	1.8 (1.17, 2.85)
Rural	15	4,895	0.7 (0.40, 1.26)	24	9,797	1.1 (0.69, 1.88)
Sex						
Male	13	16,848	1.1* (0.59, 2.06)	28	32,275	2.1 (1.26, 3.35)
Female	25	22,798	1.5 (0.98, 2.37)	23	20,221	1.2 (0.69, 2.20)
Marital status						
Married	30	33,147	1.3 (0.84, 1.93)	41	40,912	1.9 (1.31, 2.72)
Never married / separated / divorced / widowed	8	6,498	1.5* (0.64, 3.48)	10	11,584	1.1* (0.42, 2.97)
Education level						
No formal education	4	1,399	1.0* (0.35, 2.82)	8	7,891	1.7* (0.66, 4.27)
Primary education	7	9,031	1.3* (0.57, 2.85)	26	26,258	1.9 (1.11, 3.16)
Secondary education	21	22,854	1.4 (0.79, 2.32)	14	13,597	1.3* (0.66, 2.64)
Tertiary education	6	6,361	1.3* (0.48, 3.34)	3	4,751	1.5* (0.46, 5.12)
Occupation						
Employed	15	14,237	0.8* (0.42, 1.41)	8	11,599	1.5* (0.70, 3.15)
Unemployed / retiree / homemaker	23	25,408	2.1 (1.31, 3.48)	43	40,898	1.7 (1.15, 2.47)
Individual monthly income (RM)						
< 1000	23	23,242	2.0 (1.22, 3.41)	33	27,690	1.5 (0.94, 2.41)
1000 - 1999	6	7,422	1.0* (0.38, 2.73)	9	11,517	1.7* (0.71, 4.07)
≥ 2000	9	8,982	0.8* (0.37, 1.68)	8	11,241	1.7* (0.91, 3.32)

[a] Self-reported cancer: Those who had cancer and the cancer was confirmed by a doctor.

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 13.5.2.1.1: Prevalence of current smokers among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Current smoked tobacco [a]					
	Pre-elderly aged 50-59 years (N=3,139)			Elderly aged 60+ years (N=3,968)		
	Unweighted count	Estimated Population	Prevalence (%), 95% CI	Unweighted count	Estimated Population	Prevalence (%), 95% CI
Malaysia	**711**	**663,193**	**21.8 (19.50, 24.36)**	**622**	**430,134**	**13.3 (11.74, 15.11)**
Strata						
Urban	272	483,683	20.6 (17.74, 23.81)	197	271,869	11.5 (9.54, 13.87)
Rural	439	179,510	26.0 (23.55, 28.59)	425	158,266	18.3 (16.22, 20.49)
Sex						
Male	683	646,281	42.0 (37.93, 46.26)	570	403,833	25.6 (22.44, 29.00)
Female	28	16,912	1.1 (0.68, 1.86)	52	26,301	1.6 (1.11, 2.29)
Marital status						
Married	631	591,825	22.7 (20.17, 25.55)	470	327,580	15.0 (12.94, 17.22)
Never married / separated / divorced / widowed	80	71,369	16.4 (12.64, 21.05)	152	102,554	9.9 (7.79, 12.58)
Education level						
No formal education	43	26,147	18.6 (11.46, 28.62)	93	47,351	10.1 (7.66, 13.16)
Primary education	203	157,679	22.3 (18.88, 26.07)	356	222,790	15.9 (13.78, 18.21)
Secondary education	401	410,913	24.3 (21.25, 27.61)	148	130,696	12.6 (9.92, 15.80)
Tertiary education	64	68,454	13.8 (9.79, 19.02)	25	29,297	9.4 (5.70, 15.16)
Occupation						
Employed	608	559,368	30.3 (26.94, 33.86)	281	169,039	21.6 (18.08, 25.57)
Unemployed / retiree / homemaker	103	103,825	8.7 (6.80, 11.12)	341	261,095	10.7 (9.19, 12.41)
Individual monthly income (RM)						
< 1000	199	131,120	11.5 (9.22, 14.29)	384	245,468	13.3 (11.45, 15.36)
1000 - 1999	280	242,050	33.3 (28.67, 38.27)	158	105,116	15.4 (12.49, 18.93)
≥ 2000	229	286,003	25.3 (21.39, 29.54)	77	78,247	12.1 (9.02, 16.12)

[a] Current smokers - Currently using any smoked tobacco product (manufactured cigarettes, hand-rolled cigarettes, kretek, cigars, shisha, bidis or tobacco pipes).

Table 13.5.2.1.2: Prevalence of former smokers among pre-elderly and elderly in Malaysia, 2018

Sociodemographic characteristics	Former smokers [a]					
	Pre-elderly aged 50-59 years (N=3,139)			Elderly aged 60+ years (N=3,968)		
	Unweighted count	Estimated Population	Prevalence* (%), 95% CI	Unweighted count	Estimated Population	Prevalence* (%), 95% CI
Malaysia	**220**	**199,528**	**6.6 (5.50, 7.82)**	**519**	**403,053**	**12.5 (10.96, 14.23)**
Strata						
Urban	82	140,521	6.0 (4.74, 7.54)	196	284,240	12.1 (10.12, 14.30)
Rural	138	59,006	8.5 (6.84, 10.62)	323	118,814	13.7 (11.74, 15.94)
Sex						
Male	205	188,639	12.3 (10.42, 14.39)	450	368,239	23.3 (20.23, 26.75)
Female	15	10,889	0.7* (0.34, 1.56)	69	34,814	2.1 (1.34, 3.33)
Marital status						
Married	198	180,990	7.0 (5.81, 8.31)	413	341,094	15.6 (13.52, 17.88)
Never married / separated / divorced / widowed	22	18,537	4.3 (2.34, 7.64)	106	61,960	6.0 (4.57, 7.84)
Education level						
No formal education	13	5,027	3.6* (1.75, 7.12)	95	44,436	9.5 (7.19, 12.35)
Primary education	60	55,795	7.9 (5.96, 10.36)	272	189,086	13.5 (11.45, 15.78)
Secondary education	118	99,348	5.9 (4.64, 7.40)	115	129,626	12.5 (9.82, 15.71)
Tertiary education	29	39,358	7.9 (5.04, 12.22)	37	39,906	12.8 (8.36, 19.15)
Occupation						
Employed	168	155,064	8.4 (6.86, 10.23)	193	142,753	18.2 (14.27, 23.01)
Unemployed / retiree / homemaker	52	44,464	3.7 (2.62, 5.30)	326	260,300	10.7 (9.18, 12.35)
Individual monthly income (RM)						
< 1000	72	51,340	4.5 (3.15, 6.41)	283	183,407	9.9 (8.25, 11.90)
1000 - 1999	68	51,670	7.1 (5.28, 9.51)	138	109,153	16.0 (12.80, 19.90)
≥ 2000	80	96,518	8.5 (6.53, 11.04)	96	109,297	16.9 (12.69, 22.26)

[a] Former smokers - Used any smoked tobacco product (manufactured cigarettes, hand-rolled cigarettes, kretek, cigars, shisha, bidis or tobacco pipes) in the past.

** Prevalence should be interpreted with caution due to high relative standard error.*

Table 14.1.2.1: Prevalence of self-reported elder abuse in the past 12 months among elderly in Malaysia, 2018 (N=3,466)

Sociodemographic characteristics	Overall abuse		
	Unweighted count	Estimated Population	Prevalence[a] (%), 95% CI
Malaysia	**301**	**244,239**	**9.0 (6.93, 11.56)**
Strata			
Urban	105	165,796	8.3 (5.87, 11.71)
Rural	196	78,443	10.7 (7.76, 14.68)
Sex			
Male	159	135,161	9.9 (7.15, 13.44)
Female	142	109,079	8.1 (6.20, 10.48)
Marital status			
Married	103	82,300	10.5 (7.79, 14.01)
Never married / separated / divorced / widowed	198	161,939	8.4 (6.26, 11.10)
Education level			
No formal education	43	24,621	7.7 (5.12, 11.51)
Primary education	172	110,948	9.5 (7.28, 12.40)
Secondary education	71	90,745	9.6 (6.32, 14.30)
Tertiary education	15	17,926	6.1 (3.43, 10.79)
Occupation			
Employed	89	58,069	8.2 (5.75, 11.48)
Unemployed / retiree / homemaker	212	28,068	9.3 (7.09, 12.02)
Individual monthly income (RM)			
< 1000	176	133,233	8.9 (6.60, 11.96)
1000 - 1999	78	49,155	8.2 (5.06, 12.94)
≥ 2000	45	58,960	10.0 (6.39, 15.21)

[a] *Prevalence excludes respondents with cognitive impairment (n=241) and those who had help from someone else to answer the questionnaire (n=261).*

Table 14.1.2.2: Prevalence of types of abuse experienced by elderly in Malaysia in the past 12 months, 2018 (N=3,466)

Type of abuse	Unweighted count	Estimated population	Prevalence* (%)[a], 95% CI
Overall	301	244,239	9.0 (6.93,11.56)
Neglect	254	208,945	7.5 (5.54,10.07)
Psychological	37	23,194	0.8 (0.52,1.35)
Financial	25	20,179	0.7 (0.41,1.31)
Physical	12	6,397	0.2* (0.12,0.44)
Sexual	3	1,823	0.1* (0.02,0.27)

[a] Total for overall abuse is > total of each subtype of abuse as >1 subtype of abuse may have been experienced by the elderly person.
** Prevalence should be interpreted with caution due to high relative standard error.*

Table 14.1.2.3: Clustering of abuse subtypes experienced by elderly who reported abuse in Malaysia in the past 12 months, 2018 (N=301)

Clustering of abuse	Unweighted count	Percentage (%)[b] (%)
1 type	280	95.1
2 types	15	3.7
3 types	3	0.6
4 types	3	0.6
5 types	0	-

[b] An elderly person may sustain more than on type of abuse in the past 12 months

Table 14.1.2.4: Prevalence of elderly who perceived various types of abusive behaviour as elder abuse in Malaysia, 2018 (N=3,466)

Type of abuse	Total		
	Unweighted count	Estimated population	Prevalence* (%)[c], 95% CI
Neglect	3,035	2,563,848	92.0 (88.99,94.27)
Psychological	3,067	2,578,279	92.6 (89.81,94.64)
Financial	3,033	2,558,429	91.8 (88.97,94.02)
Physical	3,091	2,602,621	93.4 (90.70,95.38)
Sexual	2,852	2,384,626	85.6 (82.36,88.31)

[c] Perception of all elderly regardless of screening status for abuse

Table 14.1.2.5: Reporting of elder abuse in the past 12 months among elderly in Malaysia who experienced abuse, 2018 (N=301)

Reporting of abuse	Unweighted count	Percentage (%)
Health care providers	0	-
Social workers	1	0.8
Police	52	64.7
Others	5	6.0
None	29	28.5

Table 14.1.2.6: Reasons for non-reporting of elder abuse in the past 12 months by elderly in Malaysia who experienced abuse, 2018 (N=29)

Reporting of abuse	Unweighted count	Percentage (%)
Did not feel it is an abuse or neglect	7	24.8
Did not know where to seek help	4	16.2
Ashamed	1	2.3
Did not want to implicate family members	17	56.7

APPENDIX 10

OPERATIONAL DEFINITION OF VARIABLES

ELDERLY HEALTH – QUALITY OF LIFE

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
M001	M001_NEW	Domain Control: Option for age prevents from doing the things I would like to.	RECODE M001 (MISSING=SYSMIS) ('1'=0) ('2'=1) ('3'=2) ('4'=3) INTO M001_NEW. VARIABLE LABELS M001_NEW 'M001_NEW'.
M002	M002_NEW	Domain Control: Option for feel that what happens is out of control.	RECODE M001 (MISSING=SYSMIS) ('1'=0) ('2'=1) ('3'=2) ('4'=3) INTO M001_NEW. VARIABLE LABELS M001_NEW 'M001_NEW'.
M003	M003_NEW	Domain Control: Option for feel free to plan for the future.	RECODE M003 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M003_NEW. VARIABLE LABELS M003_NEW 'M003_NEW'.
M004	M004_NEW	Domain Control: Option for feel left out of things.	RECODE M004 (MISSING=SYSMIS) ('1'=0) ('2'=1) ('3'=2) ('4'=3) INTO M004_NEW. VARIABLE LABELS M004_NEW 'M004_NEW'.
M005	M005_NEW	Domain for Autonomy: Option for can do the things that want to do.	RECODE M005 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M005_NEW. VARIABLE LABELS M005_NEW 'M005_NEW'.
M006	M006_NEW	Domain for Autonomy: Option for family responsibilities prevent from doing what want to.	RECODE M006 (MISSING=SYSMIS) ('1'=0) ('2'=1) ('3'=2) ('4'=3) INTO M006_NEW. VARIABLE LABELS M006_NEW 'M006_NEW'.
M007	M007_NEW	Domain for Autonomy: Option for feel please to what can do.	RECODE M007 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M007_NEW. VARIABLE LABELS M007_NEW 'M007_NEW'.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
M008	M008_NEW	Domain for Autonomy: Option for health stops from doing things.	RECODE M008 (MISSING=SYSMIS) ('1'=0) ('2'=1) ('3'=2) ('4'=3) INTO M008_NEW. VARIABLE LABELS M008_NEW 'M008_NEW'.
M009	M009_NEW	Domain for Autonomy: Option for feel shortage of money stops me from doing things	RECODE M009 (MISSING=SYSMIS) ('1'=0) ('2'=1) ('3'=2) ('4'=3) INTO M009_NEW. VARIABLE LABELS M009_NEW 'M009_NEW'.
M010	M010_NEW	Domain for Pleasure: Option for look forward to each day.	RECODE M010 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M010_NEW. VARIABLE LABELS M010_NEW 'M010_NEW'.
M011	M011_NEW	Domain for Pleasure: Option for life has meaning.	RECODE M011 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M011_NEW. VARIABLE LABELS M011_NEW 'M011_NEW'.
M012	M012_NEW	Domain for Pleasure: Option for enjoy the entire thing.	RECODE M014 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M014_NEW. VARIABLE LABELS M014_NEW 'M014_NEW'.
M013	M013_NEW	Domain for Pleasure: Option for enjoy being in the company of others.	RECODE M013 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M013_NEW. VARIABLE LABELS M013_NEW 'M013_NEW'.
M014	M014_NEW	Domain for Pleasure: Option for look back on life with a sense of happiness.	RECODE M014 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M014_NEW. VARIABLE LABELS M014_NEW 'M014_NEW'.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
M015	M015_NEW	Domain for Self-realization: Option for feel full of energy these days.	RECODE M015 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M015_NEW. VARIABLE LABELS M015_NEW 'M015_NEW'.
M016	M016_NEW	Domain for Self-realization: Option for do things that never done before.	RECODE M016 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M016_NEW. VARIABLE LABELS M016_NEW 'M016_NEW'.
M017	M017_NEW	Domain for Self-realization: Option for feel satisfied with the way of life has turned out.	RECODE M017 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M017_NEW. VARIABLE LABELS M017_NEW 'M017_NEW'.
M018	M018_NEW	Domain for Self-realization: Option for feel that life is full of opportunities.	RECODE M018 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M018_NEW. VARIABLE LABELS M018_NEW 'M018_NEW'.
M019	M019_NEW	Domain for Self-realization: Option for feel that the future looks good.	RECODE M019 (MISSING=SYSMIS) ('1'=3) ('2'=2) ('3'=1) ('4'=0) INTO M019_NEW. VARIABLE LABELS M019_NEW 'M019_NEW'.
QoL score	SCORE_TOTAL	Total score for QoL	COMPUTE Score=SUM (M001_NEW, M002_NEW, M003_NEW, M004_NEW, M005_NEW, M006_NEW, M007_NEW, M008_NEW, M009_NEW, M010_NEW, M011_NEW, M012_NEW, M013_NEW, M014_NEW, M015_NEW, M016_NEW, M017_NEW, M018_NEW, M019_NEW).
Control score	SCORE_ CONTROL	Domain for Control score	COMPUTE Score_control=M001_NEW + M002_NEW + M003_NEW + M004_NEW.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Autonomy score	SCORE_ AUTONOMY	Domain for Autonomy score	COMPUTE Score_autonomy=M005_NEW + M006_NEW + M007_NEW + M008_NEW + M009_NEW.
Pleasure score	SCORE_ PLEASURE	Domain for Pleasure score	COMPUTE Score_pleasure=M010_NEW + M011_NEW + M012_NEW + M013_NEW + M014_NEW.
Self Realizatio n score	SCORE_ SR	Domain for Self-realization score	COMPUTE Score_SR=M015_NEW + M016_NEW + M017_NEW + M018_NEW + M019_NEW.
QoL Tertiles Pre_ elderly	TERTILES_PRE_ ELDERLY	QoL score was divided into tertiles.	RECODE Score (MISSING=SYSMIS) (Lowest thru 46=1) (47 thru 51=2) (52 thru Highest=3) INTO tertile. VARIABLE LABELS tertile 'tertiles '.
QoL Tertiles Elderly	TERTILES_ ELDERLY	QoL score was divided into tertiles.	RECODE Score (MISSING=SYSMIS) (Lowest thru 44=1) (45 thru 50=2) (51 thru Highest=3) INTO tertile. VARIABLE LABELS tertile 'tertiles '.

ELDERLY HEALTH – MENTAL HEALTH: DEMENTIA SCREENING

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
C201	C201	What is a BRIDGE?	RECODE C201 (1=0) (2=2) INTO C201_new. EXECUTE. VALUE LABELS C201_new 1= Incorrect 2= Correct
C202	C202	Name as many DIFFERENT	RECODE C202 (1=0) (2=1) (3=2) INTO C202_new. EXECUTE. VALUE LABELS C202_new 1= 0 – 3 2= 4 – 7 3= 8 or more
C203	C203	ANIMALS as you can in 1 minute	RECODE C203 (1=0) (2=1) INTO C203_new. EXECUTE. VALUE LABELS C203_new 1= Incorrect 2= Correct
C204	C204	Who is the current PRIME MINISTER OF MALAYSIA?	RECODE C204 (1=0) (2=2) INTO C204_new. EXECUTE. VALUE LABELS 1= Incorrect 2= Correct
C205	C205	What DAY of the week is it?	RECODE C205 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) INTO C205_new. EXECUTE. VALUE LABELS C204_new 1= 0 words 2= 1 word 3= 2 words 4= 3 words 5= 4 words 6= 5 or more words
C206a	C206a	Can you tell me the TEN WORDS we learned earlier?	RECODE C206a (1=0) (2=1) INTO C206a_new. EXECUTE. VALUE LABELS C206a_new 1= Incorrect 2= Middle 2 matchsticks pointing the same way

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
C206b	C206b	Matchstick design performed correctly	RECODE C206b (1=0) (2=1) INTO C206b_new. EXECUTE. VALUE LABELS C206b_new 1= Incorrect 2= Outside 2 matchsticks pointing at an angle
C206c	C206c	Matchstick design performed correctly	RECODE C206c (1=0) (2=1) INTO C206c_new. EXECUTE.
		Matchstick design performed correctly	VALUE LABELS C206c_new 1= Incorrect 2= Matchsticks are orientated correctly
Total score	C2_TotalScore	Total Score C2	COMPUTE C2_TotalScore=C201_new + C202_new + C203_new + C204_new + C205_new + C206a_new + C206b_new + C206c_new. EXECUTE.
Dementia	C2_Dementia	Dementia	RECODE C2_TotalScore (Lowest thru 10=1) (11 thru Highest=0) INTO Dementia. EXECUTE.

ELDERLY HEALTH – MENTAL HEALTH: DEPRESSIVE SYMPTOMS SCREENING

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
C301	C301	Are you basically satisfied with your life?	Recode answers option to C301_score 1→0 2→1
C302	C302	Have you dropped many of your activities and interests?	Recode answers option to C302_score 1→1 2→0
C303	C303	Do you feel that your life is empty?	Recode answers option to C303_score 1→1 2→0
C304	C304	Do you often get bored?	Recode answers option to C304_score 1→1 2→0
C305	C305	Are you in good spirits most of the time?	Recode answers option to C305_score 1→0 2→1
C306	C306	Are you afraid that something bad is going to happen to you?	Recode answers option to C306_score 1→1 2→0
C307	C307	Do you feel happy most of the time?	Recode answers option to C307_score 1→0 2→1
C308	C308	Do you often feel helpless?	Recode answers option to C308_score 1→1 2→0
C309	C309	Do you feel that you have more problems with memory than most?	Recode answers option to C309_score 1→1 2→0

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
C310	C310	Do you think it is wonderful to be alive now?	Recode answers option to C310_score 1→0 2→1
C311	C311	Do you feel worthless the way you are now?	Recode answers option to C311_score 1→1 2→0
C312	C312	Do you feel full of energy?	Recode answers option to C312_score 1→0 2→1
C313	C313	Do you feel that your situation is hopeless?	Recode answers option to C313_score 1→1 2→0
C314	C314	Do you think that most people are better off than you are?	Recode answers option to C314_score 1→1 2→0
Total score	Score_depression	Total score of valid answer of GDS-14	
Major depression	Depression	Total score of 8 and above	0= Not depress 1= Depress
Clinically significant depression	CDepression	Total score of 6 and above	0= Not depress 1= Depress

ELDERLY HEALTH – FUNCTIONAL LIMITATION AND FALLS

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Functional limitation	STATUSADL	Activities of Daily Living (ADL) (Mahoney & Barthel 1965) is used to measure an individual's physical limitation. It is measured by asking 10 questions on feeding, bathing, grooming, dressing, bowel and bladder control, toileting, chair transfer, ambulation and stair climbing. Total score of <20 is categorised as presence of functional limitation.	Totalskor1=NEW_D101 + NEW_D102 + NEW_D103 + NEW_D104 + NEW_D105 + NEW_D106 + NEW_D107 + NEW_D108 + NEW_D109 + NEW_D110. totalskor1 (SYSMIS=SYSMIS) (20 thru Highest=0) (Lowest thru 19=1) INTO STATUSADL. VALUE LABELS STATUSADL 0 = Absent 1 = Present
Dependency in instrumental activities of daily living.	STATUSIADL	Instrumental activities of daily living (IADL) (M. P. Lawton & E. M. Brody, 1969) is used to assess an individual's independent living skills. It is measured by an individual's ability to do 8 activities; using telephone, shopping, food preparation, housekeeping, laundry, using transportation, responsibility for own medications and ability to handle finance. Total score of <8 is categorised as dependent in instrumental of activities of daily living.	totalskorD2=NEW_D201 + NEW_D202 + NEW_D203 + NEW_D204 + NEW_D205 + NEW_D206 + NEW_D207 + NEW_D208. totalskorD2 (SYSMIS=SYSMIS) (0 thru 7=0) (8=1) INTO STATUSIADL. VALUE LABELS STATUSIADL 0 = Dependent 1 = Independent
B103_new	Able to board the transport	Able to board the transport	VALUE LABELS B101_new 1 Independent boarding 2 Assisted boarding
B110a_new_clinic	Able to move around the hospital/clinic independently without help – clinic area	Able to move around the hospital/clinic independently without help: clinic area	1 Yes 2 No
B110b_new_toilet	Able to move around the hospital/clinic independently without help – toilet	Able to move around the hospital/clinic independently without help – toilet	1 Yes 2 No

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
B110c_new _carpark	Able to move around the hospital/clinic independently without help – car park	Able to move around the hospital/clinic independently without help – car park	1 Yes 2 No
Fall	FALLS	An event in which an individual comes to rest on the ground, floor or other lower level occurring in the last 12 months.	D301 = 1 VALUE LABELS FALLS 1 = Yes 2 = No
Characteristics of fall	FREQUENCY OF FALLS	Characteristics of fall: • Frequency of fall	new302 = 1 D302 (SYSMIS=SYSMIS) (1=1) (2 thru Highest=2) INTO new302. VALUE LABELS FREQUENCY OF FALLS (new302) 1 = 1 2 = >2
	TYPES OF INJURY	Types of injury sustained due to fall	Compute: (D303 = 2) type_injury=1, (D304 = 1) type_injury=2, (D304 = 2) type_injury=3. VALUE LABELS TYPES OF INJURY 1 = Uninjured 2 = Minor Injury 3 = Severe Injury
	MEDICAL TREATMENT	Medical treatment received due to fall	VALUE LABELS MEDICAL TREATMENT (D305) 1 = Outpatient 2 = Hospitalised 3 = Self-treated
	LOCATION OF LAST FALL	Location of the last fall	VALUE LABELS LOCATION OF LAST FALL (D306) 1 = Indoors 2 = Outside the house 3 = Outdoors 4 = In the bathroom

ELDERLY HEALTH – URINARY INCONTINENCE

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Stress Urinary	E001 E002 E003	Positive screening for self-reported stress urinary incontinence symptoms	**recode scoring RECODE E001 ('1'=0) ('2'=1) ('3'=2) ('4'=3) ('5'=4) ('6'=5) ('-6'=0) ('-8'=0) INTO E001_new. EXECUTE. RECODE E002 ('1'=0) ('2'=1) ('3'=2) ('4'=3) ('5'=4) ('6'=5) ('-6'=0) ('-8'=0) INTO E002_new. EXECUTE. RECODE E003 ('1'=0) ('2'=1) ('3'=2) ('4'=3) ('5'=4) ('6'=5) ('-6'=0) ('-8'=0) INTO E003_new. EXECUTE. **compute stress score COMPUTE E_stress_score=E001_new + E002_new + E003_new. EXECUTE. stress category DATASET ACTIVATE DataSet2. RECODE E_stress_score (SYSMIS=SYSMIS) (Lowest thru 3=0) (4 thru Highest=1) INTO E_stress_cat. VARIABLE LABELS E_stress_cat 'E_stress_cat'. EXECUTE. *recode age to 2 groups 50-59 & 60 and above RECODE Age_new (SYSMIS=SYSMIS) (Lowest thru 59=1) (60 thru Highest=2) INTO Agegrp_new. VARIABLE LABELS Agegrp_new 'Agegrp_new'. EXECUTE. *select cases 60 and above and NO proxy DATASET ACTIVATE DataSet1. DATASET COPY new_modul_E. DATASET ACTIVATE new_modul_E. FILTER OFF. USE ALL. SELECT IF (Agegrp_new = 2 & A101 = 1 | 2). EXECUTE. DATASET ACTIVATE DataSet1.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Urge Urinary	E004 E005 E006	Positive screening for self-reported urge urinary incontinence symptoms	**recode scoring RECODE E004 ('1'=0) ('2'=1) ('3'=2) ('4'=3) ('5'=4) ('6'=5) ('-6'=0) ('-8'=0) INTO E004_new. EXECUTE. RECODE E005 ('1'=0) ('2'=1) ('3'=2) ('4'=3) ('5'=4) ('6'=5) ('-6'=0) ('-8'=0) INTO E005_new. EXECUTE. RECODE E006 ('1'=0) ('2'=1) ('3'=2) ('4'=3) ('5'=4) ('6'=5) ('-6'=0) ('-8'=0) INTO E006_new. EXECUTE. **compute urge score COMPUTE E_urge_score=E004_new + E005_new + E006_new. EXECUTE. urge category DATASET ACTIVATE DataSet2. RECODE E_urge_score (SYSMIS=SYSMIS) (Lowest thru 3=0) (4 thru Highest=1) INTO E_stress_cat. VARIABLE LABELS E_urge_cat 'E_urge_cat'. EXECUTE. *recode age to 2 groups 50-59 & 60 and above RECODE Age_new (SYSMIS=SYSMIS) (Lowest thru 59=1) (60 thru Highest=2) INTO Agegrp_new. VARIABLE LABELS Agegrp_new 'Agegrp_new'. EXECUTE. *select cases 60 and above and NO proxy DATASET ACTIVATE DataSet1. DATASET COPY new_modul_E. DATASET ACTIVATE new_modul_E. FILTER OFF. USE ALL. SELECT IF (Agegrp_new = 2 & A101 = 1 | 2). EXECUTE. DATASET ACTIVATE DataSet1.

ELDERLY HEALTH – VISION AND HEARING DISABILITY

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Vision_difficulty: Do you have difficulty in seeing, (even when wearing your glasses / contact lenses)? OR have difficulty clearly seeing someone's face at a distance of 6 meters or 20 feet (even when wearing your glasses / contact lenses)? OR have difficulty clearly seeing the picture on a coin (even when wearing your glasses / contact lenses)? Hearing aid Do you use a hearing aid?	F102, F103, F104	Any condition that person who has vision difficulties or problems of any kind even when wearing glasses (if they wear glasses/contact lenses) OR Any condition that person who has vision difficulties clearly seeing someone's face at a distance of 6 meters or 20 feet (even when wearing your glasses / contact lenses) OR Any condition that person who has vision difficulties seeing the picture on a coin (even when wearing your glasses / contact lenses).	-7 Don't know -9 Don't want to answer 1. No difficulty 2. Somedifficulty 3. A lot ofdifficulty 4. Cannot see at all RECODE F102 ('1'=0) ('2'=0) ('3'=1) ('4'=1) ('-7'=-7) ('-9'=-9) ('-6'=-6) INTO F102_new. EXECUTE. RECODE F103 ('1'=0) ('2'=0) ('3'=1) ('4'=1) ('-7'=-7) ('-9'=-9) ('-6'=-6) INTO F103_new. EXECUTE. RECODE F104 ('1'=0) ('2'=0) ('3'=1) ('4'=1) ('-7'=-7) ('-9'=-9) ('-6'=-6) INTO F104_new. EXECUTE. COMPUTE vision_difficulty=F102_new = 1 | F103_new = 1 | F104_new = 1. EXECUTE. * Complex Samples Frequencies. CSTABULATE /PLAN FILE='E:\MODUL F_new\NHMS2018.csaplan' /TABLES VARIABLES=vision_difficulty /CELLS POPSIZE TABLEPCT /STATISTICS SE CV CIN (95) COUNT /MISSING SCOPE=TABLE CLASSMISSING=EXCLUDE. * Complex Samples Crosstabs. CSTABULATE /PLAN FILE='E:\MODUL F_new\NHMS2018.csaplan' /TABLES VARIABLES=Strata Sex Marital_status_II Education Employment_status incomegroup_new BY vision_difficulty /CELLS POPSIZE ROWPCT TABLEPCT /STATISTICS SE CV CIN (95) COUNT /MISSING SCOPE=TABLE CLASSMISSING=EXCLUDE.
Hearing_difficulty Do you have difficulty hearing, [even when using a hearing aid(s)]? OR	F201	Any condition either person use or not use a hearing aid	-7 Don't know -9 Don't want to answer 1. Yes 2. No * Complex Samples Frequencies. CSTABULATE /PLAN FILE='E:\MODUL F_new\NHMS2018.csaplan' /TABLES VARIABLES=F201 /CELLS POPSIZE TABLEPCT

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Do you have difficulty hearing what is said in a conversation with one other person in a quiet room/place [even when using a hearing aid(s)]? OR Do you have difficulty hearing what is said in a conversation with one other person in a noisier room/place [even when using a hearing aid(s)]?	F203, F205, F206	Any condition that person who has some hearing limitation or problems of any kind with their hearing even when using a hearing aid OR Any condition that person who has some hearing limitation or problems in a conversation with one other person in a quiet room/place even when using a hearing aid OR Any condition that person who has some hearing limitation or problems in a conversation with one other person in a noisier room/place even when using a hearing aid.	/STATISTICS SE CV CIN (95) COUNT /MISSING SCOPE=TABLE CLASSMISSING=EXCLUDE. * Complex Samples Crosstabs. CSTABULATE /PLAN FILE='E:\MODUL F_new\NHMS2018.csaplan' /TABLES VARIABLES= Strata Sex Marital_status_II Education Employment_status incomegroup_new BY F201 /CELLS POPSIZE ROWPCT TABLEPCT /STATISTICS SE CV CIN (95) COUNT /MISSING SCOPE=TABLE CLASSMISSING=EXCLUDE. -7 Don't know -9 Don't want to answer 1. No difficulty 2. Somedifficulty 3. A lot ofdifficulty 4. Cannot see at all RECODE F203 ('1'=0) ('2'=0) ('3'=1) ('4'=1) ('-7'=-7) ('-9'=-9) ('-6'=-6) INTO F203_new. EXECUTE. RECODE F205 ('1'=0) ('2'=0) ('3'=1) ('4'=1) ('-7'=-7) ('-9'=-9) ('-6'=-6) INTO F205_new. EXECUTE. RECODE F206 ('1'=0) ('2'=0) ('3'=1) ('4'=1) ('-7'=-7) ('-9'=-9) ('-6'=-6) INTO F206_new. EXECUTE. COMPUTE hearing_difficulty=F203_new = 1 | F205_new = 1 | F206_new = 1. EXECUTE. * Complex Samples Frequencies. CSTABULATE /PLAN FILE='E:\MODUL F_new\NHMS2018.csaplan' /TABLES VARIABLES=hearing_difficulty /CELLS POPSIZE TABLEPCT /STATISTICS SE CV CIN (95) COUNT /MISSING SCOPE=TABLE CLASSMISSING=EXCLUDE. * Complex Samples Crosstabs. CSTABULATE /PLAN FILE='E:\MODUL F_new\NHMS2018.csaplan' /TABLES VARIABLES= Strata Sex Marital_status_II Education Employment_status incomegroup_new BY hearing_difficulty /CELLS POPSIZE ROWPCT TABLEPCT /STATISTICS SE CV CIN (95) COUNT /MISSING SCOPE=TABLE CLASSMISSING=EXCLUDE.

ELDERLY HEALTH – PHYSICAL ACTIVITY

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Work-related vigorous-intensity activity for 10 min plus continuously in a typical week	G101	Work involves vigorous-intensity physical activity for at least 10 minutes continuously in a typical week. Vigorous-intensity activity is any activity that causes large increases in breathing or heart rate such as running, carrying or lifting heavy loads, digging, harvesting food/crops, gardening or construction work.	1 = "Yes" 2 = "No"
Days do vigorous-intensity activities as part of your work in a typical week	G102	Number of days doing vigorous-intensity activities as part of your work in a typical week.	1, 2, 3, 4, 5, 6 or 7 days
Time spent doing vigorous-intensity activities at work on a typical day	G103	Time usually spend on a typical day doing vigorous-intensity activities at work.	Continuous data (in minutes)
Work-related moderate-intensity activity for 10 min plus continuously in a typical week	G104	Work involves moderate-intensity physical activity for at least 10 minutes continuously in a typical week.	1 = "Yes" 2 = "No"
Days do moderate-intensity activities as part of your work in a typical week	G105	Moderate-intensity activity is any activity that causes small increases in breathing or heart rate such as brisk walking, carrying light loads, fishing, doing household chores, washing car or painting house. Number of days doing moderate-intensity activities as part of your work in a typical week.	1, 2, 3, 4, 5, 6 or 7 days
Time spent doing moderate-intensity activities at work on a typical day	G106	Time usually spend on a typical day doing moderate-intensity activities at work.	Continuous data (in minutes)
Walk or cycle for 10 min plus continuously to get to and from places	G201	Travel-related activities such as walk or cycle for at least 10 minutes continuously to get to and from places in a typical week.	1 = "Yes" 2 = "No"
Days walk or cycle for 10 min plus continuously to get to and from places	G202	Number of days walk or cycle for at least 10 minutes continuously to get to and from places in a typical week.	1, 2, 3, 4, 5, 6 or 7 days

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Time spent walking or cycling for travel	G203	Time usually spend walking or cycling for travel on a typical day.	Continuous data (in minutes)
Leisure time vigorous-intensity sports, fitness or recreational activities for 10 min plus continuously	G301	Do vigorous-intensity sports, fitness or recreational activities that cause large increases in breathing or heart rate such as running, jogging, aerobic or football for at least 10 minutes continuously during leisure time in a typical week.	1 = "Yes" 2 = "No"
Days do leisure time vigorous-intensity sports, fitness or recreational activities	G302	Number of days doing vigorous-intensity sports, fitness or recreational activities for at least 10 minutes continuously during leisure time in a typical week.	1, 2, 3, 4, 5, 6 or 7 days
Time spent doing leisure time vigorous-intensity sports, fitness or recreational activities	G303	Time usually spend on doing vigorous-intensity sports, fitness or recreational activities on a typical day.	Continuous data (in minutes)
Leisure time moderate-intensity sports, fitness or recreational activities for 10 min plus continuously	G304	Do moderate-intensity sports, fitness or recreational activities that cause small increases in breathing or heart rate such as brisk walking, cycling, swimming, planting trees/flowers or volleyball for at least 10 minutes continuously during leisure time in a typical week.	1 = "Yes" 2 = "No"
Days do leisure time moderate-intensity sports, fitness or recreational activities	G305	Number of days doing moderate-intensity sports, fitness or recreational activities for at least 10 minutes continuously during leisure time in a typical week.	1, 2, 3, 4, 5, 6 or 7 days
Time spent doing leisure time moderate-intensity sports, fitness or recreational activities	G306	Time usually spend doing moderate-intensity sports, fitness or recreational activities on a typical day.	Continuous data (in minutes)
Sedentary behaviour	G401	Time usually spend on a typical day sitting or reclining including time spent at work, at home, in leisure time and during travel BUT NOT INCLUDING time spent sleeping.	Continuous data (in minutes)
MET value of vigorous work activity per week	Vigorous Work_MET	Vigorous-intensity activities at work in MET-minutes per week.	COMPUTE VigorousWork_MET=G102 * G103 * 8. EXECUTE.
MET value of moderate work activity per week	Moderate Work_MET	Moderate-intensity activities at work in MET-minutes per week.	COMPUTE ModerateWork_MET=G105 * G106 * 4. EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
MET value of transport activity per week	Transport_ MET	Transport activity in MET-minutes per week.	COMPUTE Transport_MET=G202 * G203 * 4. EXECUTE.
MET value of vigorous recreational activity per week	Vigorous Recreation_ MET	Vigorous recreational activity in MET-minutes per week	COMPUTE VigorousRecreation_MET=G30 2 * G303 * 8. EXECUTE.
MET value of moderate recreational activity per week	Moderate Recreation_ MET	Moderate recreational activity in MET-minutes per week	COMPUTE ModerateRecreation_MET=G3 05 * G306 * 4. EXECUTE.
Sum of all activity per week	Total_PA_ MET	Total physical activity MET-minutes per week	COMPUTE Total_PA_MET=VigorousWork_ MET + ModerateWork_MET + Transport_MET + VigorousRecreation_MET + ModerateRecreation_MET. EXECUTE.
Level of total physical activity	PA	Highly active (High) i) at least 3 days of vigorous-intensity activity achieving a minimum of at least 1500 METs-minutes/week, OR ii) 7 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 3000 METs-minutes/week Moderately active (Moderate) i) 3 or more days of vigorous-intensity activity of at least 20 minutes/day, OR ii) 5 or more days of moderate-intensity activity or walking of at least 30 minutes/day, OR iii) 5 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 600 METs-minutes/week	COMPUTE VigWorkDay=G102. VARIABLE LABELS VigWorkDay 'Days of vigorous activity at work'. EXECUTE. COMPUTE ModWorkDay=G105. VARIABLE LABELS ModWorkDay 'Days of moderate activity at work'. EXECUTE. COMPUTE WalkDay=G202. VARIABLE LABELS WalkDay 'Days of walking/cycling '. EXECUTE. COMPUTE VigLeisureDay=G302. VARIABLE LABELS VigLeisureDay 'Days of vigorous activity during leisure'. EXECUTE. COMPUTE ModLeisureDay=G305. VARIABLE LABELS ModLeisureDay 'Days of moderate activity during leisure'. EXECUTE. COMPUTE High1Day=sum (VigWorkDay, G302).

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition

			EXECUTE.
			
			COMPUTE High2Day=sum (VigWorkDay,ModWorkDay,WalkDay,VigLeisureDay,ModLeisureDay).
			EXECUTE.
			
			IF (High1Day >= 3 & Total_PA_MET >= 1500) High1=1.
			EXECUTE.
			
			IF (High1Day < 3 | Total_PA_MET < 1500) High1=2.
			EXECUTE.
			
			IF (High2Day >= 7 & Total_PA_MET >= 3000) High2=1.
			EXECUTE.
			
			IF (High2Day < 7 | Total_PA_MET < 3000) High2=2.
			EXECUTE.
			
			IF (High1 = 1 | High2 = 1) HighlyActive=1.
			VARIABLE LABELS HighlyActive 'Highly Active'.
			EXECUTE.
			
			IF (High1 = 2 & High2 = 2) HighlyActive=2.
			VARIABLE LABELS HighlyActive 'Highly Active'.
			EXECUTE.
			
			VALUE LABELS HighlyActive
			1 'Yes'
			2 'No'.
			
			COMPUTE Mod1Days=sum (VigWorkDay,VigLeisureDay).
			EXECUTE.
			
			COMPUTE Mod2Days=sum(ModWorkDay, WalkDay,ModLeisureDay).
			EXECUTE.
			
			COMPUTE Mod3Day=sum(VigWorkDay,ModWorkDay,WalkDay,VigLeisureDay,ModLeisureDay).
			EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition

			COMPUTE Mod1Duration=(VigorousWork_MET/8) + (VigorousRecreation_MET/8).
			EXECUTE.
			
			COMPUTE Mod2Duration=(ModerateWork_MET/4) + (Transport_MET/4) + (ModerateRecreation_MET/4).
			EXECUTE.
			
			IF (Mod1Days >= 3 & Mod1Duration >= 60) Mod1=1.
			EXECUTE.
			
			IF (Mod1Days < 3 | Mod1Duration < 60) Mod1=2.
			EXECUTE.
			
			IF (Mod2Days >= 5 & Mod2Duration >= 150) Mod2=1.
			EXECUTE.
			
			IF (Mod2Days < 5 | Mod2Duration < 150) Mod2=2.
			EXECUTE.
			
			IF (Mod3Day >= 5 & Total_PA_MET >= 600) Mod3=1.
			EXECUTE.
			
			IF (Mod3Day < 5 | Total_PA_MET < 600) Mod3=2.
			EXECUTE.
			
			IF (Mod1 = 1 | Mod2 = 1 | Mod3 = 1) ModerateActive=1.
			VARIABLE LABELS ModerateActive 'Moderately Active'.
			EXECUTE.
			
			IF (Mod1 = 2 & Mod2 = 2 & Mod3 = 2) ModerateActive=2.
			VARIABLE LABELS ModerateActive 'Moderately Active'.
			EXECUTE.
			
			VALUE LABELS ModerateActive
			1 'Yes'
			2 'No'.
			
			IF (HighlyActive = 1 &

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition

			ModerateActive = 1) PA=1.
			VARIABLE LABELS PA ' PA Level'.
			EXECUTE.
			
			IF (HighlyActive = 2 & ModerateActive = 1) PA=2.
			VARIABLE LABELS PA ' PA Level'.
			EXECUTE.
			
			IF (HighlyActive = 2 & ModerateActive = 2) PA=3.
			VARIABLE LABELS PA ' PA Level'.
			EXECUTE.
			VALUE LABELS PA
			1 'Highly active'
			2 'Moderately active'
			3 'Inactive'.

Final physical activity category	Final_PA	Inactive (Low) The activity level did not reach the criteria for either high or moderate levels of physical activity Active (Moderate and High) i)3 or more days of vigorous-intensity activity of at least 20 minutes/day, OR ii)5 or more days of moderate-intensity activity or walking of at least 30 minutes/day, OR iii) 5 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 600 METs-minutes/week	RECODE PA (1=1) (2=1) (3=2) INTO Final_PA. VARIABLE LABELS Final_PA 'Final Physical Activity Category'. EXECUTE. VALUE LABELS Final_PA 1 'Active' 2 'Inactive'.
High level of sedentary behaviour	High Sedentary	Inactive (Low) The activity level did not reach the criteria for either high or moderate levels of physical activity. High level of sedentary behaviour At least 8 hours of total sedentary time on a typical day.	COMPUTE SedentaryTime_Hr=G401 / 60. EXECUTE. RECODE SedentaryTime_Hr (8.00 thru Highest=1) (Lowest thru 7.99=2) (ELSE=SYSMIS) INTO HighSedentary. EXECUTE. VALUE LABELS HighSedentary 1 'Yes' 2 'No'

ELDERLY HEALTH – ORAL HEALTHCARE

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
GOHAI Question H001	H001	Option for limit the kind of food because of teeth or dentures	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never”
GOHAI Question H001 rescoring	H001_Point	Option for limit the kind of food because of teeth or dentures	RECODE H001 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H001_Point. VARIABLE LABELS H001_Point 'Markah H001'. EXECUTE. RECODE H001_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value
GOHAI Question H002	H002	Option for trouble biting or chewing	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H002 rescoring	H002_Point	Option for trouble biting or chewing	RECODE H002 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H002_Point. VARIABLE LABELS H002_Point 'Markah H002'. EXECUTE. RECODE H002_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value
GOHAI Question H003	H003	Option for swallow comfortably	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H003 rescoring	H003_Point	Option for swallow comfortably	RECODE H003 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H003_Point. VARIABLE LABELS H003_Point 'Markah H003'. EXECUTE. RECODE H003_Point (-6=-6) (1=5) (2=4) (3=3) (4=2) (5=1) (6=0). EXECUTE. -6=Missing value

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
GOHAI Question H004	H004	Option for prevented from speaking because of teeth or dentures	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H004 rescoring	H004_Point	Option for prevented from speaking because of teeth or dentures	RECODE H004 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H004_Point. VARIABLE LABELS H004_Point 'Markah H004'. EXECUTE. RECODE H004_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value
GOHAI Question H005	H005	Option or able to eat	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H005 rescoring	H005_Point	Option or able to eat	RECODE H005 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H005_Point. VARIABLE LABELS H005_Point 'Markah H005'. EXECUTE. RECODE H005_Point (-6=-6) (1=5) (2=4) (3=3) (4=2) (5=1) (6=0). EXECUTE. -6=Missing value
GOHAI Question H006	H006	Option for limit contact with people	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H006 rescoring	H006_Point	Option for limit contact with people	RECODE H006 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H006_Point. VARIABLE LABELS H006_Point 'Markah H006'. EXECUTE. RECODE H006_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value
GOHAI Question H007	H007	Option for pleased and happy	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
GOHAI Question H007 rescoring	H007_Point	Option for pleased and happy	RECODE H007 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H007_Point. VARIABLE LABELS H007_Point 'Markah H007'. EXECUTE. RECODE H007_Point (-6=-6) (1=5) (2=4) (3=3) (4=2) (5=1) (6=0). EXECUTE. -6=Missing value
GOHAI Question H008	H008	Option for use medication to relieve pain	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H008 rescoring	H008_Point	Option for use medication to relieve pain	RECODE H008 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H008_Point. VARIABLE LABELS H008_Point 'Markah H008'. EXECUTE. RECODE H008_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE.
GOHAI Question H009	H009	Option for worried about the problems with teeth	-6=Missing value 1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H009 rescoring	H009_Point	Option for worried about the problems with teeth	RECODE H009 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H009_Point. VARIABLE LABELS H009_Point 'Markah H009'. EXECUTE. RECODE H009_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value
GOHAI Question H010	H010	Option for feel nervous or self-conscious	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H010 rescoring	H010_Point	Option for feel nervous or self-conscious	RECODE H010 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H010_Point. VARIABLE LABELS H010_Point 'Markah H010'. EXECUTE. RECODE H009_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
GOHAI Question H011	H011	Option for uncomfortable eating in front of people	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H011 rescoring	H011_Point	Option for uncomfortable eating in front of people	RECODE H011 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H011_Point. VARIABLE LABELS H011_Point 'Markah H011'. EXECUTE. RECODE H011_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value
GOHAI Question H011	H012	Option for teeth sensitive	1=Sentiasa/ Always 2=Sangat Kerap/ Very often 3= Kerap/ Often 4= Kadang-kadang/ Sometimes 5= Jarang Sekali/ Seldom 6=Tidak Pernah/ Never
GOHAI Question H011 rescoring	H012_Point	Option for teeth sensitive	RECODE H012 (CONVERT) ('1'=1) ('2'=2) ('3'=3) ('4'=4) ('5'=5) ('6'=6) INTO H012_Point. VARIABLE LABELS H012_Point 'Markah H012'. EXECUTE. RECODE H012_Point (-6=-6) (6=5) (5=4) (4=3) (3=2) (2=1) (1=0). EXECUTE. -6=Missing value
Self-reported general health	H013	Self-reported on respondent's general health	1=Sangat sihat/ Very healthy 2=Sihat/ Healthy 3= Sederhana/ Average 4= Tidak sihat/ Unhealthy 5= Sangat tidak sihat/ Very unhealthy -7=TT -9=EJ
Self-reported general health rescoring	H013_New	Self-reported on respondent's general health	RECODE H013 (MISSING=-6) ('1'=1) ('2'=1) ('3'=2) ('4'=2) ('5'=2) INTO H013_New. VARIABLE LABELS H013_New 'Prevalence of Self-reported General health'. EXECUTE. -6= Missing Value
Self-reported oral health	H014	Self-reported on respondent's oral health	1=Sangat baik/ Very good 2=Baik/ Good 3= Sederhana/ Average 4= Buruk/ Poor 5= Amat buruk/ Very poor -7=TT -9=EJ

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Self-reported oral health rescoring	H014_New	Self-reported on respondent's oral health	RECODE H014 (MISSING=-6) ('1'=1) ('2'=1) ('3'=2) ('5'=2) ('4'=2) INTO H014_New. VARIABLE LABELS H014_New 'Prevalence of self-reported oral health'. EXECUTE. -6= Missing value
Need dental treatment	H015	Option for dental treatment	1=Ya/ Yes 2=Tidak/ No -7=TT -9=EJ
Self-reported dental treatment 3 months	H016	Self-reported on past 3 months for dental treatment	1=Ya/ Yes 2=Tidak/ No -7=TT -9=EJ
Total GOHAI score	Accumulated_Point	Total GOHAI Score for each respondent	COMPUTE Accumulated_Point=H001_Point + H002_Point + H003_Point + H004_Point + H005_Point + H006_Point + H007_Point + H008_Point + H009_Point + H010_Point + H011_Point + H012_Point. VARIABLE LABELS Accumulated_Point 'Total Point'. EXECUTE.
Level of OHRQOL	OHRQOL_NHMS2018	Level of oral health respondent quality of life (OHRQOL) based on Malaysia View	RECODE Accumulated_Point (SYSMIS=-6) (57 thru Highest=1) (51 thru 56=2) (Lowest thru 50=3) INTO OHRQOL_NHMS2018. VARIABLE LABELS OHRQOL_NHMS2018 'Level of OHRQOL based on Malaysia View'. EXECUTE.

ELDERLY HEALTH – SOCIAL SUPPORT AND NETWORKING

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Social Interaction Subscale			
Persons around you that you feel can depends on or feel very close to	I001	Refer to people who living around 5 km from respondent house.	1 = None 2 = 1-2 persons 3 = >2 persons
How often you spend time with someone not live with you	I002	How often respondent went to their neighbour house or the neighbour coming to visit respondent house.	1 = None 2 = 1-2 persons 3 = >2 persons

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
How often you talk to someone on the telephone	I003	How often respondent call their family and friends or respondent received call from their family and friends. Others media social such as whatsapp, telegram or facebook were not included.	1 = 0-1 time 2 = 2-5 times 3 = >5 times
How often you go to meetings of clubs and religious	I004	How often respondent go to social activities such as religious meeting at mosque, temple or church, sport and 'gotong royong' in community.	1 = 0-1 time 2 = 2-5 times 3 = >5 times
Total Social Interaction Subscale Score		Sum (I001, I002, I003, I004)	COMPUTE Interaction_01_04=I001 + I002 + I003 + I004. EXECUTE. Mean Total Score (95 % Confidence Interval)
Subjective Support Subscale			
Does seem that family and friends understand you	I005	How often respondent feel their family and friends (people which is close and important to respondent) understand the respondent feeling.	1 = Hardly ever 2 = Some of the time 3 = Most of the time
Do you feel useful to your family and friends	I006	Referring to the feelings of the respondent whether he/she felt himself/herself needed and beneficial to their family and friends.	1 = Hardly ever 2 = Some of the time 3 = Most of the time
Do you know what happen to your family and friends	I007	Whether the respondents are aware of and informed about the current situation of family and friends.	1 = Hardly ever 2 = Some of the time 3 = Most of the time
Do you feel you are being listened to, if you are talking to family and friends	I008	Refer to the respondent feel about their family and friends were concerned about what he/she said to them.	1 = Hardly ever 2 = Some of the time 3 = Most of the time
Do you feel that you have the definite role among your family and friends	I009	Whether the respondent feel that he/she has certain roles and responsibilities to family and friends.	1 = Hardly ever 2 = Some of the time 3 = Most of the time
Can you talk about your deepest problems with your family and friends	I010	Refers to the ability of respondent to talk about personal problems to at least part of their family and friends.	1 = Hardly ever 2 = Some of the time 3 = Most of the time

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
How satisfied with relationships you have with family and friends	I011	Refers to the level of satisfaction of respondent to family and friends as a whole.	1 = Very dissatisfied 2 = Somewhat satisfied 3 = Satisfied
Total Subjective		Sum (I005, I006, I007, I008, I009, I010, I011)	COMPUTE Support_05_11=I005 + I006 + I007 + I008 + I009 + I010 + I011. EXECUTE.
DUKE Social Support Index (DSSI) – 11 items			
Total Score DUKE Social Support Index (DSSI)-11 item		Sum (I001, I002, I003, I004, I005, I006, I007, I008, I009, I010, I011)	COMPUTE Total_DSSI_11item=I001 + I002 + I003 + I004 + I005 + I006 + I007 + I008 + I009 + I010 + I011. EXECUTE.

ELDERLY HEALTH – NUTRITIONAL STATUS AND DIETARY PRACTICE: ANTHROPOMETRY MEASUREMENT

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Body Mass Index (BMI)	BMI	Calculation of BMI using weight in kg and height in metres.	COMPUTE BMI=weight_mean / (height_meter * height_meter). EXECUTE.
BMI WHO1998 Classification (4 categories)	BMI_WHO1998_4CAT	Classification of body weight in adults based on BMI according to WHO 1998 classification (4 categories): Underweight = < 18.5 kg/m2 Normal =18.5 – 24.9 kg/m2 Overweight = 25.0 – 29.9 kg/m2 Obese = ≥ 30.0 kg/m2	RECODE BMI (Lowest thru 18.49=1) (18.50 thru 24.99=2) (25.00 thru 29.99=3) (30.00 thru Highest=4) INTO BMI_WHO1998_4CAT EXECUTE
BMI WHO1998 Classification (6 categories)	BMI_WHO1998_6CAT	Classification of body weight in adults based on BMI according to WHO 1998 classification (6 categories): Underweight = < 18.5 kg/m2 Normal =18.5 – 24.9 kg/m2 Overweight = 25.0 – 29.9 kg/m2 Obese 1 = 30.0 – 34.9 kg/m2 Obese II = 35.0 – 39.9 kg/m2 Obese III = ≥ 40.0 kg/m2	RECODE BMI (Lowest thru 18.49=1) (18.50 thru 24.99=2) (25.00 thru 29.99=3) (30.00 thru 34.99=4) (35.00 thru 39.99=5) (40.00 thru Highest=6) INTO BMI_WHO1998_6CAT EXECUTE.
BMI CPG 2004 Classification (4 categories)	BMI_CPG2004_4CAT	Classification of body weight in adults based on BMI according to Malaysian Clinical Practice Guidelines of Obesity 2004 (CPG 2004) classification (4 categories): Underweight = < 18.5 kg/m2 Normal = 18.5 – 22.9 kg/m2 Overweight = 23.0 – 27.4 kg/m2 Obese = ≥ 27.5 kg/m2	RECODE BMI (Lowest thru 18.49=1) (18.50 thru 22.99=2) (23.00 thru 27.49=3) (27.50 thru Highest=4) INTO BMI_CPG2004_4CAT EXECUTE

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
BMI CPG 2004 Classification (6 categories)	BMI_CPG2004_6CAT	Classification of body weight in adults based on BMI according to CPG 2004 classification (6 categories): Underweight = < 18.5 kg/m2 Normal =18.5 – 22.9 kg/m2 Overweight = 23.0 – 27.4 kg/m2 Obese 1 = 27.5 – 34.9 kg/m2 Obese II = 35.0 – 39.9 kg/m2 Obese III = ≥ 40.0 kg/m2	RECODE BMI (Lowest thru 18.49=1) (18.50 thru 22.99=2) (23.00 thru 27.49=3) (27.50 thru 34.99=4) (35.00 thru 39.99=5) (40.00 thru Highest=6) INTO BMI_CPG2004_6CAT EXECUTE.
Waist Circumference (WC)	WC_WHO2000	Classification of abdominal obesity according to recommendation made by International Diabetes Institute/ Western Pacific World Health Organisation/ International Association for the Study of Obesity/ International Obesity Task Force (WHO/IASO/IOTF, 2000): Men: ≥90cm Women: ≥80cm	COMPUTE WC_WHO2000 (WC_WHO2000=WC_mean >= 90 & Sex = 1 | WC_mean >= 80 & Sex = 2) EXECUTE.
Calf circumference (CC)	CC_WASTING	Risk of muscle wasting was assessed using calf circumference cut-off values based on Sakinah et al. (2016) cut-off values: Men: <30.1 cm Women: <27.3 cm	COMPUTE CC_WASTING (CC_WASTING=CC_mean < 30.10 & Sex = 1 | CC_mean < 27.30 & Sex = 2) EXECUTE.

ELDERLY HEALTH – NUTRITIONAL STATUS AND DIETARY PRACTICE: MALNUTRITION STATUS AMONG ELDERLY

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Age group2 strata	Agegp	Select age group more than 60 years	DATASET COPY age2. DATASET ACTIVATE age2. FILTER OFF. USE ALL. SELECT IF (Agegp = 2). EXECUTE. DATASET ACTIVATE DataSet1.
MeanJ107_new	J107_new	Mean J107a and J107b	COMPUTE J107_new=MEAN (J107a_new, J107b_new). EXECUTE. DATASET ACTIVATE DataSet1. COMPUTE Diff107ab=J107a_new - J107b_new. EXECUTE.
J201_new until J205_new	J201_new until J205_new	Change string to numeric J201 until J205	STRING J201_new (A8). COMPUTE J201_new=J201. EXECUTE. STRING J202_new (A8). COMPUTE J202_new=J202. EXECUTE. STRING J203_new (A8). COMPUTE J203_new=J203. EXECUTE. STRING J204_new (A8).

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
			COMPUTE J204_new=J204. EXECUTE. STRING J205_new (A8). COMPUTE J205_new=J205. EXECUTE.
J201new	J201new	Has your food intake declined in over the past 3 months	RECODE J201_new (1=0) (2=1) (3=2) INTO J201new. EXECUTE. 1= Severe decrease in food intake 2= Moderate decrease in food intake 3=No decrease in food intake
J202new	J202new	How much weight have lost in the past 3 months?	RECODE J202_new (1=0) (2=1) (3=2) (4=3) INTO J202new. EXECUTE. 1 = Weight loss greater than 3 kg 2 = Do not know the amount of weight loss 3 = Weight loss between 1 and 3 kg 4 = No weight loss or weight loss less than 1kg
J203new	J203new	Describe current mobility.	RECODE J203_new (1=0) (2=1) (3=2) INTO J203new. EXECUTE. 1 = Unable to get up from bed, chair or wheel chair without assistance 2 = Able to get up from bed or chair but unable to go out from the house 3= Able to leave my home
J204new	J204new	Stressed or severely ill in the past 3 months.	RECODE J204_new (1=0) (2=2) INTO J204new. EXECUTE. 1 = “Yes” 2 = “No”
J205new	J205new	Currently experiencing dementia and/or prolong severe sadness.	RECODE J205_new (1=0) (2=1) (3=2) INTO J205new. EXECUTE. 1 = Yes, experiencing dementia and/or prolong severe sadness 2 = Yes, mild dementia but no prolonged severe sadness 3 = Neither dementia no prolong severe Sadness
Total J2	Total J2	Total part 1	COMPUTE TotalJ2=SUM (J201new, J202new, J203new, J204new, J205new). EXECUTE.

Total Part2	Total Part2	Total Part 2	IF (J107_new < 30.1 & Sex = 1 | J107_new < 27.3 & Sex = 2) Part2=0.
			EXECUTE.
			IF (J107_new >= 30.1 & Sex = 1 | J107_new >= 27.3 & Sex= 2) Part2a=3.
			EXECUTE.
			COMPUTE TotalPart2=SUM (Part2, Part2a).
			EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Skor MNA		Score MNA	COMPUTE skorMNA=SUM (TotalJ2, Total Part2) EXECUTE
Skor MNA		Score MNA	RECODE SkorMNA (12 thru 14=1) (8 thru 11=2) (0 thru 7=3) INTO SkorMNA_new. EXECUTE. VARIABLE LABELS SkorMNA_new. Status Malnutrition. VALUE LABELS SkorMNA_new 1 Normal nutritional status 2 At risk of malnutrition 3 Malnutrition.
MNA_new2 group		Score MNA_2 group	RECODE SkorMNA (12 thru 14=1) (8 thru 11=2) (0 thru 7=2) INTO SkorMNA_new_2grp. EXECUTE. VARIABLE LABELS SkorMNA_new_2grp 'Status Malnutrition'. VALUE LABELS SkorMNA_new_2grp 1 Normal nutritional status 2 Malnutrition (At risk of malnutrition & malnutrition).

ELDERLY HEALTH – NUTRITIONAL STATUS AND DIETARY PRACTICE: DIETARY PRACTICE

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
i. Fruits and vegetables intake in a day – Measured by servings of fruits and vegetables intake according to MDG 2010 recommendation.			
Frequency of fruit intake in a week	J305_hari	Number of days that a person consumes fruits in a typical week	RECODE J305 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) (7=6) (8=7) INTO J305_hari. EXECUTE.
Quantity of fruits intake in a day	J306	Number of servings of fruit intake in a day	Continuous (number of serving)
Quantity of fruit intake in a day	fruit_serving_day	Number of servings of fruit intake in a day	COMPUTE fruit_serving_day= (J305_hari * J306_clean)/7. EXECUTE.
Frequency of fruit juice intake in a week	J307_hari	Number of days that a person consumes fresh fruit juice in a typical week	RECODE J307 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) (7=6) (8=7) INTO J307_hari. EXECUTE.
Quantity of fruit juice intake	J308	Number of glasses of fruit juice consumed in a week	Continuous (number of glass)
Convert fruit juice to serving	J308_ serving	Serving of fruit juice intake	COMPUTE J308_serving=J308 / 2. EXECUTE.
Serving of fruit juice intake in a day	juice_ serving_day	Serving of fruit juice intake in a day	COMPUTE juice_serving_day= (J307_hari * J308_serving)/7. EXECUTE.
Total fruit intake in day	fruitorjuice_ serving_day	Serving of total fruit intake in a day	COMPUTE fruitorjuice_serving_day=fruit_serving_ day + juice_serving_day. EXECUTE.
Adequate intake of fruit	J_309	Category of adequate and inadequate intake (< 2 servings and ≥ 2 servings)	RECODE fruitorjuice_serving_day (0 thru 1.999=1) (2 thru Highest=2) INTO fruitorjuice_cat. EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
J_309	J309_hari	Number of days that a person consumes cooked /raw vegetables in a typical week	1. 0 day 2. 1 day 3. 2 days 4. 3 days 5. 4 days 6. 5 days 7. 6 days 8. 7 days
Frequency of vegetable intake in a week	J310	Record number of days consumed vegetables in a week	RECODE J309 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) (7=6) (8=7) INTO J309_hari. EXECUTE.
Quantity of vegetable intake in a day		Number of servings of vegetables in a day	Continuous data (number of serving)
Total serving of vegetable intake in a day		Continuous (number of serving)	COMPUTE vege_serving_day= (J309_hari * J310) / 7. EXECUTE.
Adequate intake of vegetable		Category of adequate and inadequate intake (< 3 servings and ≥ 3 servings)	RECODE vege_serving_day (0 thru 2.999=1) (3 thru Highest=2) INTO vege_cat. EXECUTE.
ii. Plain water intake in a day – Measured by glasses of plain water intake according to MDG 2010 recommendation			
J_311	J_311	Number of days that a person consumes plain water in a typical week	1. 0 day 2. 1 day 3. 2 days 4. 3 days 5. 4 days 6. 5 days 7. 6 days 8. 7 days
J311_hari	Frequency of plain water intake in a week	Number of days that a person consumes plain water in a typical week	RECODE J311 (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) (7=6) (8=7) INTO J311_hari. EXECUTE.
J312	Quantity of plain water intake in day	Number of glasses of plain water consumed in a day	Continuous data (number of glass)
Total plain water intake		Continuous (number of glasses)	COMPUTE water_glass_day= (J311 * J312) / 7. EXECUTE.
Adequate plain water intake		Adequate (≥ 6 glasses) and inadequate intake (<6 glasses)	RECODE water_glass_day (Lowest thru 5.999=1) (6 thru Highest=2) INTO water_intake_2cat. EXECUTE.

ELDERLY HEALTH – NUTRITIONAL STATUS AND DIETARY PRACTICE: FOOD SECURITY

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
J401new	The food that I bought was not sufficient and no have money	The food that bought just didn't last, and didn't have money to get more. Was that often, sometimes, or never true for (you/your household) in the last 12 months.	1.Often true 2.Sometimes true 3.Never True 4.Don't know/Refused RECODE J401 (1 thru 2=1) (3 thru 4=0) INTO J401new.EXECUTE. VALUE LABELS J401new 0.Never true or don't know/refused 1.Often true/sometimes true
J402new	Cannot eat balance food	Couldn't afford to eat balanced meals. Was that often, sometimes, or never true for (you) in the last 12 months.	1.Often true 2.Sometimes true 3.Never True 4.Don't know/Refused RECODE J402 (1 thru 2=1) (3 thru 4=0) INTO J402new. EXECUTE VALUE LABELS J402new 0.Never true or don't know/refused 1.Often true/sometimes true
J403new	Reduce food size and do not because not enough money	Did (you) in your household ever cut the size of your meals or skip meals because there wasn't enough money for food.	1.Yes 2.No 3.Don't know RECODE J403 (1 thru 1=1) (2 thru 3=0) (-7=0) INTO J403new. VALUE LABELS J403new 0.No/don't know 1.Yes
J404new	If Yes, how often	If yes, how often did this happen-almost every month, some months but not every month, or in only 1 or 2 months.	1. Almost every month 2. Some month but not every month 3. Only 1 or 2 months 4. Don't know RECODE J404 (1 thru 2=1) (3 thru 4=0) INTO J404new. EXECUTE VALUE LABELS J404new 0. Only one or 2 months 1. Almost every month or some month but not every month
J405new	Eat less than what u think should be because not enough food	Did you ever eat less than you felt you should because there wasn't enough money for food in the last 12 months?	1. Yes 2. No 3. Don't know RECODE J405 (1 thru 1=1) (2 thru 3=0) (-7=0) INTO J405new.EXECUTE VALUE LABELS J405new 0. No/don't know 1. Yes
J406new	Hungry but did not eat because not enough food	In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?	1. Yes 2. No 3. Don't know RECODE J406 (1 thru 1=1) (2 thru 3=0) (-7=0) INTO J406new. EXECUTE. VALUE LABELS J406new 0. No/don't know 1. Yes

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
TotalskorJ 4	Food security status	Total score food security	COMPUTE TotalskorJ4=SUM (J401new, J402new, J403new, J404new, J405new, J406new). EXECUTE
Food security	Food security status	Classification of food category in 3 categories.	RECODE TotalskorJ4 (0 thru 1=1) (2 thru 4=2) (5 thru 6=3) INTO Foodsecurity. EXECUTE. VALUE LABELS Foodsecurity 1 High and marginal food security 2 Low food security 3 Very low food security.
Food security new	Foodsecuritynew	Classification of food category in 2 categories.	RECODE Foodsecuritynew (1=1) (2=2) (3=2) INTO Foodsecure2cat. EXECUTE. 1. Food security (High and marginal food security) 2. Food insecurity (Low food security and Very low food security)

ELDERLY HEALTH – NON-COMMUNICABLE DISEASES

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition

Ever Screen DM	screenDM	Those who had their blood sugar measured in the past 12 months either by themselves or by a healthcare worker.	Compute variable ever Screen DM
			IF (K101_new >= 1) screenDM=0.
			EXECUTE.
			
			IF (K103a_new = 2) screenDM=-2.
			EXECUTE.
			
			IF (K101_new = 1 & screenDM ~=-2) screenDM=1.
			EXECUTE.

Known DM (Self-Reported DM)	knownDM	Those who being told to have diabetes by a doctor or assistant medical officer.	Compute variable self-reported / known DM
			
			IF (K102_new >= 1 | K102_new = - 7) knownDM=0.
			EXECUTE.
			
			IF (K102_new = 1) knownDM=1.
			EXECUTE.

Diabetes who Received advice	received_ advisedDM	Known diabetes who received any advice for diet control, advice for weight loss and advice to start or do more exercise and herbal/traditional remedies.	Compute variable received any advised for DM
			
			IF (knownDM = 1) received_advisedDM=0.
			EXECUTE.
			
			IF (K106_new = 1 | K107_new = 1 | K108_new = 1) received_advisedDM=1.
			EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition

Ever Screen HPT	screenHPT	Those who had their blood pressure measured in the past 12 months by themselves or by a healthcare worker.	Compute variable ever screening for hypertension
			
			IF (K201_new >= 1) screenHPT=0.
			EXECUTE.
			
			IF (K203a_new = 2) screenHPT=-2.
			EXECUTE.
			
			IF (K201_new = 1 & screenHPT ~=-2) screenHPT=1.
			EXECUTE.

Known HPT	knownHPT	Defined as being told to have hypertension by a doctor or assistant medical officer.	Compute variable self-reported / known Hypertension
			
			IF (K202_new >= 1 | K202_new = - 7) knownHPT=0.
			EXECUTE.
			
			IF (K202_new = 1) knownHPT=1.

Hypertensive who received any advice	received_ adviceHPT	Hypertension patients who received advice to reduce salt intake, advice for weight loss and advice to start or do more exercise and herbal/traditional remedies.	Compute variable received any advised for HPT
			
			IF (knownHPT = 1) received_adviceHPT=0.
			EXECUTE.
			
			IF (K205_new = 1 | K206_new = 1 | K207_new = 1) received_adviceHPT=1.
			EXECUTE.

Ever Screen Hypercholesterolemia	Ever Screened Chol	Defined as those who had their blood checked for cholesterol levels in the past 12 months by themselves or by a healthcare worker.	Compute variable ever screening for hypercholesterolemia
			
			IF (K301_new >= 1) EverScreenedChol=0.
			EXECUTE.
			
			IF (K302_new = 1) EverScreenedChol=-2.
			EXECUTE.
			
			IF (K301_new = 1 & EverScreenedChol ~=-2) EverScreenedChol=1.
			EXECUTE.

Known Hypercholesterolemia	knownCHOL	Self-reported /known hypercholesterolemia - was defined as being told to have hypercholesterolemia by a doctor or assistant medical officer.	Compute known hypercholesterolemia
			
			IF (K302_new >= 1 | K302_new = - 7) knownCHOL=0.
			EXECUTE.
			IF (K302_new = 1) knownCHOL=1.
			EXECUTE.

Hypercholesterolemia who received any advice	received_ advicedChol	Types of treatments or advice for hypercholesterolemia patients - drugs (medication) in the past two weeks, advice for special low fat or low cholesterol diet, advice to lose weight and advice to start or do more exercise and herbal/traditional remedies.	Compute variable received advised
			
			IF (knownCHOL = 1) received_advicedChol =0.
			EXECUTE.
			IF (K304_new = 1 | K305_new = 1 | K306_new = 1) received_advicedChol =1.
			EXECUTE.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition

Self-reported cancer	diagca	Self-reported cancer is defined as being diagnosed by a doctor to have cancer	Compute variable for self-reported cancer
			
			IF (K401_new >= 1 | K401_new = - 7) diagca=0.
			EXECUTE.
			
			IF (K401_new = 1 & K402_new = 1) diagca=1.
			VARIABLE LABELS diagca 'Diagnosed cancer'.
			EXECUTE.

Current smoked tobacco user	csmoked	Currently using any smoked tobacco product (manufactured cigarettes, hand-rolled cigarettes, kretek, cigars, shisha, bidis or tobacco pipes).	Compute denominator for smoking IF (K501_new >= 1 | K501_new = - 7 | K504a_new >= 1 | K504a_new = - 7 | K504b_new >= 1 | K504b_new = - 7 | K504c_new >= 1 | K504c_new = - 7) denom_smoking=0.
			Compute variable Current smoked tobacco user COMPUTE csmoked=denom_smoking. VARIABLE LABELS csmoked 'current smoked tobacco product'. EXECUTE. IF (K501_new = 1 | K501_new = 2) csmoked=1. VARIABLE LABELS csmoked 'current smoked tobacco product'. EXECUTE.
Former smokers (past smoker)	pastsmoked	Used any smoked tobacco product (manufactured cigarettes, hand-rolled cigarettes, kretek, cigars, shisha, bidis or tobacco pipes) in the past.	Compute variable former smokers' user COMPUTE pastsmoked=denom_smoking. VARIABLE LABELS pastsmoked 'past smoked tobacco user'. EXECUTE. IF (K502_new = 1 | K502_new = 2) pastsmoked=1. VARIABLE LABELS pastsmoked 'past smoked tobacco user'. EXECUTE.

ELDERLY HEALTH – ELDER ABUSE AND NEGLECT

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Neglect	L1_ Neglect	Positive screening for self-reported neglect perpetrated by someone known to the respondent in the past 12 months	**L101 Neglect_Cooked Food COMPUTE L101_food_direct=L101a = 2. COMPUTE L101_food_indirect_1=L101a = 1 & L101b = 2 & L101c = 4. COMPUTE L101_food_indirect_2=L101a = 1 & L101b = 2 & (L101c = 2 | L101c = 3) & L101d >= 2. COMPUTE L101_food_all=L101_food_indirect_1 = 1 | L101_food_direct = 1 | L101_food_indirect_2 = 1. **L102 Neglect_Clean Clothes COMPUTE L102_cleanclothes_direct=L102a = 2. COMPUTE L102_cleanclothes_indirect_1=L102a = 1 & L102b = 2 & L102c = 4. COMPUTE L102_cleanclothes_indirect_2=L102a = 1 & L102b = 2 & (L102c = 2 | L102c = 3) & L102d >= 2. COMPUTE L102_cleanclothes_all=L102_cleanclothes_indirect_1 = 1 | L102_cleanclothes_direct = 1 | L102_cleanclothes_indirect_2 = 1. **L103 Neglect Medication COMPUTE L103_med_direct=L103a = 2. COMPUTE L103_med_indirect_1=L103a = 1 & L103b = 2 & L103c = 4. COMPUTE L103_med_indirect_2=L103a = 1 & L103b = 2 & (L103c = 2 | L103c = 3) & L103d >= 2. COMPUTE L103_med_all=L103_med_indirect_1 = 1 | L103_med_direct = 1 | L103_med_indirect_2 = 1. **L104 Neglect Shelter COMPUTE L104_shelter_direct=L104a = 2. COMPUTE L104_shelter_indirect_1=L104a = 1 & L104b = 2 & L104c = 4. COMPUTE L104_shelter_indirect_2=L104a = 1 & L104b = 2 & (L104c = 2 | L104c = 3) & L104d >= 2. COMPUTE L104_shelter_all=L104_shelter_indirect_1 = 1 | L104_shelter_direct = 1 | L104_shelter_indirect_2 = 1. **L1 Neglect computation COMPUTE L1_Neglect=L101_food_all = 1 | L102_cleanclothes_all = 1 | L103_med_all = 1 | L104_shelter_all = 1. VARIABLE LABELS L1_Neglect 'Neglect'. EXECUTE. VALUE LABELS L1_Neglect 0 Negative 1 Positive.
Financial abuse	L2_FA_all	Positive screening for self-reported financial abuse perpetrated by someone known to the respondent in the past 12 months	**L2 Financial abuse computation COMPUTE L201_FA_stolen_money=L201a = 1 & L201b = 1. COMPUTE L202_FA_prevented_access=L202a = 1 & L202b = 1.

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
			COMPUTE L203_FA_manipulate_money=L203a = 1 & L203b = 1. COMPUTE L204_FA_manipulate_will=L204a = 1 & L204b = 1. COMPUTE L205_FA_financial_doc=L205a = 1 & L205b = 1. COMPUTE L206_FA_power_attorney=L206a = 1 & L206b = 1. COMPUTE L207_FA_tried=L207a = 1 & L207b = 1. COMPUTE L208_FA_stop=L208a = 1 & L208b = 1. COMPUTE L2_FA_all=L201_FA_stolen_money = 1 | **L2_FA_all computation COMPUTE L202_FA_prevented_access = 1 | L203_FA_manipulate_money = 1 | L204_FA_manipulate_will = 1 | L205_FA_financial_doc = 1 | L206_FA_power_attorney = 1 | L207_FA_tried = 1 | L208_FA_stop = 1. VARIABLE LABELS L2_FA_all 'Financial Abuse'. EXECUTE. VALUE LABELS L2_FA_all 0 Negative 1 Positive.
Psychological abuse	L3_PsyA_all	Positive screening for self-reported psychological abuse perpetrated by someone known to the respondent in the past 12 months	**L3 Psychological abuse computation COMPUTE L301_PsyA_Curse_direct=L301a = 1 & L301b = 1 & L301c = 3. COMPUTE L301_PsyA_Curse_indirect=L301a = 1 & L301b = 1 & L301c <= 2 & L301d >= 2. COMPUTE L301_PsyA_Curse_all=L301_PsyA_Curse_direct = 1 | L301_PsyA_Curse_indirect = 1. COMPUTE L302_PsyA_Threaten_Verbal_direct=L302a = 1 & L302b = 1 & L302c = 3. COMPUTE L302_PsyA_Threaten_Verbal_indirect=L302a = 1 & L302b = 1 & L302c <= 2 & L302d>= 2. COMPUTE L302_PsyA_Threaten_Verbal_all=L302_PsyA_Threaten_Verbal_direct = 1 | L302_PsyA_Threaten_Verbal_indirect = 1. COMPUTE L303_PsyA_Belittle_direct=L303a = 1 & L303b = 1 & L303c = 3. COMPUTE L303_PsyA_Belittle_indirect=L303a = 1 & L303b = 1 & L303c <= 2 & L303d>= 2. COMPUTE L303_PsyA_Belittle_all=L303_PsyA_Belittle_direct = 1 | L303_PsyA_Belittle_indirect = 1. COMPUTE L304_PsyA_Ignore_direct=L304a = 1 & L304b = 1 & L304c = 3. COMPUTE L304_PsyA_Ignore_indirect=L304a = 1 & L303b = 1 & L304c <= 2 & L304d>= 2. COMPUTE L304_PsyA_Ignore_all=L304_PsyA_Ignore_direct = 1 | L304_PsyA_Ignore_indirect = 1. COMPUTE

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
			L305_PsyA_Threaten_hurt_direct=L305a = 1 & L305b = 1 & L305c = 3. COMPUTE L305_PsyA_Threaten_hurt_indirect=L305a = 1 & L305b = 1 & L305c <= 2 & L305d>= 2. COMPUTE L305_PsyA_Threaten_hurt_all=L305_PsyA_Threaten_hurt_direct = 1 | L305_PsyA_Threaten_hurt_indirect = 1. COMPUTE L306_PsyA_Prevent_visit_direct=L306a = 1 & L306b = 1 & L306c = 3. COMPUTE L306_PsyA_Prevent_visit_indirect=L306a = 1 & L306b = 1 & L306c <= 2 & L306d>= 2. COMPUTE L306_PsyA_Prevent_visit_all=L306_PsyA_Prevent_visit_direct = 1 | L306_PsyA_Prevent_visit_indirect = 1. COMPUTE L307_PsyA_Stop_Device_direct=L307a = 1 & L307b = 1 & L307c = 3. COMPUTE L307_PsyA_Stop_Device_indirect=L307a = 1 & L307b = 1 & L307c <= 2 & L307d>= 2. COMPUTE L307_PsyA_Stop_Device_all=L307_PsyA_Stop_Device_direct = 1 | L307_PsyA_Stop_Device_indirect = 1. COMPUTE L3_PsyA_all=L301_PsyA_Curse_all = 1 | L302_PsyA_Threaten_Verbal_all = 1 | L303_PsyA_Belittle_all = 1 | L304_PsyA_Ignore_all = 1 | L305_PsyA_Threaten_hurt_all = 1 | L306_PsyA_Prevent_visit_all = 1 | L307_PsyA_Stop_Device_all = 1. VARIABLE LABELS L3_PsyA_all 'Psychological Abuse'. EXECUTE. VALUE LABELS L3_PsyA_all 0 Negative 1 Positive.
Physical abuse	L4_ PhysicalA _all	Positive screening for self-reported physical abuse perpetrated by someone known to the respondent in the past 12 months	**Physical abuse computation COMPUTE L401_PA_tried_hit=L401a = 1 & L401b = 1. COMPUTE L402_PA_push=L402a = 1 & L402b = 1. COMPUTE L403_PA_hit_object=L403a = 1 & L403b = 1. COMPUTE L404_PA_kick=L404a = 1 & L404b = 1. COMPUTE L405_PA_burn=L405a = 1 & L405b = 1. COMPUTE L406_PA_medication=L406a = 1 & L406b = 1. COMPUTE L407_PA_restrain=L407a = 1 & L407b = 1. COMPUTE L408_PA_threaten=L408a = 1 & L408b = 1. COMPUTE L4_PhysicalA_all=L401_PA_tried_hit = 1 | L402_PA_push = 1 | L403_PA_hit_object = 1 |

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
			L404_PA_kick = 1 | L405_PA_burn = 1 | L406_PA_medication = 1 | L407_PA_restrain = 1 | L408_PA_threaten = 1. VARIABLE LABELS L4_PhysicalA_all 'Physical Abuse'. EXECUTE. VALUE LABELS L4_PhysicalA_all 0 Negative 1 Positive.
Sexual abuse	L5_sexualA_all	Positive screening for self-reported sexual abuse perpetrated by someone known to the respondent in the past 12 months	**Sexual abuse computation COMPUTE L501_SA_verbal=L501a = 1 & L501b = 1. COMPUTE L502_SA_touch=L502a = 1 & L502b = 1. COMPUTE L503_SA_relationship=L503a = 1 & L503b = 1. COMPUTE L5_SexualA_all=L501_SA_verbal = 1 | L502_SA_touch = 1 | L503_SA_relationship = 1. VARIABLE LABELS L5_SexualA_all 'Sexual Abuse'. EXECUTE. VALUE LABELS L5_SexualA_all 0 Negative 1 Positive.
Overall abuse	L6_ Overall_ Abuse	Self-reported overall abuse perpetrated by someone known to the respondent in the past 12 months	**Overall Abuse computation COMPUTE L6_Overall_Abuse=L1_Neglect = 1 | L2_FA_all = 1 | L3_PsyA_all = 1 | L4_PhysicalA_all = 1 | L5_SexualA_all = 1. VARIABLE LABELS L6_Overall_Abuse 'Overall abuse'. EXECUTE. VALUE LABELS L6_Overall_Abuse 0 Negative 1 Positive.
Sum of abuse subtypes	L_ sumcluster	Occurrence of two or more subtypes of abuse in the past 12 months	COUNT L_sumcluster=L1_Neglect L2_FA_all L3_PsyA_all L4_PhysicalA_all L5_SexualA_all (1). VARIABLE LABELS L_sumcluster 'Sum of abuse types'. EXECUTE. VALUE LABELS L_sumcluster 0 0 subtypes of abuse 1 1 subtypes of abuse 2 2 subtypes of abuse 3 3 subtypes of abuse 4 4 subtypes of abuse 5 5 subtypes of abuse
Perception neglect	L105	Perception of various types of abusive behaviour as neglect	L105=1
Perception financial abuse	L209	Perception of various types of abusive behaviour as financial abuse	L209=1

Variable Name	Variable in SPSS	Definition	SPSS Variable Definition
Perception psychological abuse	L308	Perception of various types of abusive behaviour as psychological abuse	L308=1
Perception physical abuse	L409	Perception of various types of abusive behaviour as physical abuse	L409=1
Perception sexual abuse	L504	Perception of various types of abusive behaviour as sexual abuse	L504=1
Reporting overall abuse	L507	Reporting of abuse in the past 12 m months	L507= 1 Health care providers 2 Social workers 3 Police 4 Others 5 No
Non-reporting overall abuse	L508	Reasons for non-reporting of abuse in the past 12 months	L508= 1 Did not think it is a type of abuse or neglect 2 Did not know where to seek help 3 Was ashamed 4 Did not want to implicate family members
Prior abuse	L600	Abuse prior to age 60 years	L600=1
Reporting of prior abuse	L601	Reporting of abuse prior to age 60	L601= 1 Health care providers 2 Social workers 3 Police 4 Others 5 No
Non-reporting of prior abuse	L602	Reasons for non-reporting of prior abuse	L602= 1 Did not think it is a type of abuse or neglect 2 Did not know where to seek help 3 Was ashamed 4 Did not want to implicate family members

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eISBN 978-983-2387-83-1