Med & Health Jan 2026; 21(1): 367-387 https://doi.org/10.17576/MH.2026.2101.24

ORIGINAL ARTICLE

The Development and Validation of a New Malay Language Psychological Quality of Life assessment (PsychQOL)

KU NURUL IZZAH KU SEMAN[1,2], SHALISAH SHARIP[1]*, SYAHNAZ MOHD HASHIM[3], IDAYU BADILLA IDRIS[4]

[1]*Department of Psychiatry, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia*

[2]*Department of Psychology, Abdul Hamid Abu Sulayman Kuliyyah of Islamic Revealed Knowledge and Human Sciences (AHAS KIRKHS), International Islamic University Malaysia, 53100 Kuala Lumpur, Malaysia*

[3]*Department of Family Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia*

[4]*Department of Public Health Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia*

Received: 21 February 2025 / Accepted: 05 June 2025

ABSTRAK

Instrumen penilaian kualiti hidup (QOL) yang menggabungkan elemen psikologi dan rohani, di samping meraikan kepelbagaian budaya tempatan Malaysia, sangat jarang ditemui. Kajian ini bertujuan untuk membangunkan dan menilai sifat psikometrik soal selidik QOL psikologi dalam Bahasa Melayu yang relevan dengan budaya dan konteks tempatan. Kajian ini juga bertujuan untuk menerokai perbezaan antara persepsi orang dewasa yang sihat dan pesakit psikiatri terhadap QOL psikologi. Kajian ini melibatkan proses penilaian kesahan kandungan item soal selidik, kajian rintis dan kajian lapangan yang dijalankan ke atas dua sampel berbeza, iaitu orang dewasa sihat dan pesakit psikiatri. Analisis berfokus kepada penilaian konsistensi dalaman dan kesahan konstruk melalui Analisis Faktor Eksploratori (EFA). Seramai 120 orang dewasa sihat (purata umur = 34.5, SD = 6.3) dan 120 pesakit psikiatri (purata umur = 34.5, SD = 13.3) telah menyertai kajian ini. Konsistensi dalaman untuk kedua-dua sampel, iaitu orang dewasa sihat (Cronbach's α = 0.91) dan pesakit psikiatri (Cronbach's α = 0.93) adalah sangat baik. Analisis EFA untuk kedua-dua sampel menunjukkan lima domain iaitu kekuatan, ketahanan emosi, kemurungan dan kebimbangan, keagamaan dan nilai serta sokongan sosial, dengan julat muatan faktor antara 0.411 hingga 0.872. Walaupun domain adalah sama bagi kedua-dua sampel, domain kekuatan dan ketahanan emosi, terdapat perbezaan item bergantung kepada golongan sampel. Kesimpulannya, soal selidik 'Psychological Quality of Life' (PsychQOL) yang baru dibangunkan ini mempunyai struktur faktor pelbagai dimensi dengan sifat psikometrik yang kuat dan sesuai untuk orang dewasa yang sihat dan pesakit psikiatri. PsychQOL menawarkan alternatif yang sesuai dari segi budaya dan bahasa untuk menilai QOL psikologi dalam kalangan rakyat Malaysia, khususnya mereka yang berbahasa Melayu. Penilaian ini mungkin berfungsi sebagai alat pemantauan serta menawarkan pandangan terhadap pendekatan rawatan yang berkesan.

Kata kunci: *Kualiti hidup psikologi; pembangunan; penilaian psikometrik; penilaian kualiti hidup; pesakit psikiatri*

Correspondence: Shalisah Sharip. Department of Psychiatry, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latiff, Bandar Tun Razak 56000 Cheras, Kuala Lumpur, Malaysia.
Tel: +603 9145 6157 Email: shalisah@hctm.ukm.edu.my

ABSTRACT

Locally designed and validated quality of life (QOL) assessments which incorporate psychological-spiritual elements, while also considering the cultural and contextual diversity of Malaysian society, are scarce. This study aimed to develop and assess the psychometric properties of a culturally-relevant Malay psychological QOL questionnaire tailored to the Malaysian context. This study also aimed to explore differences between healthy adults and psychiatric patients in terms of perception of psychological QOL. This study involved process of assessing content validity of the questionnaire item, a pilot study and conducting a field study with two different samples, namely healthy adults psychiatric patients. The analysis has focused on assessing internal consistency and construct validity through Exploratory Factor Analysis (EFA). A total of 120 healthy adults (mean age = 34.5, SD = 6.3) and 120 psychiatric patients (mean age = 34.5, SD = 13.3) participated in this study. Internal consistencies for both healthy adults (Cronbach's α= 0.91) and psychiatric patients (Cronbach's α = 0.93) were excellent. For both samples, EFA analysis revealed five domains: vigour, emotional resilience, depression and anxiety, religiosity and values and social support, with minimum factor loadings ranged from 0.411 to 0.872. Item loadings for vigour and emotional resilience varied slightly for both groups. This newly designed Psychological Quality of Life (PsychQOL) questionnaire is a multidimensional factor structure with strong psychometric properties, which is suitable for both healthy and psychiatric patients. The PsychQOL offers a culturally and linguistically appropriate alternative for evaluating psychological well-being among Malaysians, particularly the Malay-speaking population. This assessment may serve as a monitoring tool while also offering insights into successful treatment approaches.

Keywords: Development; psychiatric patients; psychological quality of life; psychometric evaluation; quality of life assessment

INTRODUCTION

Quality of life (QOL) is an essential element of clinical investigation and patient care in healthcare settings, alongside symptom severity and mortality (Berlim & Fleck 2003). A focus on QOL centres patient perspectives matters and is central to treatment planning and evaluation (Grover & Sahoo 2022). The World Health Organisation (WHO) has outlined the definition of QOL as "the individual's perception of his or her position in life, within the cultural context and value system he or she lives in, and in relation to his or her goals, expectations, parameters and social relations" (The WHOQOL Group 1995). It is a comprehensive concept influenced by different aspects of life and includes individual's physical health, psychological state, level of independence, social relationships and how they interact with their environment (Power & Kuyken 1998). Given this broad definition of QOL, the aspects covered by QOL assessments tend to be broad as well, and are influenced by various populations and concerns.

QOL in individuals with severe psychiatric disorders is significantly lower than general population, related to different living conditions, source of income and disease severity (Berghöfer et al. 2020). Specifically, the psychological aspect of QOL was affected the most in these individuals, the psychological domain consistently shows the lowest mean scores across six major psychiatric disorders (unipolar depression, bipolar depression, schizophrenia, schizoaffective disorder, neurotic disorder and dementia) (Berghöfer et al. 2020). The significant impact on the psychological aspect of QOL emphasises the importance of assessing this domain in mental health research and clinical practice. Such evaluations provide deeper understanding of the effectiveness of various treatment approaches, particularly in psychopharmacological and psychotherapeutic interventions (Gigantesco & Massimo Giuliani 2011).

Assessing Psychological QOL

Psychological QOL is a subset of general QOL typically assessed using comprehensive, multidimensional and generic assessments of QOL. One of the most widely used in healthcare research, the World Health Organisation Quality of Life (WHOQOL) assessment, was developed by the WHOQOL Group (Power & Kuyken 1998). The WHOQOL included psychological domain among their six domains of QOL that contribute to the overall evaluation in WHOQOL-100 assessment. Under WHOQOL framework, this domain has 20 items, with four items covering each facet such as positive and negative feelings, self-esteem, cognitive functioning, bodily image and appearance. These facets were maintained in the shorter version of WHOQOL-100, namely the four-domains WHOQOL-BREF (The WHOQOL Group 1998). In the WHOQOL-BREF, the psychological domain is reduced to six items, with additional items related to spirituality added to the domain.

In comparison to WHOQOL-BREF, the European Quality of Life-5 Dimension (EQ-5D) was developed by EuroQol Group, as a concise five items assessment (Devlin & Brooks 2017). This assessment, which focuses on health-related QOL, has one item focusing on psychological state which is depression/anxiety. The item was measured using five levels in EQ-5D-5L, making it easy to administer in routine monitoring (Devlin & Brooks 2017). Moreover, a health survey is frequently used to measure QOL in healthcare settings, Short Form-36 (SF-36) includes items related to psychological aspects under the mental health dimension of the assessment. In this dimension includes items related to vitality, general mental health, limitation in role functioning and social functioning (Ware Jr & Sherbourne 1992). While SF-36 does not include items related to spirituality, the assessment provides a more extensive coverage on psychological aspects impacted by health conditions.

Culturally relevant QOL assessment, specifically psychological QOL allows accurate depiction of psychological wellbeing and life satisfaction of individuals, contributing to the effectiveness of tailored psychological interventions. However, most existing QOL measures may not fully capture the psychological aspects of QOL in the Asian country specifically for Malaysian population. Many existing tools have been developed according to Western contexts, lacking incorporation of spirituality aspects which is highly valued in Malaysian cultures and serves as a key contributor to an individual's overall QOL (Abdullah et al. 2018; Skevington et al. 2020). While those assessments are reliable and valid for Malaysian population, the suitability for this population remains questionable when spirituality, particularly religiosity aspects are not measured. Previously, in terms of psychometric validation in local contexts, WHOQOL-BREF and SF-36 have been translated into Malay language and validated in the Malaysian population with good reliability and validity, while a Malay version of EQ-5D-5L has shown fair to moderate level of test-retest reliability (Akmal Shafie et al. 2019; Hasanah et al. 2003; Sararaks et al. 2005). WHOQOL-BREF has incorporated one item taken from their list of spirituality, religion and personal beliefs category (The WHOQOL Group 1998). However, the item is related to meaning and enjoyment in life only. Another version of WHOQOL, which was WHOQOL-SPRB BREF could be an alternative with more facets of spirituality dimension (Skevington et al. 2013). However, to the best of our knowledge, the assessment has not yet been translated and validated in the Malaysian population. Without a reliable and culturally relevant assessment, clinicians and researchers may struggle to assess psychological QOL among Malaysian accurately, potentially leading to less impactful interventions.

As there are limitations of existing assessments for psychological QOL and restricted availability of culturally appropriate assessments for Malaysian population, the development and validation of a psychological QOL assessments for Malaysian population is essential to facilitate valid and meaningful assessments.

Thus, this study aimed to develop and evaluate psychometric properties of a culturally relevant Malay psychological QOL questionnaire tailored to Malaysian context by incorporating spirituality items. A validated psychological QOL measurement, specifically designed in Malaysian context and national language will lead to better evaluations in clinical and research settings. We also explored whether there is any potential differences in the domains contributing to psychological QOL between the healthy population and psychiatric patients. Previously, QOL in psychiatric patients had been reported in many studies using existing QOL assessments such as WHOQOL-BREF, EQ-5D and SF-36 (Colillas-Malet et al. 2020; de Alves et al. 2016; Lamers et al. 2006). However, the assessments did not reveal specific aspects of psychological QOL due to the nature of the measurements themselves, limiting understanding of in-depth psychological QOL of psychiatric patients. Furthermore, knowing these differences is crucial in establishing the baseline psychological QOL, which can guide clinicians and researchers in developing tailored intervention and prediction purpose. The outcomes will support mental health professionals in identifying areas of need for intervention and support, in addition to monitoring patients' progress effectively, contributing to intervention optimisation.

MATERIALS AND METHODS

Instrument

(a) Item generation

A comprehensive literature review related to psychological aspects was conducted to determine the dimensions of psychological QOL (Knight et al. 2020; Macinnes 2006; Mao et al. 2021; Remmerswaal et al. 2020; Skevington et al. 2013; The WHOQOL Group 1998). The new questionnaire development was guided by WHOQOL framework (Power & Kuyken 1998) and based on Bio-Psycho-Social-Spiritual model (Koenig 2004; Puchalski et al. 2009; Sulmasy 2002), an extension of Engel's Bio-Psycho-Social Model (Engel 1960). Based on the the literature and discussions among experts, who consisted of two clinical psychologists, a family medicine specialists and a community health specialist. Six core components were identified for newly designed questionnaire. These components were occupational functioning, emotional stability, depression and anxiety, social functioning, spirituality and valued living and physical functioning. The authors developed the questionnaire items based on the components, in Malay language which reached to 29 items before submitting to experts to validate the items.

All items were developed as positive statements, except for items related to depression and anxiety. For the negative-statement items, reverse scoring was done on the responses before analysis. The questionnaire used a 7-point Likert Scale: (1: strongly disagree to 7: strongly agree) to properly capture variations in responses (Debets et al. 2020). The score for this questionnaire ranged from 7 to 203 for 29 items, with higher score suggesting better psychological QOL.

(b) Content Validity

Content validity was essential in ensuring the items are representative and relevant to measure the construct comprehensively (Haynes et al. 1995). A total of four subject matter experts (SMEs) were recruited through judgement sampling to evaluate the items. They were clinical psychologists, aged between 30 to 41 years old, with working experiences ranged from 7 to 15 years. All SMEs were practicing in clinical settings. They were chosen based on their expertise and experience in clinical psychology. They rated the items based on two criteria-relevancy and clarity through a Google form. Relevancy aspect focused on how well the item represented the construct as outlined in theoretical definition while Clarity measured how well the item was clear and easy to understand. Content validity index (CVI) was calculated as outlined by Waltz and Bausell (1981). Items with CVI values of 0.75 and above were accepted (Yaghmaie 2003). Scale-level CVI based on the average method (S-CVI/Ave) were

calculated for relevancy and clarity on the initial 29 questions.

(c) Pre testing and pilot testing

Once the item were validated by expert and suitable to assess psychological QOL, pre-testing was conducted with ten healthy adults to assess face validity (Yusoff 2019). The respondents were recruited through convenience sampling. Based on cognitive interviews, all respondents verified that the majority of the items were easy to understand and not time-consuming. There was some feedback provided on five items regarding poor comprehensibility and redundancy, thus, the items were deleted. Pilot testing was then conducted among 30 healthy adults online to assess face validity before conducting the field study. The Cronbach's α calculated was 0.94.

(d) Field Study

The field study was conducted in two phases. The first phase focused on validating the new questionnaire in an adult, generally healthy population with no psychiatric disorders. The initial phase was conducted to establish baseline QOL in non-clinical sample, minimising the influence of psychiatric symptomatology. Psychiatric samples were chosen for validation, as the psychological QOL in individuals with psychiatric disorders was consistently reported to be low (Berghöfer et al. 2020). Exploratory Factor Analysis (EFA) was conducted for both study populations to examine the underlying factor structure and assess construct validity.

(i) Part 1: Healthy adults

The first part of this two-phase study focused on the psychometric evaluation of the questionnaire in healthy adults. This cross-sectional study was conducted from March 2024 until June 2024. In order to gain larger sample, healthy respondents were invited to participate virtually through online platforms such as Facebook, WhatsApp and Instagram. Respondents were recruited using convenience sampling. The virtual invitations were linked to Google Forms, where information about the study objectives and procedures was made available. The respondents also provided informed consent on the first section of the online survey form. The inclusive criteria for this phase were Malaysians aged 18 years old or above and with no psychiatric disorders.

(ii) Part 2: Psychiatric patients

The second part was focused on assessing psychometric properties of the questionnaire in psychiatric patients. This study was conducted from July 2023 until September 2024 and included individuals with psychiatric disorders. Respondents were recruited from Psychiatric Clinic of Hospital Canselor Tuanku Muhriz, Malaysia. The respondents were first given information about this study and provided informed consent indicating their agreement to participate. The inclusive criteria for this phase were Malaysians, age 18 years old and above, and diagnosed with psychiatric disorder by psychiatrists based on Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5). Other inclusion criteria included being clinically stable and able to comprehend the questions. Patients who were not clinically stable, such as having active psychosis, suicidal ideation, substance intoxication and severe mood episodes were excluded from the study. Patient who were having neurological problem and could not read were also excluded from this study.

Statistical Analysis

Statistical analysis was carried out using Statistical Package for the Social Sciences version 26 software (IBM Corp., Armonk, NY). Descriptive statistics were used to capture the sociodemographic details of both study populations. The collected data showed normal distributions, reported as mean with standard deviation. The internal consistency reliability of the questionnaire was evaluated by calculating Cronbach's α coefficient of the overall questionnaire and each

factor. A coefficient of 0.7 and above indicated acceptable reliability (Bland & Altman 1997). Item-total correlation was calculated to examine whether the score of the item correlates with the total score of the questionnaire with a correlation of 0.3 and above considered acceptable (Hajjar 2018).

EFA was carried out to determine the number of underlying dimensions of the questionnaire. Principal component analysis was chosen to extract the most essential elements of the data and condense into simpler presentation to help in exploring the connections between the variables and observations (Abdi & Williams 2010). Additionally, Varimax rotation was chosen as this study assumed that the domains within the construct did not necessarily correlate (Costello & Osborne 2005). This study also applied the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericitiy in determining the adequacy of samples, allowing applicability of the factor structure to broader population. The KMO value ranged between zero and one, with values above 0.8 suggested the factor structure was stable (Lanario et al. 2020). In terms of Bartlett's test of sphericity, this test determined whether the correlation matrix differs from the identity matrix, with a significant value of <0.05 suggesting that the sample was suitable for factor analysis (Shrestha 2021). The Kaiser's criterion of eigenvalues 1 was used to decide the number of factors extracted and retained. Minimum factor loading was set to 0.4 following recommendation from Costello and Osborne (2005). Confirmatory Factor Analysis (CFA) was an important analysis to verify the underlying dimension (Brown & Moore 2012). However, it was not conducted in this study as the researchers focused on exploring and comparing the factor structures of this questionnaire using different samples. A larger sample size was required for conducting CFA, whereas EFA offered researchers greater flexibility in choosing item, enabling a more refined measurement models.

Additionally, the independent t-test was employed to compare the scores of the two samples, to quantify the impact of psychiatric disorders on psychological QOL. The measure of effect size, Cohen's *d* was used to evaluate the magnitude of the differences between the two means (Cohen 1988). The formula used was:

$$d = \frac{M_1 - M_2}{S_p}$$

where M_1 and M_2 were means obtained from respective samples and S_P was the pooled standard deviations of the two samples. Cohen (1988) suggested that the magnitude of effect sizes be interpreted as small for $d = 0.2$, medium for $d = 0.5$ and large for $d = 0.8$.

RESULTS

Content Validity of the PsychQOL

Based on literature review and expert discussion, the initial core components identified for inclusion in the PsychQOL were physical functioning, occupational functioning, emotional stability, depression and anxiety, social relationship and spirituality. Following ratings and feedback from SMEs, the S-CVI/Ave ranged from 0.75 to 1.0, as shown in Table 1 (Relevancy) and Table 2 (Clarity). One item with low item-level content validity index (I-CVI) due to poor relevancy were deleted, while another item with low I-CVI remained under different category based on the feedback. The researchers also added One item to improve the questionnaire based on the feedback given by the panel of experts. After that, five items were deleted following poor comprehensibility of items as gathered from cognitive interviews during the pre-test phase. Pilot testing was conducted using the final 24-item questionnaire and the Cronbach's α was 0.94.

Field Study Sample 1: Healthy adults

(a) Descriptive analysis

A total of 120 individuals, aged 19 to 64 years old (mean age = 34.5, SD = 6.3) participated in the online study. There were 28 males and 92 females, from predominantly Malay ethnicity

TABLE 1: Content validity index for questionnaire items based on relevancy

Domain	Expert 1	Expert 2	Expert 3	Expert 4	EA	I-CVI	UA	S-CVI (ave)
Relevancy								
Occupational Functioning								0.75
1. I am not worried of going anywhere	1	1	1	0	3	0.75	0	
2. I can perform my daily activities in peace	1	1	1	0	3	0.75	0	
3. I can perform daily activities well	1	1	1	1	4	1.00	1	
4. I feel that my body is healthy	1	1	1	0	3	0.75	0	
5. My emotions are always in a calm state	1	1	0	0	2	0.50	0	
Emotional Stability								0.90
1. I can control my emotions well when I am facing problems	1	1	1	1	4	1.00	1	
2. I believe that I could face future challenges	1	1	1	1	4	1.00	1	
3. I have a sense of purpose in my life	1	1	0	0	2	0.50	0	
4. I can think clearly to solve any problems	1	1	1	1	4	1.00	1	
5. I can manage my emotions well	1	1	1	1	4	1.00	1	
Depression & Anxiety								0.92
1. I feel lonely	1	1	1	1	4	1.00	1	
2. I always forget many things	1	1	0	1	3	0.75	0	
3. Everything worries me	1	1	1	1	4	1.00	1	
4. I always feel like giving up	1	1	1	1	4	1.00	1	
5. I always feel hesitant when doing something	1	1	1	1	4	1.00	1	
6. I lose interest in doing activities that I enjoyed	1	1	1	1	4	1.00	1	
7. My body always feels uncomfortable	1	1	0	1	3	0.75	0	
8. I am anxious thinking about my health issues	1	1	0	1	3	0.75	0	
9. My sexual desire is disrupted	1	1	1	1	4	1.00	1	
Spirituality & Valued Living								1.00
1. When I faced health issue, I started getting closer to God	1	1	1	1	4	1.00	1	
2. I am strongly religious person	1	1	1	1	4	1.00	1	
3. My life is very meaningful	1	1	1	1	4	1.00	1	
4. I can perform religious activities in a calm state	1	1	1	1	4	1.00	1	
5. I am able to enjoy my life as it is	1	1	1	1	4	1.00	1	

Continued...

...continuing

Domain	Expert 1	Expert 2	Expert 3	Expert 4	EA	I-CVI	UA	S-CVI (ave)
Physical Functioning								1.00
1. I can sleep well	1	1	1	1	4	1.00	1	
2. I feel energetic to do any activities	1	1	1	1	4	1.00	1	
Social Functioning								1.00
1. I have someone to share my problems with and ask for advice	1	1	1	1	4	1.00	1	
2. People around me support me a lot	1	1	1	1	4	1.00	1	
3. I can socialise well with peoples around me	1	1	1	1	4	1.00	1	
Total								0.91

†EA: Experts in agreement; I-CVI: Item-level content validity index; UA: Universal agreement; S-CVI/Ave: Scale-level content validity index based on average method

TABLE 2: Content validity for questionnaire items based on clarity

Domain	Expert 1	Expert 2	Expert 3	Expert 4	EA	I-CVI	UA	S-CVI (ave)
Clarity								
Occupational Functioning								0.90
1. I am not worried of going anywhere	1	1	1	0	3	0.75	0	
2. I can perform my daily activities in peace	1	1	1	0	3	0.75	0	
3. I can perform daily activities well	1	1	1	1	4	1.00	1	
4. I feel that my body is healthy	1	1	1	1	4	1.00	1	
5. My emotions are always in a calm state	1	1	1	1	4	1.00	1	
Emotional Stability								0.95
1. I can control my emotions well when I am facing problems	1	1	1	1	4	1.00	1	
2. I believe that I could face future challenges	1	1	1	1	4	1.00	1	
3. I have a sense of purpose in my life	1	1	1	0	3	0.75	0	
4. I can think clearly to solve any problems	1	1	1	1	4	1.00	1	
5. I can manage my emotions well	1	1	1	1	4	1.00	1	

Continued...

...continuing

Domain	Expert 1	Expert 2	Expert 3	Expert 4	EA	I-CVI	UA	S-CVI (ave)
Depression & Anxiety								0.97
1. I feel lonely	1	1	1	0	3	0.75	0	
2. I always forget many things	1	1	1	1	4	1.00	1	
3. Everything worries me	1	1	1	1	4	1.00	1	
4. I always feel like giving up	1	1	1	1	4	1.00	1	
5. I always feel hesitant when doing something	1	1	1	1	4	1.00	1	
6. I lose interest in doing activities that I enjoyed	1	1	1	1	4	1.00	1	
7. My body always feels uncomfortable	1	1	1	1	3	1.00	1	
8. I am anxious thinking about my health issues	1	1	1	1	3	1.00	1	
9. My sexual desire is disrupted	1	1	1	1	4	1.00	1	
Spirituality & Valued Living								1.00
1. When I faced health issue, I started getting closer to God	1	1	1	1	4	1.00 1.00	1	
2. I am strongly religious person	1	1	1	0	4	1.00	1	
3. My life is very meaningful	1	1	1	0	4	1.00	1	
4. I can perform religious activities in a calm state	1	1	1	1	4	1.00	1	
5. I am able to enjoy my life as it is	1	1	1	1	4	1.00	1	
Physical Functioning								1.00
1. I can sleep well	1	1	1	1	4	1.00	1	
2. I feel energetic to do any activities	1	1	1	1	4	1.00	1	
Social Functioning								1.00
1. I have someone to share my problems with and ask for advice	1	1	1	1	4	1.00	1	
2. People around me support me a lot	1	1	1	1	4	1.00	1	
3. I can socialise well with peoples around me	1	1	1	1	4	1.00	1	
Total								0.97

†EA: Experts in agreement; I-CVI: Item-level content validity index; UA: Universal agreement; S-CVI/Ave: Scale-level content validity index based on average method

(93.3%), followed by Chinese (5%), Indian (0.8%) and others (0.8%). A majority of the participants (84.2%) received education up to first degree and above, followed by 6.7% had a certificate or diploma and 9.2% received secondary education. Only 15.8% of the participants reported having medical conditions. Table 3 summarise the demographic details of the samples.

(b) Exploratory factor analysis for sample 1

EFA on the 24 items indicated that the KMO index was 0.86, indicating that the sampling was adequate and suitable for conducting EFA, with high likelihood of extracting distinct components. The analysis identified five distinct factors with their eigenvalues being greater than one (total variance explained = 62.85). All items had factor loadings of a minimum of 0.4, as shown in Table 4. The number of domains reduced from six identified domains from the literature review to five domains extracted from EFA. The first domain, vigour, contained six items, which combined all items related to occupational and physical functioning and one item from social functioning. In the initial domain formed from literature review, occupational functioning has five items, and physical functioning has two items. Two items from occupational functioning were deleted during face validity phase. Since

TABLE 3: Demographic details of the participants

Profile	Healthy adults (n=120)	%	Psychiatric patients (n=120)	%
Gender				
Male	29	24.2	34	28.3
Female	91	75.8	86	71.7
Race				
Malay	112	93.3	87	72.5
Chinese	6	5.0	19	15.8
Indian	1	0.8	4	3.3
Others	1	0.8	10	8.3
Education background				
Primary	0	0	4	3.3
Secondary	11	9.2	28	23.3
Certificate/ Diploma	8	6.7	32	26.7
Bachelor degree	75	62.5	40	33.3
Masters and above	26	21.7	12	10.0
Others	0	0	4	3.3
Existing medical condition				
Yes	19	15.8	70	58.3
No	101	84.2	50	41.7
Age				
Range	19-64		19-70	
Mean (SD)	34.5 (6.3)		34.5 (13.3)	
	Mean (SD)		**Mean (SD)**	
Total PsychQOL	133.8 (19.5)		103.5 (28.4)	
Total vigour	33.8 (5.5)		11.8 (4.6)	
Total emotional resilience	22.2 (4.1)		30.5 (10.0)	
Total depression and anxiety	36.2 (8.4)		28.5 (9.4)	
Total social support	11.9 (2.4)		9.6 (3.4)	
Total religiosity and values	29.7 (4.5)		23.0 (8.7)	

TABLE 4: Factors extracted from Exploratory Factor Analysis for healthy adults

No.	Item	Factor					Item Total Correlation	Cronbach's α
		1	2	3	4	5		
Domain 1: Vigour								
Q1	I am not worried of going anywhere	0.77					0.57	0.91
Q2	I can perform daily activities well	0.72					0.61	0.91
Q3	I feel that my body is healthy	0.66					0.42	0.91
Q4	I feel energetic to do any activities	0.58					0.59	0.91
Q5	I can sleep well	0.58					0.52	0.91
Q6	I can socialise well with peoples around me	0.50					0.71	0.91
Domain 2: Emotional Resilience								
Q7	I can control my emotions well when I am facing problems		0.81				0.60	0.91
Q8	I can think clearly to solve any problems		0.71				0.63	0.91
Q9	I can manage my emotions well		0.68				0.57	0.91
Q10	I believe that I could face future challenges		0.63				0.64	0.91
Domain 3: Depression and Anxiety								
Q11	I always feel like giving up			0.79			0.50	0.91
Q12	I always feel hesitant when doing something			0.71			0.59	0.91
Q13	I lose interest in doing activities that I enjoyed			0.66			0.57	0.91
Q14	I always forget many things			0.61			0.47	0.91
Q15	I feel lonely			0.58			0.54	0.91
Q16	I am anxious thinking about my health issues			0.58			0.51	0.91
Q17	My sexual desire is disrupted			0.56			0.39	0.91
Domain 4: Social Support								
Q18	I have someone to share my problems with and ask for advice				0.82		0.47	0.91
Q19	People around me support me a lot				0.79		0.54	0.91
Domain 5: Religiosity and Values								
Q20	When I faced health issue, I started getting closer to God					0.87	0.21	0.92
Q21	My life is very meaningful.					0.62	0.66	0.91
Q22	I can perform religious activities in a calm state					0.56	0.63	0.91
Q23	I am able to enjoy my life as it is					0.53	0.68	0.91
Q24	I have a sense of purpose in my life					0.41	0.57	0.91

the domains converged into a single factor, the factor was redefined as 'vigour' to reflect the content of the items more accurately. The second domain was emotional resilience with four items, maintaining most of the original five items from emotional stability. Another one item from emotional stability loaded on religiosity and valued living instead.

The third domain was depression and anxiety with seven items, a reduction of two items from the originally nine items in the earlier stage. Next, two items were loaded onto the fourth domain, social support, which came from social functioning domain earlier. This domain was renamed as social support as both items focused heavily on support from social circle, more specific compared to social functioning. although two-item factor generally described as unreliable and lacked of stability (Costello & Osborne 2005), Yong and Pearce (2013) suggested that a factor with two variables can be considered stable if the variables were strongly correlated ($r > 0.70$) and fairly uncorrelated with other variables. In this study, the correlation between the items was 0.62, suggesting moderate to strong association, while correlations between the two items with the rest of the items ranged from 0.21 to 0.51, suggesting that while related, the two items were distinct from other items. Thus, given the distinctiveness of the two items and related theoretical significance, the two-item factor was maintained. Finally, five items were loaded onto the religiosity and values domain. Despite maintaining the same number of items since earlier stage, one item was deleted from the earlier domain due to poor comprehensibility. Reliability analysis indicated total Cronbach's α of 0.91. Table 5 showed the Cronbach's α of each domain for healthy adults ranged between 0.74 to 0.92, suggesting that the item measured the same factor reliably.

Full Study Sample 2: Psychiatric patients

(a) Descriptive analysis for sample 2

A total of 120 individuals diagnosed with psychiatric disorders participated in the study recruited solely from the psychiatric clinic, Hospital Chancellor Tuanku Muhriz (HCTM), which was conducted through paper and pencil procedure. The participants, with ages ranged from 19 to 70 years old (mean age = 34.5, SD = 13.3), were majority female (75.8%). In terms of ethnicity, 67.5% were Malays, followed by 20.8% Chinese and 3.3% Indians, with the remaining 8.3% from other ethnic backgrounds. Only 39.2% of the participants received education up until first degree and above, while 26.7% had a certificate or diploma, 25% were educated up until secondary school, 5% had only attended primary schooling, while the remaining 4.2% had other types of education. In addition to psychiatric diagnosis, 56.7% of the participants declared medical conditions as well.

(b) Exploratory factor analysis for sample 2

Using data from this sample, the KMO index was 0.88, suggesting that the sampling size was suitable for EFA analysis. Similarly, the analysis extracted five different factors with eigenvalues greater than one (total variance explained = 68.22). All factors showed factor loadings of

TABLE 5: Cronbach's α of the domains in healthy adults and psychiatric patients

Domain	Healthy Adults	Psychiatric Patients
Vigour	0.82	0.75
Emotional resilience	0.84	0.92
Depression and anxiety	0.84	0.81
Social support	0.74	0.75
Religiosity and values	0.81	0.91

minimum 0.4 as shown in Table 6. The first domain was emotional resilience, with seven items; followed by religiosity and values as the second domain with five items. The third domain was depression and anxiety, with seven items. Similar to Sample 1, the fourth domain was social support, with two items. The fifth domain was vigour, with three items.

In contrast to EFA performed on healthy sample, the distribution of items differed for emotional resilience and vigour. From six items in vigour for Sample 1, the number of items dropped to three in Sample 2. In terms of emotional resilience, the number of items expanded to seven item in Sample 2 from four items in Sample 1. The total Cronbach's α for these 24 items was 0.93, demonstrating strong internal consistency of the questionnaire items in measuring the same construct. Table 4 detailed the Cronbach's α for each domain for psychiatric patients. The Cronbach's α ranged from 0.75 to 0.92, confirming satisfactory internal consistency.

Differences between Two Samples

The total score for PsychQOL in healthy adults (mean = 133.8, SD = 19.5) was significantly higher than the total score in psychiatric patients (mean = 103.5, SD = 28.4); $t(210.38) = -9.62$, $p < 0.001$. The effect size was 1.58, suggesting a large effect as measured using Cohen's *d*. Moreover, independent sample t-test were also carried out for total scores of 3 domains which had the same item loadings in both samples such as depression and anxiety, social support and religiosity and values. There were significant differences between healthy population and psychiatric patients in these three domains. Healthy adults had higher scores for social support compared to psychiatric patients; $t(211.98) = -0.60$, $p < 0.001$ with medium to large effect size, $d = 0.78$. In the religiosity and values domain, healthy adults scored significantly higher than psychiatric patients; $t(177.65) = -7.47$, $p < 0.001$ with large effect size, $d = 0.97$. For depression and anxiety domain, psychiatric patients scored lower (after reverse-coded) compared to healthy adults; $t(238) = -6.59$, $p < 0.001$ with large effect size, $d = 0.85$.

DISCUSSION

This study reports on the development of a new psychological QOL assessment written in the Malay language and its psychometric proprieties. An initial objective of the project was to identify number of factors of new development questionnaire and its correlation between latent variables or factors that represent PsychQOL. In reviewing the literature, no available data was found on factor structure or domain specifically for psychological QOL that able explain functional outcome among psychiatric disorder.

This newly questionnaire has been developed to comprehensively provide information specific to psychological QOL and to be utilised by all Malaysians with various cultural identities. This new development questionnaire was meticulously designed and undergone step by step validation process in order to determine the suitability to be used and assess human QOL not only in healthy population but with people diagnosed with psychiatric disorder. Validating this questionnaire on two different populations serve multiple purposes: establishing normative profiles and identifying deviations or abnormalities in symptoms, behaviours, or experiences that enable prediction or monitoring treatment outcomes. The cognitive interview as well as face and content validity of the Malay version of PsychQOL were evaluated by multiple processes of online interviews and surveys, either by SMEs as well as patients themselves, confirming the clarity and suitability of the PsychQOL content and construct domain in assessing psychological QOL.

One interesting finding from this study is that the PsychQOL has shown excellent internal consistency with acceptable item-total correlations for most items, not only for the healthy population but also the psychiatric population. Comparing to the findings of previous work, other QOL questionnaires have been shown to have good internal consistency

TABLE 6: Factors extracted from Exploratory Factor Analysis for psychiatric patients

No.	Item	Factor					Item Total Correlation	Cronbach's α
		1	2	3	4	5		
Domain 1: Emotional Resilience								
Q1	I am not worried of going anywhere	0.69					0.58	0.93
Q2	I can perform daily activities well	0.64					0.71	0.93
Q3	I can socialize well with peoples around me	0.45					0.74	0.93
Q4	I can control my emotions well when I am facing problems	0.87					0.70	0.93
Q5	I can think clearly to solve any problems	0.84					0.72	0.93
Q6	I can manage my emotions well.	0.84					0.68	0.93
Q7	I believe that I could face future challenges.	0.72					0.73	0.93
Domain 2: Religiosity and Values								
Q8	When I faced health issue, I started getting closer to God.		0.79				0.50	0.93
Q9	I can perform religious activities in a calm state		0.75				0.70	0.93
Q10	My life is very meaningful		0.67				0.77	0.93
Q11	I am able to enjoy my life as it is		0.64				0.82	0.93
Q12	I have a sense of purpose in my life		0.62				0.71	0.93
Domain 3: Depression and Anxiety								
Q13	I always feel like giving up			0.66			0.53	0.93
Q14	I always feel hesitant when doing something			0.75			0.42	0.93
Q15	I lose interest in doing activities that I enjoyed			0.70			0.50	0.93
Q16	I always forget many things.			0.60			0.33	0.93
Q17	I feel lonely			0.70			0.51	0.93
Q18	I am anxious thinking about my health issues			0.70			0.35	0.93
Q19	My sexual desire is disrupted.			0.43			0.33	0.93
Domain 4: Social Support								
Q20	I have someone to share my problems with and ask for advice				0.82		0.47	0.93
Q21	People around me support me a lot				0.78		0.53	0.93
Domain 5: Vigour								
Q22	I feel that my body is healthy.					0.51	0.52	0.93
Q23	I feel energetic to do any activities.					0.72	0.62	0.93
Q24	I can sleep well.					0.52	0.65	0.93

to assess QOL for healthy populations as well as psychiatric disorders, supporting this finding (Auquier et al. 2003; Ginieri-Coccossis et al. 2009; Lucas-Carrasco 2012).

Moreover, in terms of factor analysis, the PsychQOL in EFA conducted on healthy adult measures psychological QOL through five domains, namely vigour, emotional resilience, depression and anxiety, social support and religiosity and values. Similarly, in the psychiatric patient sample, the EFA conducted revealed five domains, with slight variations of items loaded on the domains. These results are consistent with those of other studies on QOL suggesting the present study have specific and measurable domain of psychological QOL (Auquier et al. 2003; Ginieri-Coccossis et al. 2009; Lucas-Carrasco, 2012).

The perception of QOL in terms of psychological aspects has been proven to differ between healthy adults and individuals with psychiatric disorders. For example, despite the same factors extracted from the EFA, item loadings for domain vigour and domain emotional resilience were different. In healthy adults, vigour is linked to the ability to perform activities, including physical functioning. However, in psychiatric patients, vigour is more closely linked to physical functioning, while the ability to perform daily activities is more strongly associated with emotional resilience. Item 'I can perform daily activities well' and 'I am not worried of going anywhere' were not only related to the capacity to perform activities, but also the emotional state of activities execution. This suggests that compared to healthy adults, emotional factors have a more significant impact on the daily functioning for psychiatric patients. This difference can be attributed to the nature of psychiatric disorders, which often impair emotion regulation (Aslan et al. 2024). These challenges in managing emotions, can significantly disrupt their functioning in daily activities, implying critical need for effective emotion regulation to support everyday activities in individuals with psychiatric disorders (Altun 2023).

Moreover, vigour emerged as the dominant factor, contributing the most to the variance in healthy adults, while emotional resilience was the leading factor among psychiatric patients. These findings suggest that in healthy adults, the ability to perform daily activities and physical functioning play a central role in their quality of life. On the other hand, the ability to perform daily activities and manage emotional challenges (resilience) is perceived to be crucial for psychiatric patients. For healthy adults, the focus on physical vitality and daily functioning may show the importance of maintaining physical aspects and functioning in supporting their psychological quality of life. There was a positive association between physical activity and QOL, with self-efficacy suggested to influence perception of fitness and vitality in individuals (Pucci et al. 2012). In contrast, for psychiatric patients, the focus on emotional resilience highlights the impact of emotion regulation difficulties, as they typically struggle with their ability to manage everyday life (Aslan et al. 2024). Thus, these differences emphasise the need to develop personalised strategies to address the unique priorities of these groups in improving their psychological QOL.

Comparing the two populations, healthy adults scored higher in domain depression and anxiety compared to psychiatric patients, indicating lower depression and anxiety symptoms. Given the large effect size of the score differences between these two populations, the finding suggests that among healthy adults, the existence of depression and anxiety symptoms were minimal, compared to symptoms levels among psychiatric patients. Similar pattern was previously documented by Hao and colleague (2020) where 26.3% of psychiatric patients reported symptoms of anxiety while 34.2% reported symptoms of depression. In comparison to healthy adults, only 6.4% reported anxiety symptoms and 1.8% reported depression symptoms. Furthermore, the discrepancy in symptoms level between healthy adults and psychiatric patients could also be influenced by spirituality level as observed through the religiosity and values domain, which was significantly higher, in healthy adults. Previously,

a possible bidirectional association between spirituality/religiosity (S/R) and depression was suggested, with a higher S/R linked to lower depression (Lucchetti et al. 2021).

This study confirms the need to include items related to spirituality in the psychological QOL construct in both populations. Previous research has documented a positive association between S/R and psychological QOL in healthy adults and psychiatric patients (Borges et al. 2021; Vitorino et al. 2018). In the PsychQOL, five spirituality items focused on religiosity and values. The factor loadings of these items were high in both populations, specifically higher in psychiatric patients compared to healthy controls. This indicates that the domain is an essential aspect of the construct, especially for psychiatric patients. Previously, the WHOQOL Group (1998) had include one item related to spirituality, religion and personal belief into the psychological domain of WHOQOL-BREF as the items loaded higher on a psychological domain. This item 'To what extent do you feel your life to be meaningful?' from WHOQOL-BREF focused on valued living (The Whoqol Group 1998). It is arguable with the current findings, the significance of spirituality in shaping psychological QOL appears to be greater than previously suggested, extending beyond valued living to also include religiosity.

One item related to seeking connection with God during health challenges has low item-total correlation (ITC) among healthy adults as compared to psychiatric patients. Seeking connection with God is recognised as positive religious coping (Pargament et al. 2011), and tends to increase when people face life challenges. This is particularly relevant in the context of psychiatric patients, here specifically Malaysian Muslim depression patients expressed their spiritual needs such as engaging in worship and having hope as essential coping mechanism (Ahmad Nabil 2016). Consistently, in Western cultures, positive religious coping which includes spiritual connection and benevolent religious reappraisal had been documented to help in reducing hopelessness and suicidality in depression patients (De Berardis et al. 2020). These findings suggest that the desire for spiritual connection may be more pronounced in individuals struggling with mental health disorders compared to healthy controls. Therefore, integrating spiritual coping into management of psychiatric patients could be a key factor in enhancing their psychological QOL (De Berardis et al. 2020).

Interestingly, item related to sexual desire was poorly correlated to the total score in both populations, suggesting that sexual desire was less relevant to psychological QOL construct for Malaysians. This could be due to the taboo surrounding sexual issues among Malaysians, especially Muslims (Muhamad et al. 2021). In a qualitative study involving Malaysian women with female sexual dysfunction, Muhamad and colleagues (2021) reported how Malaysian women perceived sex as a culturally unacceptable topic for discussion. This could affect the responses for the aforementioned items due to shame or privacy, leading to low ITC in both populations.

The PsychQOL provides some benefits over existing QOL assessments. Firstly, with 24 items, the PsychQOL offers comprehensive blend of functioning and life satisfaction statements that focused on psychological QOL. Compared to the WHOQOL-BREF (Harper et al. 1998), a widely adopted tool for QOL assessment, the psychological domain has only six questions out of the total of 26 items for overall assessments. This limited focus may restrict the coverage of different facets in assessing psychological QOL. In contrast, the PsychQOL provides a more in-depth exploration of the psychological QOL construct, enabling a richer understanding of this aspect. By providing a more detailed and specialised assessment, the PsychQOL can contribute significantly to providing more personalised interventions aimed at improving psychological aspects of life, thus enhancing the effectiveness of interventions strategies.

Another QOL assessment that has similar focus is the Mental Health Quality of Life (MHQoL) (van Krugten et al. 2022), which was developed to capture QOL dimensions in individuals with mental disorders. The domains includes self-image, independence,

mood, relationships, daily activities, physical health and future, were relatively comparable to the domains covered in PsychQOL, with the exception that the PsychQOL includes items related to religiosity, depression and anxiety. Despite covering more aspects compared to the PsychQOL, the lack of spirituality items might limit holistic understanding of the psychological QOL construct in individuals. With inclusion of spirituality items, the PsychQOL offers a more culturally sensitive assessment, especially among individuals who valued spirituality highly in their life.

There were several limitations that had been identified. First, the overrepresentation of Malay ethnicity in this study could skew the findings and limit the generalisability of this study to the whole Malaysian population. Since the sample did not accurately reflect ethnic distribution in Malaysia accurately, the findings might disproportionately highlight the perspectives, cultural norms and experiences of Malay people, reducing applicability of the findings to other ethnic groups, such as Chinese, Indians and other Bumiputra groups. This could potentially lead to less comprehensive understanding of psychological QOL across the multicultural population. In terms of gender proportion, relatively three quarter of the samples were females. This gender imbalance might affect the total scores recorded, particularly for perceived social support and emotional resilience. The different perception in these two aspects in relation to maintaining psychological wellbeing was evident; while women tend to prioritise social support, men place greater importance on resilience (Zhang et al. 2018). Thus, unequal gender representation may reduce the generalisability of the results to the wider population.

Additionally, this assessment was tested among participants with 18 years old and above. As this is the first validation study of the PsychQOL, a validation study in children and adolescents is not yet available. The suitability of this assessment to measure the psychological QOL in individuals younger than 18 years old is still unknown, particularly relating to domain and phrases used. Some QOL assessments previously used in children involved parents' report, in addition to self-report, such as Pediatric Quality of Life Questionnaire (PedQL) (Varni et al. 1999), TNO-AZL Child Quality of Life Questionnaire (TACQOL) (Vogels et al. 1998) and Child Quality of Life Questionnaire (CQOL) (Graham et al. 1997). As the PsychQOL involved only self-rating, the applicability to this age group might be limited. Thus, it is recommended that PsychQOL to be used in adults only, until further psychometric evaluation is carried out.

Another limitation of the study was that face validity was only conducted qualitatively instead of a combination of quantitative and qualitative procedures. Although cognitive interview had contributed to rich data, the lack of face validity index limits the understanding of overall face validity. Furthermore, as the first phase of the field study was conducted using online platform, it potentially increased the self-selection bias in which those who had access to internet were more prone to participate compared to those who have limited access to internet. Consequently, this might lead to less generalisable results as the characteristics of the participants might differs from the non participants (Alarie & Lupien 2021). We attempted to reduce this participant bias by reaching out to participants from different age groups and communities, enhancing data diversities. In terms of statistical analysis, this study lacks test-retest analysis which is important to measure the temporal stability of an assessment (Polit 2014). With test-retest analysis such as intraclass correlation coefficient, the difference of responses in sample over time can be analysed (Polit 2014).

It is recommended that replication studies in assessing the psychometric properties in a larger sample, with the inclusion of more respondents from other ethnicities. A proportion of ethnicity in the sample reflecting the general population would illustrate better potential to improve the generalisability of the PsychQOL to the wider Malaysian population. Furthermore, future studies could replicate this study in other languages to be used internationally, enabling

cross-cultural comparison, especially in cultures with high spiritual immersion.

In conclusion, the PsychQOL assessment has strong psychometric properties and has gone through face validity, content validity and construct validity processes in Malaysian healthy adults and psychiatric patients. With five domains and a total of 24 items, this newly developed assessment could be a simple, specific and effective tool to measure psychological QOL in the Malaysian population.

CONCLUSION

This questionnaire has been developed to comprehensively provide information specific to psychological QOL and to be utilised by all Malaysians with various cultural identities. Overall, this study found that the PsychQOL is demonstrating a high potential to be a reliable and valid assessment for measuring the psychological QOL of an individual.

The PsychQOL assessment has strong psychometric properties and has gone through face validity, content validity and construct validity processes in Malaysian healthy adults and psychiatric patients. With five domains and a total of 24 items, this newly-developed assessment could be a simple, specific and effective tool to measure psychological QOL in the Malaysian population.

Author contributions: Conceptualisation: KNI, SS; Data curation, formal analysis, investigation: KNI; Methodology: KNI, SS, SMH, IBI; Project administration: KNI; Resources: KNI, SS; Software, visualisation: KNI; Funding acquisition, validation: SS; Supervision: SS, SHM, IBI; Manuscript-original draft: KNI; Manuscript-review and editing: SS, SMH, IBI. All authors have approved the final manuscript.

Conflict of interest: The authors declared no conflicts of interest in relation to this study.

Funding: This research was supported by Malaysian Ministry of Higher Education (MOHE) under Fundamental Research Grant Scheme (FRGS/1/2020/ tk02/UKM/03/2/).

Ethical statement: This study received ethical approval from the Research and Ethics Committee of Univeristi Kebangsaan Malaysia (JEP-2021-206).

Acknowledgement: The authors would like to express gratitude to SMEs and all participants for their contribution in this study. The authors would also like to express appreciation and acknowledged Ministry of Higher Education, Malaysia for the funding that was provided under Ministry of Higher Education (MOHE) Fundamental Research Grant Scheme (FRGS/1/2020/ tk02/UKM/03/2/).

REFERENCES

Abdi, H., Williams, L.J. 2010. Principal component analysis. *Wiley Interdiscip Rev Comput Stat* **2**(4): 433-459. https://doi.org/10.1002/wics.101

Abdullah, N., Ghani, A.A., Maamor, S., Wahab, N.A., Razimi, M.S.A., Aziz, A.B., Elias, N.H. 2018. Examining Level of Spirituality among Malaysian Youth. *Indian J Public Health Res Dev* **9**(11): 1515-20. https://doi.org/10.5958/0976-5506.2018.01663.7.

Ahmad Nabil, M.R., Saini, S.M., Nasrin, N., Bahari, R., Sharip, S. 2016. 'I can't pray' - The spiritual needs of Malaysian Muslim patients suffering from depression. *IIUM Med J Malaysia* **15**(1): 103-9. https://doi.org/10.31436/imjm.v15i1.415.

Akmal Shafie, A., Vasan Thakumar, A., Jou Lim, C., Luo, N. 2019. Psychometric performance assessment of Malay and Malaysian English version of EQ-5D-5L in the Malaysian population. *Qual Life Res* **28**(1): 153-62. https://doi.org/10.1007/s11136-018-2041-z

Alarie, S., Lupien, S.J. 2021. Self-selection bias in human stress research: A systematic review. *Psychoneuroendocrinology* **131**: 105514. https://doi.org/10.1016/j.psyneuen.2021.105514

Altun, İ. 2023. Emotion dysregulation affects functionality in major depressive disorder. *Acibadem Universitesi Saglik Bilimleri Dergisi* **14**(1): 32-8. https://doi.org/10.31067/acusaglik.1216637

Aslan, I.H., Dorey, L., Grant, J.E., Chamberlain, S.R. 2024. Emotion regulation across psychiatric disorders. *CNS Spectr* **29**(3): 215–220. https://doi.org/10.1017/S1092852924000270

Auquier, P., Simeoni, M. C., Sapin, C., Reine, G.,

Aghababian, V., Cramer, J., Lancon, C. 2003. Development and validation of a patient-based health-related quality of life questionnaire in schizophrenia: The S-QoL. *Schizophr Res* **63**(1-2): 137-149. https://doi.org/10.1016/S0920-9964(02)00355-9

Berghöfer, A., Martin, L., Hense, S., Weinmann, S., Roll, S. 2020. Quality of life in patients with severe mental illness: A cross-sectional survey in an integrated outpatient health care model. *Qual Life Res* **29(**8): 2073-87. https://doi.org/10.1007/s11136-020-02470-0.

Berlim, M.T, Fleck, M.P.A. 2003. "Quality of life": A brand new concept for research and practice in psychiatry. *Braz J Psychiatry* **25**(4): 249-52. https://doi.org/10.1590/S1516-44462003000400013.

Bland, J.M., Altman, D.G. 1997. Statistics notes: Cronbach's alpha. *BMJ* **314**(7080): 572. https://doi.org/10.1136/bmj.314.7080.572.

Borges, C.C., dos Santos, P.R., Alves, P.M., Borges, R.C.M., Lucchetti, G., Barbosa, M.A., Porto, C.C., Fernandes, M.R. 2021. Association between spirituality/religiousness and quality of life among healthy adults: A systematic review. *Health Qual Life Outcomes* **19**: 1-13. https://doi.org/10.1186/s12955-021-01878-7.

Brown, T.A., Moore, M.T. 2012. Confirmatory factor analysis. In *Handbook of structural equation modelling*. New York, NY: The Guilford Press; 361-79.

Cohen, J. 1988. *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). New York: Routledge.

Costello, A.B., Osborne, J. 2005. Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *PARE* **10**(1): 1-9. https://doi.org/10.7275/jyj1-4868.

Colillas-Malet, E., Prat, G., Espelt, A., Juvinyà, D. 2020. Gender differences in health-related quality of life in people with severe mental illness. *PLoS ONE* **15**(2): e0229236. https://doi.org/10.1371/journal.pone.0229236.

de Alves, V.M., Ferreira de Lima Francisco, L.C., Belo Pereira, F.M., de-Melo-Neto, V.L., Barros, V.G., Nardi, A.E. 2016. Evaluation of the quality of life and risk of suicide. *Clinics* **71**(3): 135. https://doi.org/10.6061/clinics/2016(03)03

De Berardis, D., Olivieri, L., Rapini, G., Serroni, N., Fornaro, M., Valchera, A., Carano, A., Vellante, F., Bustini, M., Serafini, G., Pompili, M., Ventriglio, A., Perna, G., Fraticelli, S., Martinotti, G., Di Giannantonio, M. 2020. Religious coping, hopelessness, and suicide ideation in subjects with first-episode major depression: An exploratory study in the real world clinical practice. *Brain Sci* **10**(12): 960. https://doi.org/10.3390/brainsci10120912.

Debets, M.P.M., Scheepers, R.A., Boerebach, B.C.M., Arah, O.A., Lombarts, K.M.J.M.H. 2020. Variability of residents' ratings of faculty's teaching performance measured by five- and seven-point response scales. *BMC Med Educ* **20**: 1-9. https://doi.org/10.1186/s12909-020-02244-9

Devlin, N.J., Brooks, R. 2017. EQ-5D and the EuroQol Group: Past, present and future. *Appl Health Econ Health Policy* **15**(2): 127-37. https://doi.org/10.1007/s40258-017-0310-5.

Engel, G.L. 1960. A unified concept of health and disease. *Perspect Biol Med* **3**(4): 459-85. https://doi.org/10.1353/pbm.1960.0020.

Gigantesco, A., Giuliani, M. 2011. Quality of life in mental health services with a focus on psychiatric rehabilitation practice. *Ann Ist Super Sanita* **47**(4): 363-72. https://doi.org/10.4415/ANN_11_04_07

Ginieri-Coccossis, M., Triantafillou, E., Tomaras, V., Liappas, I.A., Christodoulou, G.N., & Papadimitriou, G.N. 2009. Quality of life in mentally ill, physically ill and healthy individuals: The validation of the Greek version of the World Health Organization Quality of Life (WHOQOL-100) questionnaire. *Ann Gen Psychiatry* **8**: 23. https://doi.org/10.1186/1744-859X-8-23.

Graham, P., Stevenson, J., Flynn, D. 1997. A new measure of health-related quality of life for children: Preliminary findings. *Psychol Health* **12**(5): 655-75. https://doi.org/10.1080/08870449708407412

Grover, S., Sahoo, S. 2022. Optimising patient care in psychiatry - Focus on quality of life. In *Handbook on Optimizing Patient Care in Psychiatry*. Routledge; 18-32.

Hajjar, S.T. 2018. Statistical analysis: Internal-consistency reliability and construct validity. *Int J Quant Qual Res Methods* **6**(1): 27-38.

Hao, F., Tan, W., Jiang, L.I., Zhang, L., Zhao, X., Zou, Y., Hu, Y., Luo, X., Jiang, X., McIntyre, R.S. and Tran, B., Sun, J., Zhang, Z., Ho, R,, Ho, C., Tam, W. 2020. Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry. *Brain Behav Immun* **87**:100-6. https://doi.org/10.1016/j.bbi.2020.04.069.

Hasanah, C.I., Naing, L., Rahman, A.R.A. 2003. World Health Organization quality of life assessment: Brief version in Bahasa Malaysia. *Med J Malaysia* **58**(1): 79-88.

Haynes, S.N., Richard, D.C.S., Kubany, E.S. 1995. Content validity in psychological assessment: A functional approach to concepts and methods. *Psychol Assess* **7**(3): 238-47. https://doi.org/10.1037/1040-3590.7.3.238.

Knight, M.J., Lyrtzis, E., Baune, B.T. 2020. The

association of cognitive deficits with mental and physical quality of life in major depressive disorder. *Compr Psychiatry* **97**: 152147. https://doi.org/10.1016/j.comppsych.2019.152147

Koenig, H.G. 2004. Religion, spirituality, and medicine: Research findings and implications for clinical practice. *South Med J* **97**(12): 1194-200. https://doi.org/ 10.1097/01.SMJ.0000146489.21837.

Lamers, L.M., Bouwmans, C.A., van Straten, A., Donker, M.C., Hakkaart, L. 2006. Comparison of EQ-5D and SF-6D utilities in mental health patients. *Health Econ* **15**(11): 1229-36. https://doi.org/10.1002/hec.1125.

Lanario, J.W., Hyland, M.E., Menzies-Gow, A., Mansur, A.H., Dodd, J.W., Fowler, S.J., Jones, R.C., Masoli, M., 2020. Validation of subscales of the Severe Asthma Questionnaire (SAQ) using exploratory factor analysis (EFA). *Health Qual Life Outcomes* **18**(1): 336. https://doi.org/10.1186/s12955-020-01593-9.

Lucas-Carrasco, R. 2012. The WHO quality of life (WHOQOL) questionnaire: Spanish development and validation studies. *Qual Life Res* **21**: 161-5. https://doi.org/10.1007/s11136-011-9926-3

Lucchetti, G., Koenig, H.G., Lucchetti, A.L.G. 2021. Spirituality, religiousness, and mental health: A review of the current scientific evidence. *World J Clin Cases* **9(**26): 7620-31. https://doi.org/10.12998/wjcc.v9.i26.7620.

Macinnes, D.L. 2006. Self-esteem and self-acceptance: An examination into their relationship and their effect on psychological health. *J Psychiatr Ment Health Nurs* **13**(5): 483-9. https://doi.org/10.1111/j.1365-2850.2006.00959.x

Mao, Z., Ahmed, S., Graham, C., Kind, P., Sun, Y.N., Yu, C.H., 2021. Similarities and differences in health-related quality-of-life concepts between the east and the west: A qualitative analysis of the content of health-related quality-of-life measures. *Value Health Regi Issues* **24***:* 96-106. https://doi.org/10.1016/j.vhri.2020.11.007.

Muhamad, R., Horey, D., Liamputtong, P., Low, W.Y., Zulkifli, M.M., Sidi, H. 2021. Transcripts of unfulfillment: A study of sexual dysfunction and dissatisfaction among Malay-Muslim women in Malaysia. *Religions* **12**(3): 205. https://doi.org/10.3390/rel12030205.

Pargament, K., Feuille, M., Burdzy, D. 2011. The brief RCOPE: Current psychometric status of a short measure of religious coping. *Religions* **2**(1): 51-76. https://doi.org/10.3390/rel2010051.

Polit, D.F. 2014. Getting serious about test-retest reliability: A critique of retest research and some recommendations. *Qual Life Res* **23**(6): 1713-20. https://doi.org/10.1007/s11136-014-0632-9

Power, M., Kuyken, W. 1998. World Health Organization Quality of Life Assessment (WHOQOL): Development and general psychometric properties. *Soc Sci Med* **46**(12): 1569-85. https://doi.org/10.1016/S0277-9536(98)00009-4

Puchalski, C., Ferrell, B., Virani, R., Otis-Green, S., Baird, P., Bull, J., Chochinov, H., Handzo, G., Nelson-Becker, H., Prince-Paul, M., Pugliese, K., Sulmasy, D. 2009. Improving the quality of spiritual care as a dimension of palliative care: the report of the Consensus Conference. *J Palliat Med* **12**(10): 885-904. https://doi.org/10.1089/jpm.2009.0142

Pucci, G.C., Rech, C.R., Fermino, R.C., Reis, R.S., 2012. Association between physical activity and quality of life in adults. *Rev Saude Publica* **46**(1): 166-79. https://doi.org/ 10.1590/s0034-89102012000100021.

Remmerswaal, K.C.P., Batelaan, N.M., Hoogendoorn, A.W., van der Wee, N.J.A., van Oppen, P., van Balkom, A.J.L.M. 2020. Four-year course of quality of life and obsessive–compulsive disorder. *Soc Psychiatry Psychiatr Epidemiol* **55**(8): 989-1000. https://doi.org/10.1007/s00127-019-01779-7.

Sararaks, S., Azman, A.B., Low, L.L., Rugayah, B., Aziah, A.M., Hooi, L.N., Razak, M.A., Norhaya, M.R., Lim, K.B., Azian, A.A., Geeta, S., 2005. Validity and reliability of the SF-36: The Malaysian context. *Med J Malaysia* **60**(2): 163.

Skevington, S.M., WHOQOL SRBP Group. 2020. Is culture important to the relationship between quality of life and resilience? global implications for preparing communities for environmental and health disasters. *Front Psychol* **11**: 1492. https://doi.org/10.3389/fpsyg.2020.01492.

Skevington, S.M., Gunson, K.S., O'Connell, K.A. 2013. Introducing the WHOQOL-SRPB BREF: Developing a short-form instrument for assessing spiritual, religious and personal beliefs within quality of life. *Qual Life Res* **22**(5): 1073-83. https://doi.org/10.1007/s11136-012-0237-0.

Shrestha, N., 2021. Factor analysis as a tool for survey analysis. *Am J Appl Math Stat* **9**(1): 4-11. https://doi.org/10.12691/ajams-9-1-2

Sulmasy, D.P. 2002. A Biopsychosocial-spiritual model for the care of patients at the end of life. *Gerontologist* **42**(suppl 3): 24-33. https://doi.org/10.1093/geront/42.suppl_3.24.

The WHOQOL Group. 1995. The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. *Soc Sci Med* **41**(10): 1403-9. https://doi.org/10.1016/0277-9536(95)00112-K

The WHOQOL Group. 1998. Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychol Med* **28**(3): 551-8. https://doi.org/10.1017/

S0033291798006667.

van Krugten, F.C.W., Busschbach, J.J.V., Versteegh, M.M., Hakkaart-van Roijen, L., Brouwer, W.B.F. 2022. The Mental Health Quality of Life Questionnaire (MHQoL): Development and first psychometric evaluation of a new measure to assess quality of life in people with mental health problems. *Qual Life Res* **31**(2): 633–643. https://doi.org/10.1007/s11136-021-02935-w.

Varni, J.W., Seid, M., Rode, C.A. 1999. The PedsQL™: Measurement model for the pediatric quality of life inventory. *Medical Care* **37**(2): 126-39. https://doi.org/10.1097/00005650-199902000-00003.

Vitorino, L.M., Lucchetti, G., Leão, F.C., Vallada, H., Peres, M.F.P. 2018. The association between spirituality and religiousness and mental health. *Sci Rep* **8**(1): 17233. https://doi.org/10.1038/s41598-018-35380-w

Vogels, T., Verrips, G.H.W., Verloove-Vanhorick, S.P., Fekkes, M., Kamphuis, R.P., Koopman, H.M., Theunissen, N.C.M., Wit, J.M. 1998. Measuring health-related quality of life in Children: the development of the TACQOL parent form. *Qual Life Res* **7**(5): 457-65. https://doi.org/10.1023/A:1008848218806.

Waltz, C., Bausell, B. 1981. *Nursing research: Design statistics and computer analysis*. Davis, FA.

Ware Jr, J., Sherbourne, C. 1992. The MOS 36-Item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. *Med Care* **30**(6): 473-83. https://doi.org/10.1097/00005650-199206000-00002

Yaghmaie F. 2003. Content validity and its estimation. *J Med Educ* **3**(1): 25-7.

Yeoh, S.H., Tam, C.L., Wong, C.P., Bonn, G. 2017. Examining depressive symptoms and their predictors in Malaysia: Stress, locus of control, and occupation. *Front Psychol* **8**:1411. https://doi.org/10.3389/fpsyg.2017.01411.

Yong, A.G., Pearce, S. 2013. A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutor Quant Methods Psychol* **9**(2): 79-94. https://doi.org//10.20982/tqmp.09.2.p079

Yusoff, M.S.B. 2019. ABC of response process validation and face validity index calculation. *Educ Med J* **11**(3): 55–61. https://doi.org/10.21315/eimj2019.11.3.6.

Zhang, M., Zhang, J., Zhang, F., Zhang, L., Feng, D., 2018. Prevalence of psychological distress and the effects of resilience and perceived social support among Chinese college students: Does gender make a difference?. *Psychiatry Res* **267**:409-413. https://doi.org/10.1016/j.psychres.2018.06.020