



A Malay Version of the Attitude to Ageing Questionnaire: Its Adaptation, Validation, and Reliability in the Malaysian Older Adult Population

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Received: March 10, 2022

Revised: June 17, 2022

Accepted: July 1, 2022

Background: The Attitude to Ageing Questionnaire (AAQ) was developed to assess perceptions of the aging process among older adults. The 24 items were framed into three factors. This study aimed to translate the AAQ from English to the Malay language (AAQ-M) and determine its factorial structure and validity in a Malaysian population. **Methods:** The original AAQ underwent a standard translation process, as well as content and face validation, to produce the AAQ-M. The construct validity of the AAQ-M was then assessed in 254 older adults aged 60 years and above attending a public primary care clinic in Seremban, Malaysia. **Results:** Exploratory factor analysis showed a three-factor model for the AAQ-M with acceptable reliability and Cronbach α values ranging from 0.71 to 0.82 for each factor. A total of five items were omitted for poor factor loadings (<0.32) or because they did not conceptually fit into the factor they were loaded onto. Of the final 19 AAQ-M items, seven were physical change factors, eight were psychosocial loss factors, and four were psychological growth factors. This three-factor model explained 37.9% of the total variance. **Conclusion:** The AAQ-M version confirmed that the three-factor model, namely physical change, psychosocial loss, and psychological growth, was similar to that of the original AAQ. The AAQ-M is a valid and reliable instrument for assessing the three aspects of attitudes toward aging in the Malaysian older adult population.

Key Words: Older adults, Aging, Malay, Validation, Questionnaire, Translations

INTRODUCTION

The population of older adults, defined as people aged 60 years and above,¹ has increased in recent decades. Worldwide, there were 1 billion older adults in 2019, a number that is expected to increase to 1.4 billion by 2030.¹ This significant increase is because of the increase in life expectancy of the population, which is closely related to improvements in health literacy and care, as well as to health systems in general. In Asia, including Malaysia, the older adult population is expected to double in 2030.^{2,3} Malaysia is a multiracial country, with Malays, Chinese, Indians, and indigenous Bumiputra being the major races. Malay is the most common lan-

guage.

Aging is a challenging phase of life that involves changes in employment, working environment, and physical and cognitive functioning. Aging is viewed as a reflection of individual accomplishments of their life goals.⁴ The experience of getting old is subjective and influenced by various factors such as physical elements, psychological status, and sociocultural values. Attitude to aging, which plays an important role in its successful development, is how a person perceives and experiences the aging process, which is reflected in the affective, cognitive, and evaluative components of behavior.⁵ A positive attitude to aging is associated with superior physical, mental, emotional, and social well-being,⁶⁻⁹ whereas a

negative attitude to aging is associated with depression, anxiety, and poor quality of life.^{10,11} Thus, a goal of living toward healthy or successful aging is of the utmost importance.

One instrument that has been developed to assess older adults' attitudes toward aging is the Attitude to Ageing Questionnaire (AAQ), which assesses psychological growth, physical change, and psychosocial loss domains.¹² The AAQ is a self-administered questionnaire with 24 items that reflect both the positive and negative aspects of aging based on an individual's experience and general opinion of the aging process.¹² The questionnaire has been translated into various languages and validated in many countries, including Canada, Spain, Brazil, Iran, Norway, and Belgium.^{8,13-15} To our knowledge, no validated tool was available in Malay to measure the attitude toward aging among older adults in Malaysia. Research on the attitudes of Malaysian older adults toward aging is also limited. Hence, this study aimed to translate the English version of the AAQ into the Malay language (AAQ-M) and assess its validity among a group of Malaysian older adults. Hopefully, more studies among Malaysian older adults will be performed using this validated tool, which could allow a better understanding of their attitudes toward aging. This is an initial but important step in planning better health promotion and education programs.

MATERIALS AND METHODS

The AAQ

This study used the validated AAQ developed by Laidlaw.¹² The AAQ was used to assess subjective perceptions of aging based on three factors, namely physical change related to health and physical functioning (eight items: items #7, 8, 11, 13, 14, 16, 23, and 24); psychological growth, referring to wisdom in aging (eight items: items #1, 2, 4, 5, 10, 18, 19, and 21); and psychosocial loss related to the experience involving psychological and social loss throughout the aging process (eight items: items #3, 6, 9, 12, 15, 17, 20, and 22).¹² The response to each item used a five-point Likert scale between 1 ("strongly disagree" or "not at all true") and 5 ("strongly agree" or "extremely true"). Overall, the total score was the sum of all three subscales, with reverse scores for the psychosocial loss subscale. The mean of the total score was used to interpret the result. A higher mean score indicated a positive attitude toward aging.

Translation, Content Validation, and Face Validation

Four independent translators performed a forward and backward translation procedure on the original AAQ. Two forward translations into the Malay language (AAQ-M) were performed by a linguist and a medical doctor who could speak, read, and write in

both English and Malay. Subsequently, another pair of linguists and medical doctors performed a backward translation of the AAQ-M into English. The researchers re-examined the translated versions against the original AAQ to form a harmonized AAQ-M version while ensuring that the translated items maintained the meaning of the original AAQ.

Subsequently, the AAQ was subjected to content validation by an expert panel comprising a psychiatrist, geriatrician, and family physician with special interests in geriatric care. We contacted panel members via email and provided both the original and translated versions of the questionnaires. The panel members were requested to give their expert opinions on the appropriateness of the items to be used, check the accuracy of the translated items in assessing the intended context of the respective original items, and suggest any additional items specific to the Malaysian population. Based on their suggestions, necessary amendments were made to produce the final version of the AAQ-M.

This final version was then administered to 10 older adults for face validity to check the comprehensibility of the questionnaire. These participants were patients aged ≥ 60 years attending a primary health clinic in Negeri Sembilan in the first week of June 2018. They were selected based on criteria similar to those used to select the intended population of the construct validity study and were not included in further studies. The selected participants were individually met and provided with the final AAQ-M. They were requested to review all items on their own. Subsequently, the field researcher checked their understanding of each item and indicated whether any of the questions were culturally insensitive, irrelevant, or inappropriate. The participants were also asked to attempt and provide their answers to each item using the response format.

Study Design, Setting, and Participants for Construct Validity

We conducted this cross-sectional validation study at the same primary health clinic in Negeri Sembilan, Malaysia. The participants attended the clinic from June to September 2018 and were older adults aged ≥ 60 years who could read and understand Malay. The exclusion criteria were older adults with cognitive impairment and those who had been involved in the face validity assessments. The sample size was based on a participant-to-item ratio of at least 10:1.¹⁶ Hence, this study required a minimum of 276 participants, with an additional 15% needed to allow for non-responses. During the data collection period, a field researcher went through the list of clinic attendees and performed convenience sampling by approaching older adults while they waited for their medical consultations. The older adults who met the study criteria were briefed on the study and invited to participate. Individuals who agreed to

participate were requested to complete the AAQ-M questionnaire at their convenience. The completed questionnaires were collected on the same day before the participants left the clinic.

Ethical Considerations

This study was registered in the National Medical Research Registry (NMRR-17-3167-37451) of Malaysia and received approval from the research and ethics committee of the Universiti Kebangsaan Malaysia Research and Ethics Committee (UKM PPI/111/8/JEP-2018-069) and the Malaysia Medical Research and Ethic Committee (NMRR-17-3167-37451 (IRR)). We also obtained permission to conduct the study at the government primary health clinic from the Negeri Sembilan State Health Department and the family medicine specialists in charge. Kenneth Laidlaw, the original author of the questionnaire, granted us permission to use and translate the AAQ from English into the Malay language. The participation of older adults was voluntary, and only those who provided written consent were included in this study. Anonymity was maintained throughout the study.

This study complied the ethical guidelines for authorship and publishing in the *Annals of Geriatric Medicine and Research*.¹⁷⁾

Statistical Analysis

The analysis was performed using IBM SPSS Statistics version 22.0 (IBM, Armonk, NY, USA). A descriptive analysis was performed to describe sociodemographic profiles of the participants. The underlying structure of the 24-item AAQ-M was determined using exploratory factor analysis (EFA) with principal axis factoring and direct oblimin rotation. Oblimin rotation was used because factors were expected to be correlated with each other.^{18,19)} The number of factors to be extracted was based on the Kaiser criterion, scree plot, and Monte Carlo principal components analysis (PCA) for parallel analysis. Items with a factor loading < 0.32 were considered poor.¹⁸⁾ Items with poor factor loading or those that grouped into factors other than those in the original AAQ were examined qualitatively before a decision was made to exclude or retain them. Once a clean factorial structure was determined, the items were subjected to reliability testing of their internal consistency based on Cronbach's alpha (α) values.

RESULTS

Content and Face Validity

The content experts concluded that all 24 items were relevant and culturally appropriate in the Malaysian setting. They agreed that the translated AAQ-M version covered content similar to the original version and was suitable for testing in the older adult popula-

tion. Minor amendments were made, mainly for item wording, to produce the finalized version of the AAQ-M. No additional items were suggested by the experts. During the face validity assessment, the participants felt that the questions were relevant and reported no difficulties in understanding the questions. They could answer them independently and took approximately 10–15 minutes to complete the questionnaire. They felt that the questions were both culturally relevant and appropriate.

Construct Validity and Factor Analysis

This study initially identified 276 older adults who met the study criteria. However, 11 refused to participate, seven did not return the questionnaire, and four gave incomplete responses. Thus, the analysis included feedback from 254 older adults, corresponding to a response rate of 92.0%. The participants' ages ranged from 60 to 88 years, with a mean \pm standard deviation of 66.46 ± 5.37 years. The proportions of men (48.8%) and women (51.2%) were almost equal. More than half of the participants were Malays (56.3%) and had secondary school education (58.3%). Almost all participants were married (95.3%) (Table 1).

We initially conducted free EFA without restricting the analysis to a certain number of factors. The Kaiser-Meyer-Olkin value was 0.84, while Bartlett's test of sphericity was significant and the p-value was < 0.001, indicating that the data were adequate for factor analysis. Five factors from this first EFA explained 40.9% of the total variance. However, the average communalities were < 0.6 and

Table 1. Characteristics of the participants

| Characteristic | Value |
|---------------------|--------------------------|
| Age (y) | 66.46 \pm 5.37 (60–88) |
| Sex | |
| Male | 124 (48.8) |
| Female | 130 (51.2) |
| Ethnicity | |
| Malay | 143 (56.3) |
| Chinese | 47 (18.5) |
| Indian | 62 (24.4) |
| Others | 2 (0.8) |
| Marital status | |
| Married | 242 (95.3) |
| Single | 9 (3.5) |
| Divorced | 3 (1.2) |
| Educational status | |
| No formal education | 7 (2.8) |
| Primary school | 54 (21.3) |
| Secondary school | 148 (58.3) |
| College/university | 45 (17.7) |

Values are presented as mean \pm standard deviation (range) or number (%).

thus did not meet the required assumptions for Kaiser’s criterion in deciding the number of factors number of factors.²⁰⁾

Unlike Kaiser criterion, the scree plot suggested that three factors should be retained, whereas the Monte Carlo PCA for parallel analysis suggested two factors. If three factors were retained, which would be similar to the constructs of the original AAQ, they would account for 34.6% of the total variance. If two factors were retained, they would account for a lower variance of 31.0%. Thus, a second EFA was conducted by fixing the extraction to three factors. Table 2 presents the results of this analysis. All items, except #1, 2, and 4, had a factor loading of ≥ 0.32, with no cross-loading items. Compared to the original factor structure, items #8, 11, 13, 14, 16, and 23 loaded appropriately into the physical change factor; items #3, 6, 9, 12, 15, 17, 20, and 22 loaded appropriately into the psychosocial loss factor; and items #10, 18, 19, and 21 loaded appropriately into the psychological growth factor. However, three items did not load according to their original factors. Item #5 from the psychological growth factor loaded into the physical change factor, while items #7 and 24 from physical change loaded into psychological growth.

Item Selection and Internal Consistency

Based on the EFA results, item #1 “As people get older, they are better able to cope with life,” item #2 “It is a privilege to grow old,” and item #4 “Wisdom comes with age” showed poor factor loadings (< 0.32) and were excluded. Subsequently, we conducted a third EFA using 21 items fixed into three factors. The total variance improved to 37.1%, and all but three items were loaded appropriately according to the original factors. Item #5 “There are many pleasant things about growing old,” as in the second EFA, was supposed to load in psychological growth but instead loaded into the physical change factor. Content experts decided to retain this item because of its relevance to the new factor. However, item #7 “It is important to take exercise at any age” and item #24 “I keep myself as fit and active as possible by exercising,” which loaded into the psychological growth factor, were removed as they were not conceptually appropriate for the new factor.

Subsequently, we performed a fourth EFA using 19 items. The results showed further improvement in total variance to 37.9% for a three-factor structure, namely physical change (Factor 1), psychosocial loss (Factor 2), and psychological growth (Factor 3)

Table 2. Three factor loadings for Attitude to Ageing Questionnaire in Malay version (AAQ-M) based on 24 items

| Items | Factor 1 | Factor 2 | Factor 3 |
|---|--------------|--------------|---------------|
| 11. I don't feel old. | 0.574 | 0.127 | -0.042 |
| 13. My identity is not defined by my age. | 0.547 | 0.112 | 0.067 |
| 5. There are many pleasant things about growing older. | 0.519 | -0.152 | 0.066 |
| 23. My health is better than I expected for my age. | 0.475 | 0.009 | -0.203 |
| 16. Problems with my physical health do not hold me back from doing what I want to. | 0.418 | 0.030 | -0.178 |
| 8. Growing older has been easier than I thought. | 0.417 | 0.140 | -0.152 |
| 14. I have more energy now than I expected for my age. | 0.399 | 0.073 | -0.202 |
| 2. It is a privilege to grow old. | 0.272 | -0.224 | -0.022 |
| 4. Wisdom comes with age. | 0.261 | -0.241 | -0.243 |
| 22. I feel excluded from things because of my age. | 0.104 | 0.720 | 0.049 |
| 17. As I get older, I find it more difficult to make new friends. | 0.045 | 0.695 | -0.004 |
| 6. Old age is a depressing time of life. | -0.140 | 0.670 | 0.033 |
| 20. I don't feel involved in society now that I am older. | 0.172 | 0.589 | 0.115 |
| 12. I see old age mainly as a time of loss. | 0.081 | 0.581 | 0.106 |
| 15. I am losing my physical independence as I get older. | 0.072 | 0.565 | -0.238 |
| 9. I find it more difficult to talk about my feelings as I get older. | 0.006 | 0.553 | -0.144 |
| 3. Old age is a time of loneliness. | -0.183 | 0.519 | -0.040 |
| 1. As people get older they are better able to cope with life. | 0.209 | -0.266 | -0.169 |
| 21. I want to give a good example to younger people. | -0.081 | -0.068 | -0.876 |
| 18. It is very important to pass on the benefits of my experiences to younger people. | 0.091 | 0.072 | -0.602 |
| 24. I keep myself as fit and active as possible by exercising. | 0.057 | -0.047 | -0.561 |
| 7. It is important to take exercise at any age. | -0.028 | -0.005 | -0.488 |
| 19. I believe my life has made a difference. | 0.148 | 0.265 | -0.403 |
| 10. I am more accepting of myself as I have grown older. | 0.288 | -0.086 | -0.374 |
| % of variance explained | 17.3 | 14.0 | 3.3 |

Factor loadings with highest value are in bold.

(Table 3). The internal consistency (Cronbach’s α) of the final version of the AAQ-M of 19 items was 0.79. The Cronbach α values of the physical change (seven items), psychosocial loss, (eight items), and psychological growth (four items) factors were 0.74, 0.82, and 0.71, respectively.

DISCUSSION

This study successfully translated and cross-culturally validated the AAQ. The original AAQ, translated into the Malay language (AAQ-M) through the standard translation process, then underwent assessments of its content and face validity. The content expert review deemed the AAQ to be important and relevant to the Malaysian older adult population. This was further supported by face validity, in which 10 older adults agreed that the AAQ-M was applicable and easy to understand.

The EFA of the AAQ-M was fixed at a three-factor structure, as suggested by the scree plot. This structure is similar to that of the original AAQ¹³) and represents physical change, psychosocial loss, and psychological growth factors. Other translated versions of the AAQ in various countries also showed three-factor structures similar to that of the original AAQ.^{7,8,13-15}) However, the final AAQ-M included only 19 items. Five items were removed: three

for poor factor loading and two for incorrect loading and contextually inappropriate factors. Studies using the French and Spanish versions of the AAQ also reported that some items performed differently from their factor structures.^{7,8}) Older adults from different cultures may view aging differently. The living experiences of older adults may also differ individually, which may have influenced the results of our study. However, the re-analysis after removing the five items from the AAQ-M showed better psychometric properties. The finalized 19-item AAQ-M has been proven to be a valid and reliable questionnaire for assessing attitudes toward aging and can be used in future studies.

The first three items (#1, 2, and 4) were removed for poor factor loading (< 0.32). Originally, these items were intended to fall under psychological growth. Item #1 “As people get older, they are better able to cope with life” did not fit into any of the three factors. The older adults in this study might have had a different understanding of the phrase “cope with life,” which would have influenced their response to this item. This phrase can be interpreted in the context of physical, psychological, social, and even spiritual endurance that corresponds to their life events, functional dependencies, poverty, health conditions, and spiritual or religious beliefs.^{21,22}) Notably, spirituality is a fundamental component of successful aging among Malaysian older adults²²) and thus may affect

Table 3. Three factor loadings for Attitude to Ageing Questionnaire in Malay version (AAQ-M) based on 19 items

| Items | Factor 1 (physical change) | Factor 2 (psychosocial loss) | Factor 3 (psychological growth) |
|---|-------------------------------|---------------------------------|------------------------------------|
| 11. I don't feel old. | 0.678 | 0.066 | 0.030 |
| 13. My identity is not defined by my age. | 0.570 | 0.077 | 0.093 |
| 23. My health is better than I expected for my age. | 0.531 | -0.032 | -0.133 |
| 16. Problems with my physical health do not hold me back from doing what I want to. | 0.442 | -0.007 | -0.150 |
| 8. Growing older has been easier than I thought. | 0.410 | 0.043 | -0.176 |
| 14. I have more energy now than I expected for my age. | 0.410 | -0.152 | -0.011 |
| 5. There are many pleasant things about growing older. | 0.399 | 0.104 | -0.182 |
| 22. I feel excluded from things because of my age. | 0.070 | 0.720 | 0.043 |
| 6. Old age is a depressing time of life. | -0.172 | 0.705 | 0.046 |
| 17. As I get older, I find it more difficult to make new friends | 0.050 | 0.686 | 0.024 |
| 20. I don't feel involved in society now that I am older. | 0.115 | 0.577 | 0.067 |
| 9. I find it more difficult to talk about my feelings as I get older. | 0.114 | 0.561 | 0.143 |
| 3. Old age is a time of loneliness. | -0.015 | 0.556 | -0.136 |
| 12. I see old age mainly as a time of loss. | 0.045 | 0.555 | -0.257 |
| 15. I am losing my physical independence as I get older. | -0.217 | 0.547 | -0.038 |
| 21. I want to give a good example to younger people. | -0.006 | -0.115 | -0.820 |
| 18. It is very important to pass on the benefits of my experiences to younger people. | 0.118 | 0.026 | -0.600 |
| 19. I believe my life has made a difference. | 0.109 | 0.240 | -0.448 |
| 10. I am more accepting of myself as I have grown older. | 0.271 | -0.112 | -0.392 |
| % of variance explained | 18.9 | 15.4 | 3.6 |

Factor loadings with highest value are in bold.

their grappling with life events.

The poor loading in item #2 “It is a privilege to grow old” could be because of the word “privilege” that was translated as “*keistimewaan*” in the Malay language. The root word for “*keistimewaan*” is “*istimewa*,” which means “special.” Thus, those who did not really understand “*keistimewaan*” might have simplified the word using its root expression and misinterpreted the actual meaning of privilege. Nevertheless, the possibility of a double interpretation of “special” or “privilege” was not identified during the face validation. As aging involves multiple losses, older adults might have difficulty comprehending why getting older is special and an honor, especially if they have not yet experienced being special or have not received any privilege. The statement that growing old is a privilege requires evidence as people assume or judge based on evidence.²³⁾

The poor factor loading in item #4 “Wisdom comes with age,” was related to the definition of “wisdom.” In Asian culture, respect for older adults by younger people may reflect older adults’ wisdom.²⁴⁾ However, older Malaysian adults may view respect from the younger population as not entirely related to their wisdom but rather as more of a cultural expectation. The idea of becoming wiser as one grows older may be difficult for some people to accept because it is normal in Malaysia to consider aging as a time when one loses his/her cognitive function and develops dementia.²⁵⁾ Older Malaysian adults who stay with their children may also feel they have lost their importance by becoming dependent^{21,26)} and thus lose their wisdom in decision-making and perhaps their role as the head of the family.

After removing the three items, the repeated EFA showed that items #5, 7, and 24 loaded into different factors from those loaded in the original AAQ. Item #5 “There are many pleasant things about growing old” that originally belonged to the psychological growth factor, was loaded into physical change instead. This placement was acceptable after examining the context of the sentences. Older adults may consider “many pleasant things” as something related to physical health and functioning. Although they might experience various physical limitations, they have a positive attitude about their life experience and feel grateful toward God as a result of contentment and acceptance.²⁷⁾ Gratefulness is a desirable virtue in Asian culture and various religions. Thus, item #5 was retained in the physical change factor. However, item #7 “It is important to exercise at any age” and item #24 “I keep myself as fit and active as possible by exercising” were removed from the AAQ-M. Originally, these items were intended to measure the physical change factor but were loaded into the psychological growth factor instead. The incorrect loading of items could be because of possible connections between physical

activity and psychological growth. The older adults in this study might have believed that physical activities could make them more independent and healthier and have good relationships with their friends or neighbors,²⁸⁾ which is consistent with psychological growth.

The final AAQ-M, containing 19 items, showed good internal consistency, with a Cronbach’s α of 0.79, comparable to the Norwegian ($\alpha = 0.82$) and French ($\alpha = 0.81$) versions of the AAQ.^{8,14)} The individual factors also showed good internal consistency, ranging from 0.71 to 0.82. As with other studies, the psychological growth factor showed the lowest reliability among all factors.^{7,8,12,14)} Cronbach’s α values > 0.7 indicated good internal consistency.²⁰⁾

The strength of this study is that the participants were not limited to one ethnicity; rather, they were of different ethnicities, with Malays the predominant ethnic group, followed by Indians and Chinese. This study had several limitations. First, the AAQ-M did not undergo test-retest reliability assessments to assess its temporal stability. Second, the attitude regarding aging measured by the AAQ-M was restricted to three factors, namely physical change, psychosocial loss, and psychological growth, which accounted for 37.9% of the variance. Other aspects important in Asian cultures, such as spirituality, were not assessed.

In conclusion, this study produced a 19-item Malay version of the AAQ (AAQ-M) with a three-factor model similar to the original AAQ. Five items were removed for poor factor loadings (< 0.32) or loadings into factors deemed inappropriate. Our results demonstrated that the AAQ-M was a valid and reliable questionnaire for assessing the three aspects of attitude to aging, namely physical change, psychosocial loss, and psychological growth, among Malaysian older adults. Qualitative studies are needed to explore other aspects of attitude toward aging among older Malaysian adults.

ACKNOWLEDGEMENTS

The authors also like to express their gratitude and appreciation to the original author of the AAQ, Kenneth Laidlaw, who granted us permission to use and translate the original AAQ into the Malay language, and to all staff in the government health clinic for their kind cooperation and assistance during data collection. We also express our appreciation and thanks to the Ministry of Health of Malaysia for permission to conduct this study at the respective facilities.

CONFLICT OF INTEREST

The researchers claim no conflicts of interest.

FUNDING

None.

AUTHOR CONTRIBUTION

Conceptualization, NAM, NR; Data collection, NR; Methodology, NAM; Data analysis, NAM, NR, HT, NMT, PWK, ID; Supervision, NAM; Writing—original draft, NAM, NR; Writing—review & editing, NAM, NR, HT, NMT.

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