INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 15, Issue 2, (2025) E-ISSN: 2222-6990

Development, Validity and Reliability of '*Instrumen Kecelaruan Insomnia (IKI)*' – Malay Version

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To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v15-i2/24250 DOI:10.6007/IJARBSS/v15-i2/24250

Published Date: 02 February 2025

Abstract

This study aims to develop and measure the content validity, and reliability of the '*Instrumen Kecelaruan Insomnia (IKI)*' or Insomnia Disorder Instrument (IDI). This instrument is designed to measure the level of insomnia disorder among individuals. The basic principle construction IDI is based on the American Psychiatric Association (APA) in Diagnostic Statistical Manual (DSM) of Mental Disorders, V Edition. This instrument contains 16 negative items divided into 8 subscales which contain 2 items in each subscales. Subscale 1: Main Symptoms, Subscale 2: Significant Clinical Impact, Subscale 3: One-Week Duration, Subscale 4: Three-Month Duration, Subscale 5: Persistent Sleep Difficulty, Subscale 6: Other Sleep Disorders, Subscale 7: Substance or Medication; and Subscale 8: Other Mental Disorders. The content validity of IDI was evaluated by 7 experts, consisting of 3 education lecturers and 4 registered counsellors. A total of 40 respondents aged 15 to 40 years were selected to obtain the reliability value. The quantitative findings of the study using Content Validity Ratio (CVR) indicated that the instrument has good content validity, with all 16 items meeting the minimum CVR value (N=7, $CVR_{critical}$ = 0.622). The reliability of the instrument showed a high value of .847. Therefore, this study has successfully produced the IDI questionnaire which has good validity and reliability values for use in the field of psychology and counselling in Malaysia.

Keywords: Intrumen Kecelaruan Insomnia, IKI, Insomnia Disorder Instrument, Validity, Reliability, IDI

Introduction

Insomnia disorder is a prevalent and debilitating condition that significantly disrupts an individual's normal sleep patterns, often manifesting as difficulty falling asleep, maintaining sleep, or experiencing restorative sleep, ultimately impairing various aspects of daily functioning (Patel et al., 2021; Have et al., 2016). According to the American Psychiatric Association (APA) in the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition

(DSM-V), insomnia disorder is diagnosed based on specific criteria, including symptoms occurring at least three nights per week for a minimum duration of three months (Ahn, 2013). These symptoms must cause significant distress or impairment in key areas of functioning, such as social, occupational, academic domains, or other important areas of functioning, and should not be attributable to external factors such as stress, medication use, substance intake, or other mental disorders (Ahn, 2013).

Insomnia is a critical issue that demands attention, particularly because of its potential to cause harm if left unaddressed (Patel et al., 2021). It is frequently associated with mental health conditions such as severe stress, anxiety, and depression (Have et al., 2016). This condition can negatively impact work performance, academic achievement, and social interactions, thereby contributing to increased healthcare costs and reduced workplace productivity (Have et al., 2016; Bhaskar et al., 2016). Consequently, ensuring quality sleep is essential for individual well-being, as addressing insomnia not only enhances overall quality of life but also promotes mental and physical health (Patel et al., 2021). These outcomes emphasize the importance of early identification and effective management to prevent the escalation of related health issues.

Research has consistently highlighted the link between abnormal sleep patterns and mental health disorders, such as anxiety and depression, over the past decades (Bhaskar et al., 2016; Have et al., 2016, Benca, Obermeyer, Thisted, & Gillin, 1992). Sharma and Andrade (2012) further emphasized that insomnia is one of the most extensively studied and reported sleep disorders in the field of clinical research.

To facilitate the accurate diagnosis and evaluation of insomnia, numerous instruments have been developed to measure insomnia symptoms, such as the Daytime Insomnia Symptom Scale (DISS), which has been widely referenced in previous research. However, it is crucial for researchers to ensure that the instruments they use demonstrate high validity and reliability to be effective in both research and clinical diagnosis. Instrument validity and reliability are essential for ensuring the accuracy and consistency of measurement, free from error. The higher the validity and reliability of an instrument, the more precise the data collected, contributing to the production of high-quality research (Darussalam & Hussin, 2018).

Therefore, this study aims to develop and establish the validity and reliability of an instrument for measuring insomnia disorder based on its diagnostic criteria. by ensuring that the instrument demonstrates high validity and reliability, the research aims to contribute to the advancement of high-quality sleep research and the effective clinical management of insomnia.

Background of Instrumen Kecelaruan Insomnia (IKI)

Insomnia is a common sleep disorder, especially prevalent among adults. This condition can be caused by various factors, including stress, physical health issues, and chemical imbalances in the brain. Individuals suffering from prolonged insomnia may experience reduced productivity and a diminished quality of life. Consequently, assessing the frequency and severity of insomnia symptoms is crucial to ensuring that effective interventions can be designeed and implemented by professionals.

The '*Instrumen Kecelaruan Insomnia (IKI)'* or Insomnia Disorder Instrument (IDI) is designed for individuals aged 15 to 40. The instrument employs the Content Validity Ratio (CVR) to enhance its psychometric properties. The CVR technique is widely regarded as useful in helping researchers filter empirical items on the scale. It ensures that each item adequately represents the content of the subscales and aids in deciding whether items should be retained or eliminated. Accordingly, the IDI measures key diagnostic criteria for insomnia using eight subscales, which collectively help identify the individual's insomnia status based on the results obtained from the instrument.

Diagnostic criteria for insomnia:

a. Primary symptoms: Individuals may experience difficulties initiating sleep, maintaining sleep, or waking up earlier than desired, with difficulty returning to sleep after awakening.
b. Significant clinical impact: Insomnia can impair daily functioning, causing difficulties in concentration, daytime fatigue, emotional instability, and declines in work or academic performance.
c. Duration: According to the DSM-V diagnostic criteria, symptoms must occur at least three times per week and persist for a minimum of three months.
d. Persistent sleep difficulties: The symptoms must persist despite the individual having adequate opportunities and conditions for sleep.
e. Exclusion of other sleep disorders: The symptoms should not be explained by other sleep disorders such as narcolepsy, sleep apnea, circadian rhythm disorders, or parasomnias.
f. Substances or medications: The sleep disturbances should not result from external factors such as substance s\abuse, side effects of medications, or caffeine consumption before bedtime.
g. Exclusion of other mental disorders: Insomnia should not be attributed to other mental health conditions, such as Generalized Anxiety Disorder (GAD), Major Depressive Disorder (MDD), or bipolar disorder.

It is important to understand that insomnia must be the primary concern and not secondary to external factors such as substance intake, medications, or other medical or mental health disorders. For example, a person suffering from depression any also experience insomnia, but in such cases, insomnia would be considered a secondary symptom rather than a primary disorder.

Literature Review

According to Mayer et al. (2021), insomnia is characterized by an individual's difficulty initiating sleep or maintaining restful and sustained sleep. This condition affects daily functioning due to insufficient and poor-quality sleep, which can have widespread implications on physical health and overall well-being. Insomnia may also be linked to neurological disorders, underscoring its multifaceted nature. As a common sleep disorder, it is often associated with other sleep disturbances, further complicating its diagnosis and management. Experts, including Ferini-Strambi et al. (2021), have reviewed current knowledge and challenges surrounding insomnia, emphasizing the need for future research to address significant gaps. These gaps highlight the necessity for further investigation into the underlying mechanisms and effective treatments for insomnia.

Roach et al. (2020) stress that undiagnosed and untreated insomnia has negatively affected a large number of individuals globally. A primary challenge is the limited understanding of insomnia, compounded by insufficient availability of specialized treatment services. Yuksel et al. (2021) highlight that insomnia symptoms in adolescents are particularly overlooked, despite early awareness being crucial. Untreated insomnia is frequently linked to psychological disorders and other critical health issues, making early intervention essential in mitigating long-term risks.

Significant research has focused on insomnia symptoms in adults with Attention-Deficit/Hyperactivity Disorder (ADHD). However, studies exploring the relationship between insomnia and ADHD in adult populations remain scarce. Fadeuilhe et al. (2021) emphasize the importance of understanding this relationship to improve clinical management. Insomnia can negatively impact overall health, and Boland et al. (2023) support this perspective by asserting that early treatment of insomnia can prevent or reduce the risk of developing major depressive disorder (MDD).

Perlis et al. (2021) advocate for comprehensive treatment strategies that go beyond merely alleviating symptoms, emphasizing the importance of continued care. Despite the critical need, optimal medical treatments for insomnia remain under-researched. Perlis et al. (2022) further highlight that early detection and treatment of insomnia symptoms can significantly enhance health outcomes. Advocacy efforts should focus on raising public awareness about the necessity of treating insomnia, as understanding the mechanisms of sleep and sleep disorders is crucial for developing effective interventions.

A systematic literature review by Mahamade et al. (2020) identifies various validated and reliable instruments for assessing sleep disorders. However, most of these instruments are available only in English, limiting accessibility for non-English speakers. Hudgens et al. (2021) developed the **IDSIQ (Insomnia Daytime Symptoms and Impacts Questionnaire)** to assess and detect daytime insomnia symptoms. This instrument is based on the **Daytime Insomnia Symptom Scale (DISS)** and is designed for clinical research. While the IDSIQ provides valuable insights into daytime sleep-related symptoms, it offers limited understanding of insomnia's broader impact on daily functioning and does not encompass all relevant aspects.

The current body of research underscores the complexity of insomnia and the need for comprehensive approaches to diagnosis, treatment, and research. Bridging the existing gaps in understanding the relationship between insomnia and comorbid conditions such as ADHD and depression is crucial. Additionally, expanding access to validated instruments in multiple languages and ensuring early intervention remain key priorities for improving individual and public health outcomes.

Significant of *IKI*

According to the National Health Survey conducted by the Ministry of Health Malaysia (MOH) in 2020, between 30% to 40% of individuals experienced symptoms and met the diagnostic criteria for insomnia disorder during the COVID-19 pandemic. This alarming statistic underscores the growing prevalence of insomnia within the Malaysian population, highlighting the need for early detection and intervention.

The American Counseling Association (ACA) defines counseling as "the application of mental health, psychological, or human development principles through cognitive, affective, behavioral, or systemic interventions and strategies that address wellness, personal growth, career development, and pathology" (ACA, 1997). In line with this definition, the Insomnia Disorder Instrument *(IKI)* can play a critical role in addressing the following:

1. Identifying Individuals with High *IKI* Scores: *IKI* enables the identification of individuals who exhibit high levels of insomnia symptoms, facilitating timely intervention.
2. Evaluating Diagnostic Criteria: The instrument helps categorize individuals based on specific diagnostic criteria, offering a more nuanced understanding of their insomnia symptoms.

Given the rising incidence of insomnia as a mental health disorder in Malaysia, it is crucial for counselors and related professionals to recognize individuals with elevated *IKI* scores. This recognition not only enables the provision of appropriate treatment but also enhances public awareness about the importance of addressing mental health issues. By utilizing tools like *IKI*, counselors can support individuals in managing insomnia and contribute to broader efforts in promoting mental well-being within the community.

Theoretical framework

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), insomnia disorder is a sleep disturbance that can significantly impact an individual's daily life. It is characterized by persistent difficulties in initiating or maintaining sleep, resulting in impaired functioning. Below is a detailed explanation of the eight diagnostic criteria associated with insomnia disorder:

a. Subscale 1: Core Symptoms

Individuals experience difficulties such as trouble falling asleep, difficulty maintaining sleep (frequent awakenings with trouble falling back asleep), and waking up too early and being unable to return to sleep.

b. Subscale 2: Significant Clinical Impact

The sleep disturbance causes notable impairments in social, occupational, academic, or daily functioning. Lack of quality sleep often leads to physical fatigue, reduced energy, and diminished social engagement.

c. Subscale 3: Weekly Occurrence

Symptoms occur at least three nights per week.

d. Subscale 4: Duration of Three Months

Insomnia symptoms persist for a minimum of three months.

e. Subscale 5: Persistent Difficulty Despite Adequate Opportunity

The sleep problems occur despite having sufficient opportunities and appropriate conditions for sleep.

f. Subscale 6: Exclusion of Other Sleep Disorders

The symptoms cannot be better explained by other sleep disorders such as sleep apnea (interrupted breathing during sleep) or narcolepsy (chronic sleep disorder characterized by overwhelming daytime drowsiness).

g. Subscale 7: Exclusion of Substance or Medication Influence
The insomnia cannot be attributed to the use of substances such as caffeine, alcohol, medications, or other external substances.

h. Subscale 8: Exclusion of Other Mental Disorders
The insomnia is not better explained by other mental disorders such as Generalized Anxiety Disorder (GAD) or Major Depressive Disorder (MDD)
Although insomnia may co-occur with these conditions, it must be treated as an independent disorder to meet the diagnostic criteria.

Overall, the role of the Insomnia Disorder Instrument (*IKI*) is designed to assess various aspects of sleep difficulties among individuals. It measures how often individuals struggle to achieve quality sleep and how severe these disturbances are. It also identifies how sleep disturbances affect social, academic, or occupational performance due to persistent fatigue. *IKI* also would assess if the symptoms occur at least three nights per week for a minimum period of three months. Besides that, this instrument also ensures that insomnia is not caused by external stressors such as work pressure or environmental factors and confirming that the symptoms are not related to conditions like sleep apnea, narcolepsy, or restless legs syndrome. *IKI* will also verify that insomnia is not due to the consumption of caffeine, alcohol, or the use of medications and ensuring that the insomnia symptoms are not secondary to psychological issues such as excessive anxiety or chronic depression.

The IKI serves as a comprehensive tool for identifying and assessing insomnia disorder, ensuring that it is accurately diagnosed based on DSM-V criteria. Its systematic approach helps healthcare professionals differentiate insomnia from other related conditions and provides the foundation for effective interventions. By addressing insomnia early, counselors and clinicians can mitigate its impact on mental and physical health, enhancing overall well-being.

Objectives

The main objective of this study is to measure the severity of insomnia disorders among individuals, particularly in light of the increasing prevalence of mental health issues in Malaysia. This study also aims to determine the validity and reliability of the Insomnia Disorder Instrument (*IKI*) to ensure its suitability for use within the local cultural context. The specific objectives of this study are as follows:

1. To develop the *Instrumen Kecelaruan Insomnia (IKI)* or Insomnia Disorder Instrument based on the literature review.
2. To assess the content validity of the *IKI* through expert panel evaluation.
3. To evaluate the content validity of each subscale in the *IKI* through expert panel evaluation,
4. To determine the reliability of the *IKI* as a whole.
5. To assess the reliability of each subscale of the *IKI*.

Administration, Scoring and Interpretation of the IKI Scores

The *Instrumen Kecelaruan Insomnia (IKI)* or Insomnia Disorder Instrument is an inventory designed to measure the severity of insomnia in individuals. It consists of 16 items, divided into 8 subscales, with each subscale containing 2 items. The administration, scoring, and interpretation process is critical to ensuring the accuracy of insomnia assessments.

a. Administration

The *IKI* should be administered by trained professionals, such as counselors or psychologists, in a setting that is conducive and comfortable for the respondents. Administration typically takes between 15 to 20 minutes, and clear instructions are provided to respondents before they begin. Respondents are asked to answer honestly, marking their responses on a three-point scale: “Never” (0), “Rarely” (1), and “Frequently” (2). It is emphasized that there are no right or wrong answers, as the aim is to capture their true experiences.

b. *Scoring*

Scoring of the *IKI* involves assigning values of 0 for “Never,” 1 for “Rarely,” and 2 for “Frequently.” The total score determines the overall severity of insomnia, with scores ranging from 0 to 11 indicating a low level, 12 to 22 indicating a moderate level, and 23 to 32 indicating a high level of insomnia. Sub-scale scoring follows a similar pattern, with scores of 0 to 1 representing a low level, 2 to 3 a moderate level, and 4 a high level. This scoring system allows for a nuanced understanding of the severity of symptoms both overall and within specific areas related to insomnia.

c. Interpretation

Interpretation of the scores is essential for guiding the next actions to be taken. A low score indicates that the individual is not experiencing insomnia disorder, while a moderate score suggests the presence of some symptoms, warranting counseling sessions. A high score signifies significant symptoms, necessitating consistent and ongoing intervention. Accurate interpretation ensures that individuals who require further psychological evaluation or treatment are promptly identified and appropriately managed.

The interpretation of *IKI* scores plays a crucial role in identifying individuals who may need early intervention to prevent more severe complications. It also serves to raise awareness about the presence and impact of insomnia disorders within the community. By providing professionals with a clear framework for assessing insomnia severity, the *IKI* facilitates the planning and implementation of effective interventions tailored to the individual’s needs.

Methodology

This study employs a descriptive research design, aimed at evaluating the content validity and reliability of the *Instrumen Kecelaruan Insomnia (IKI)*, which was developed based on previous studies the research process consists of three distinct phases:

a. Phase 1: Development of the *Instrumen Kecelaruan Insomnia (IKI)*
b. Phase 2: Content and face validity assessment
c. Phase 3: Reliability analysis

Phase 1: Development of the Instrumen Kecelaruan Insomnia (IKI)
The development of the *IKI* was conducted through an extensive review of existing literature, ensuring that it adhered to established theoretical frameworks and principles. The primary guiding framework was drawn from the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-V), published by the American Psychiatric Association (APA). According to Connelly and Kramer (1989), a researcher-developed instrument is considered robust when it is systematically designed to gather reliable data.

Phase 2: Content and Face Validity Assessment
In this phase, the *IKI*, after being constructed, was distributed to a panel of seven experts to evaluate its content accuracy and relevance. The expert panel comprised three academic faculty members and four registered counselors. Their primary role was to assess the content validity of the *IKI*. A comprehensive version of the *IKI*, including an introduction and a detailed manual, was provided to the experts for review. Feedback, suggestions, and critiques were collected to enhance the instrument's quality. The evaluation utilized a three-point rating scale; 1 = essential, 2 = useful but not essential, and 3 = not necessary.

Phase 3: Reliability Analysis
The third phase aimed to determine the reliability of the *IKI*. Following the establishment of its content validity, the instrument was administered to a sample of 40 respondents selected through simple random sampling. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 30. Cronbach's alpha coefficient was calculated to evaluate the internal consistency and reliability of the *IKI*.

Sample and Sampling
The study subjects were involved only in Phases 2 and 3. In Phase 2, seven professional experts participated to assess the content validity of the *Instrumen Kecelaruan Insomnia (IKI)* or Insomnia Disorder Instrument. In Phase 3, a total of 40 respondents, aged between 15 and 40, were selected to provide data for evaluating the reliability of the *IKI*.

Findings
Phase 1: Development of the Instrumen Kecelaruan Insomnia (IKI)
The construction of the *IKI* was based on an extensive literature review focusing on the definition, factors, and symptoms of insomnia disorder. Sources included scholarly articles and journals from both local and international publications. This thorough analysis led to the development of an instrument consisting of 16 items, organized into 8 subscales, with each subscale containing 2 negatively phrased items.

Phase 2: Content and Face Validity Assessment
The findings from Phase 2 indicated several constructive suggestions for improvement provided by the expert panel. All seven selected experts expressed positive agreement on the presented items. Their feedback served as a foundational basis for refining the items to enhance the instrument's reliability. Detailed comments and suggestions from the experts are summarized in Table 1 below.

Table 1
Expert Feedback Analysis on the Study Instrument

No.	Panel expert	Remarks from panel expert	Action and justification
1	Expert 1 Academic lecturer IPGM Campus	1. The statement for item 2 should be divided into two separate items. 2. The statements for items 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 should be revised using simple sentence structures to ensure clarity and avoid confusion. 3. The items can be measured using a 4-point Likert scale to facilitate data collection,	The recommended improvements have been implemented accordingly.
2	Expert 2 Academic lecturer IPGM Campus	1. The statements for items 9, 11, and 12 need to be refined to clearly specify the conditions being measured. 2. The statement for item 10 is unclear and requires clarification to accurately represent the intended condition being assessed.	Items 9. 11, and 12 have been revised and improved accordingly.
3	Expert 3 Academic lecturer IPGM Campus	1. The statements for items 2, 5, 6, 8, 10, 13, and 14 need to be adjusted to be more specific, ensuring clearer articulation of the intended meaning. 2. The use of the word 'I' should be incorporated to reflect the individual's perspective accurately.	The statements for items 2, 5, 6, 8, 10, 13, and 14 have been revised, modified and rephrased accordingly.
4	Expert 4 Registered Counselor IPGM Campus	1. Overall, the questionnaire developed is in line with the objectives of the study. 2. The sections of the questionnaire accurately reflect the research topic.	
5	Expert 5 Registered Counselor IPGM Campus	1. Overall, all the items in the questionnaire are essential to be maintained, as each item corresponds to the criteria outlined in the	

		DSM-V for insomnia disorder.	
6	Expert 6 Registered Counselor IPGM Campus	1. Overall, the items are clear and easy to understand.	
7	Expert 7 Registered Counselor IPGM Campus	1. Overall, the construct for each item is clear and appropriate. 2. Items 13 and 14 need to be revised to avoid confusing the respondents.	Items 13 and 14 have been modified.

Based on the comments and feedback provided, the researcher reviewed and made improvements to the relevant items. Some items were agreed upon, while others were not agreed upon by some experts. Overall, the experts agreed that the items created adequately represent the concepts and can measure the level of insomnia disorder in individuals.

Content validity was determined using the Content Validity Ratio (CVR) analysis, which evaluates the importance level of each item based on three Likert scale levels: (1) very important, (2) useful but not important, and (3) not necessary. The content validity calculation was performed using the formula CVR = [ne - (N/2)] / (N/2), where CVR refers to the validity score of the item, ne is the number of expert panel members who rated the item as important, and N is the total number of panel members (N = 8).

According to Lawshe (1975), the CVR values range from -1 to +1. A value of +1 indicates that the item is considered important by all panel experts for content validity. If the CVR value is below 0, it indicates that less than half of the expert panel members rated the item as important. A CVR value of 0 means that some experts rated the item as unimportant, while others considered it important. If the CVR value is above 0, this means that more than half of the panel members rated the item as important. The higher the CVR value, the greater the content validity. Therefore, a CVR of 1 clearly indicates unanimous agreement among all experts that the item is important, reflecting high content validity.

Table 2
CVR values for the Instrumen Kecelaruan Insomnia (N = 7)

Item	P1	P2	P3	P4	P5	P6	P7	CVR
	Subscale 1							
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
	Subscale 2							
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
	Subscale 3							
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
	Subscale 4							
7	1	1	1	1	1	1	1	1

8	1	1	1	1	1	1	1	1
	Subscale 5							
9	1	1	1	1	1	1	1	1
10	1	0	1	1	1	1	1	0.71
	Subscale 6							
11	1	1	1	1	1	1	1	1
12	1	1	0	1	1	1	1	0.71
	Subscale 7							
13	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
	Subscale 8							
15	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1

$$CVR=\frac{[ne-(N/2)]}{(N/2)}$$

Critical Values for Lawshe's Content Validity Ratio, N (7) = 0.622 (Colin & Andrew, 2014)

The quantitative results of the study indicate that the instrument possesses good content validity, with the 16 items achieving a minimum CVR value (N = 7, critical CVR = 0.622) according to the Lawshe (1975) model. After testing, all 16 items were identified for retention, with minor improvements made to sentence structure and terminology. Table 2 provides a summary of the statistics measuring the evaluations from the 7 expert panel members, along with the 16 related items in the insomnia disorder scale, using the Content Validity Ratio (CVR) technique by Lawshe (1975). Table 2 below presents the CVR values obtained from the expert panel for each item in the respective subscales.

Phase 3: Reliability Analysis

The third phase was conducted to determine the reliability of the *Instrumen Kecelaruan Insomnia (IKI)* or Insomnia Disorder Instrument. Wiersma (2000) explains that instrument reliability is a measure used to determine the consistency of scores for each item. Data from the pilot study were processed using the Statistical Package for the Social Sciences (SPSS) version 30. The interpretation of the Cronbach's Alpha reliability values for the entire set of items and each subscale was based on the theory proposed by Valette (1997), which states that the minimum acceptable reliability value is 0.50. Similarly, Sidek (2005) stated that the accepted reliability value ranges from 0.50 to 0.90. Therefore, the findings of the reliability test for *IKI* indicate that it is acceptable and suitable for use. Kerlinger (1973) and Majid Konting (1998) stated that reliability values above 0.60 are commonly used, with Cronbach's Alpha values between 0.60 and 0.80 being considered moderately high, and values above 0.80 being considered high. The Cronbach's Alpha values for *IKI* are presented in Table 3 below:

Table 3
Overall and Subscale Reliability Values for IKI (N = 40)

Scale/Subscale	No. of items	Value	Interpretation
Overall *IKI*	16	.847	High
Subscale 1: Primary symptoms	2	.786	Moderately high
Subscale 2: Clinically significant effects	2	.657	Moderately high
Subscale 3: Duration of one week	2	.591	Moderately high
Subscale 4: Duration of three months	2	.557	Moderately high
Subscale 5: Difficulty maintaining sleep	2	.779	Moderately high
Subscale 6: Other sleep disturbances	2	.709	Moderately high
Subscale 7: Medication or substance use	2	.533	Moderately high
Subscale 8: Other mental disturbances	2	.720	Moderately high

*significant level: .50

Overall, the reliability analysis of the *Instrumen Kecelaruan Insomnia (IKI)* or Insomnia Disorder Instrument showed a high Cronbach's Alpha coefficient of .847. This indicates that the IKI has high reliability and is suitable for use. Based on the obtained results, the IKI subscales demonstrated high reliability for Subscale 1: Primary symptoms, while other subscales exhibited moderate to high reliability. Table 4 presents the reliability analysis to test the quality of the items developed.

Table 4
Reliability values for each IKI item (N = 40)

No.	Item	Cronbach's Alpha	Interpretation
1.	*Saya sukar untuk tidur pada waktu malam*. (I have difficulty falling asleep at night)	.842	High
2.	*Saya sukar tidur semula jika bangun terlalu awal.* (I find it difficult to fall asleep, even though it is already quite late)	.845	High
3.	*Saya menghadapi kesukaran untuk menjalani aktiviti social akibat gangguan tidur.* (I experience difficulty engaging in social activities due to sleep disturbances)	.833	High
4.	*Saya sering mengantuk pada siang hari sehingga menjejaskan aktiviti harian.* (I often feel sleepy during the day, which affects my daily activities)	.843	High
5.	*Saya mengalami gangguan tidur sekurang-kurangnya tiga malam dalam seminggu.* (I experience sleep disturbances for at least three nights a week)	.827	High
6.	*Saya sering berasa keletihan kerana mengalami gangguan tidur sekurang-kurangnya 3 hari dalam seminggu.*	.829	High

	(I often feel fatigued due to sleep disturbances for at least three nights a week)		
7.	*Saya mempunyai masalah tidur yang berlanjutan dalam tempoh tiga bulan ini*. (I have had ongoing sleep problems for the past three months)	.835	High
8.	*Saya berasa letih kerana tidak cukup tidur dalam tempoh tiga bulan ini.* (I feel fatigued due to insufficient sleep over the past three months)	.834	High
9.	*Saya sukar tidur walaupun mempunyai masa yang cukup untuk tidur.* (I have difficulty sleeping even though I have enough time to sleep.)	.833	High
10.	*Saya tidak boleh tidur walaupun berada di dalam ruang yang selesa.* (I cannot sleep even in a comfortable environment.)	.830	High
11.	*Saya berasa sesak nafas ketika tidur sehingga menjejaskan kualiti tidur.* (I feel suffocated when I sleep, which affects my sleep quality.)	.840	High
12.	*Saya berdengkur dengan kuat sehingga mengganggu tidur.* (I snore loudly, which disrupts my sleep.)	.851	High
13.	*Saya sukar tidur disebabkan pengambilan ubat-ubatan.* (I have trouble sleeping due to taking medication.)	.846	High
14.	*Saya sukar untuk tidur selepas minum minuman berkafein atau minuman beralkohol.* (I have difficulty sleeping after consuming caffeinated or alcoholic beverages.)	.849	High
15.	*Saya sukar tidur akibat terlalu memikirkan sesuatu perkara.* (I have trouble sleeping due to excessive worrying about something.)	.841	High
16.	*Saya sukar tidur berpunca daripada tekanan yang dialami.* (I have trouble sleeping due to stress I am experiencing.)	.832	High

*significant level: .50

Referring to Table 4, the obtained reliability values indicate that the items developed are at a high reliability level. Modifications made to several items after obtaining expert feedback ensured that the reliability values align with the standards set in the item construction process. This is consistent with the views of Majid Konting (1998), who stated that reliability values of .60 or higher are considered good and acceptable.

Discussion

This study has significant implications for the fields of psychology and counseling, with substantial impact in Malaysia. The development of the *Instrumen Kecelaruan Insomnia (IKI)* or Insomnia Disorder Instrument offers a valuable contribution, particularly in psychology and counseling. The findings indicate that *IKI* has high validity and reliability, making it suitable for use in counseling settings by counselors and counseling practitioners. This proves that *IKI* can effectively measure the severity of insomnia in individuals. Furthermore, the development of instruments and related studies for measuring the level of insomnia in individuals in Malaysia is still limited.

Future research should focus on more detailed statistical analyses of the *IKI* items to create a more robust and stable version. According to Zaini and Selamat (2023), personality type influences the severity of an individual's insomnia. More in-depth studies on the relationship between personality and insomnia are needed. Given that *IKI* has high reliability, it is recommended that future research be conducted to encompass all layers of society, not limited to specific groups.

Conclusion

Overall, this study successfully developed the *Instrumen Kecelaruan Insomnia (IKI)* or Insomnia Disorder Inventory based on the principles of insomnia disorder as outlined by the American Psychiatric Association (APA) in the Diagnostic and Statistical Manual (DSM) of Mental Disorders, Fifth Edition (DSM-V). Each *IKI* item has high validity and reliability values. This demonstrates that IKI can effectively measure the level of insomnia based on symptoms present in individuals.

The development of this inventory also unquestionably makes significant contributions to research on insomnia disorders. The process of diagnosis and early intervention will be facilitated by an accurate measurement tool that can assist in the identification of the early symptoms of insomnia. Identifying insomnia at an early stage can mitigate the likelihood of developing chronic mental health conditions, including anxiety, depression, and cardiovascular diseases. The educational and workplace environments can also benefit from the findings of this research. Additionally, comprehending the extent of insomnia in diverse populations can result in the implementation of support measures, including the provision of flexible working hours and the implementation of well-being programs, which are anticipated to enhance productivity and individual well-being. Consequently, the capacity to effectively address insomnia and related issues can be enhanced through ongoing research in this field.

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