Original Article

Validity and Reliability of a Newly Developed Malay-Version Questionnaire on Malaysian Public Readiness, Reaction, and Willingness Towards Terrorism

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Abstract

Background: Identifying the level of readiness, reaction to terrorist attacks, and willingness to participate in developing an action plan against terrorism is vital in formulating an ideal anti-terrorism package. **Objective**: This study aimed to determine the validity and reliability of a newly developed questionnaire in Malay to assess the level of readiness, reaction, and willingness to terrorism among Malaysians. **Methodology**: A validation study involving 150 respondents was conducted from 1st January to 31st March 2017. The study was unique in its focus on residents in two distinct districts (urban and rural) of Kelantan, Malaysia. A self-administered questionnaire, developed through local expert discussions on terrorism was used. The questionnaire consists of 28 items assessing three domains: readiness, reaction, and willingness. The study employed exploratory factor analysis, reliability of internal consistency, and descriptive analysis. **Result**: Factor analysis resulted in the retention of 12 items for the readiness domain, with 1 item excluded. The reaction domain retained all 10 items, and the analysis was performed separately for two distinct groups, each serving different purposes. In the willingness domain, 2 out of the 6 items were excluded from the analysis, leaving 4 items. The newly developed Malay version of the questionnaire consists of 25 items. The Cronbach's alpha values of the final questionnaire for each domain were 0.88 (readiness), 0.73 (reaction–independence group), 0.87 (reaction–dependence group), and 0.82 (willingness). **Conclusion**: The newly developed Malay version of the questionnaire has the potential to be a reliable and valid tool, demonstrating excellent internal consistency. This tool is now available and intends to assess Malaysian readiness, reactions, and willingness towards terrorism, providing a valuable resource for researchers, academics, and policymakers.

Keywords: *terrorism, questionnaire, readiness, reaction, willingness*

INTRODUCTION

The threat of terrorism to Malaysia is always underestimated.[1] Malaysia has often faced natural disasters, to which the populace has generally adapted well or, at times, complacency. However, the current political challenges, whether from a national or worldwide perspective, such as the ongoing war in the

Middle East and Ukraine related to religious and political issues, have great potential to affect all, including us.[2] These factors could contribute to the new threat, especially towards terrorism. Sooner or later, this country may be affected by this threat.

Preparation must be put on the national agenda to address the phenomenon of human destruction. The best solution is to expose the public with an organized strategy to handle this issue.[3] To do so, authorities should understand the extent to which Malaysia's public perceives terrorism. To date, the roles and functions of the degree to which the involvement of the Malaysian public is expected and the degree to which the public participates in planning and preparing to cope with and deal with terrorism remain vague.[4] These data are fundamentally significant since the preparations to handle these types of circumstances (disasters) would be formulated based on expert hypotheses about what individuals would be concerned with and how they would act based on previous experiences. If public expectations by the government were inaccurate, the plans produced would not operate as planned, and many individuals who should be protected would be unnecessarily harmed.[5]

The preliminary work involved exchanging concepts, knowledge, and discussions with universities, government, and private sector planners and a thorough literature analysis to identify the critical public principles around which existing strategies are focused and a frame of reference for public thought regarding disaster preparedness planning.[6] Research that uses different disaster scenarios could be conducted to assess public knowledge, readiness, and interest concerning their community's disaster planning activity. It was very important for them to have a public understanding of where, how, and why they should be involved in this situation.

Malaysia has already witnessed several disaster events on the basis of its geographical position and the nation's socio-demographics. The riot incident with the Sino-Malay sectarian conflict in Kuala Lumpur on 13th May 1969, was an example of a significant disaster in Malaysia.[7] Within 45 minutes, the incident extended throughout the city. In the end, 143 of those killed were Chinese, 25 were Malay, and 439 were wounded. Seven hundred fifty-three arson cases were reported, and 211 vehicles were destroyed or seriously damaged. In the second instance, the Memali incident in Baling, Kedah, on 19th November 1985, in which approximately 200 policemen under command had sieged several village houses in Memali. The incident resulted in the deaths of 14 civilians and 4 police officers and the detention of 159 people, including women and children. The third incident occurred on 31st July 1988, when Penang Ferry Terminal-Jeti Pengkalan Sultan Abdul Halim collapsed, killing 32 and injuring more than 1674 people.[8]

On 7th May 1991, the Sungai Buloh fireworks factory exploded, killing 22 people and injuring 103 people. On 20th June 1992, the oil tanker Choon Hong III exploded in Port Kelang, causing ten deaths and the evacuation of more than 1000 people from the area.[9] Highland Tower Condominium collapsed on 11th December 1993, with 48 people killed and another two condominium blocks nearby entirely evacuated. There was a landslide on Karak Highway, KM 34 Susur Genting Highland on 30th June 1995, which killed 20 tourists and injured another 22 victims. A similar landslide incident occurred on 15th July 1996, at KM 1.5 Jalan Genting Highland, and 17 people were killed. On 26th December 1996, typhoons and floods struck the west coast of Sabah, killing 230 people and damaging 500 homes. Pos Dipang Perak was devastated by a sudden mud flood on 29th August 1996, killing 44 people and damaging 30 houses.

On 26th December 1996, another typhoon and flood struck the west coast of Sabah, killing 230 people and damaging 500 homes. In April 2013, the Lahad Datu incident killed 14 and wounded three Malaysian law enforcement officers.[10] Except for the Lahad Datu incident, all the above events were unrelated to a terrorist attack. The Lahad Datu incident was related to the Mindanao or Filipino people trying to invade Malaysia via military force.[10]

While natural disasters have historically shaped Malaysia’s public preparedness culture, the Lahad Datu incident in 2013 highlighted that terrorism poses a significant and distinct threat. Despite the country’s experience with disaster preparedness, there remains a critical gap in addressing terrorism-specific threats, which require tailored public preparedness strategies.

By referencing natural disasters, Malaysia can build on its existing framework, but the challenge lies in leveraging this familiarity to address the unique demands of terrorism preparedness effectively.

This study aims to develop and validate a Malay version questionnaire to assess the readiness, reaction, and willingness of the Malaysian public towards terrorism, considering the increasing local and global threats and the importance of public preparedness.

METHODOLOGY

Study Design

A cross-sectional study using a purposive sampling method was conducted from 1st January to 31st March 2017 among 150 respondents in two major districts in Kelantan state. The objectives are to determine the validity and reliability of a newly developed questionnaire in the Malay version to assess the level of readiness, reaction, and willingness towards terrorism among the respondents. Kota Bharu and Gua Musang Districts were selected based on contamination factors and different geographical locations (urban and rural).[11]

Sample Size

A minimum of 84 respondents were required to validate the 28-item questionnaire based on factor analysis guidelines, which suggest three participants per questionnaire item. To enhance statistical power, the sample size was increased to 150 respondents, with 75 participants from each district. The participants represented various age groups and academic qualifications, providing a diverse sample.

Inclusion and Exclusion Criteria

The study included Malay-speaking adults and excluded individuals who did not understand the Malay language, ensuring accurate comprehension of the questionnaire.

Questionnaire Development

The questionnaire was developed by a multidisciplinary team consisting of emergency medicine experts, community medicine specialists, and members of the National Security Council. The experts provided feedback on public expectations of terrorism preparedness based on local and international experiences. The result was the development of the questionnaire, which was designed to assess readiness, reactions, and willingness towards terrorism preparedness.

A pilot study was conducted among 80 local citizens of Kubang Kerian, Kelantan. Feedback on the questionnaire was gathered and reviewed by a team of 10 experts. This revealed that some items required rewording or exclusion. Modifications were made to improve item clarity and structure, resulting in a refined version of the questionnaire comprising 28 items.

Domains

The questionnaire was divided into three key domains:

Readiness Domain: Consisting of 12 items, this domain assesses respondents' knowledge and preparedness for terrorism-related emergencies. Responses were recorded on a 3-point scale (0 = "Do not know", 1 = "Not sure", 2 = "Know").

Reaction Domain: This domain includes 10 items and is divided into two subdomains:

- **Reaction Independent**: Measures the respondents' preparedness and actions (e.g., first aid skills, knowledge of evacuation routes).
- **Reaction Dependent**: Evaluates the respondents' reliance on external systems (e.g., trust in government responses, access to emergency services). Responses were recorded on a 5-point scale (0 = "Not prepared at all", 4 = "Extremely prepared").

Willingness Domain: Comprising 6 items, this domain assesses respondents' willingness to participate in terrorism preparedness activities. Responses were recorded on a 5-point scale (0 = "Not willing at all", 4 = "Extremely willing").

Data Collection

Data collection occurred on-site, where participants were briefed on the study's purpose, and questionnaires were administered and completed in a controlled environment on the same day to minimize information bias and maximize response rates. A team of trained facilitators supervised the process to ensure uniformity in response and consistency in data collection.

Data Analysis

Statistical analysis was performed using SPSS version 22.0. The following analyses were conducted:

Internal Consistency Reliability: Cronbach's alpha was used to evaluate the reliability of each domain. All the domains demonstrated acceptable internal consistency, with Cronbach's alpha values above 0.7:

Readiness Domain	: 0.88
Reaction Domain	: 0.73 to 0.87
Willingness Domain	: 0.82

Exploratory Factor Analysis (EFA): EFA was conducted to confirm the construct validity of the questionnaire. Following the analysis, items with low factor loadings or communalities were excluded, resulting in a final version of the questionnaire with 25 retained items.

The analysis employed promax rotation, and factor loadings were used to support item inclusion within each domain. Multiple authors mentioned that Cronbach's alpha for all the domains above 0.7 was deemed to show acceptable internal consistency reliability.[12,13]

RESULTS

A total of 150 respondents participated in this study. Table 1 shows the respondents' demographic characteristics. Among the 150 respondents, 57.3% were male and 42.7% female. With respect to academic qualifications, 72% have non-professional (diploma and below) qualifications, and 28% have professional qualifications (degree and above). With respect to age, 40% were under 35 years old, and another 60% were 35 years old or older. The detailed analyses of the extracted factors, factor loadings, communality and reliability are shown in Table 2.

Table 1: Demographic characteristics of the respondents (n=150)

Characteristic	n (%)
Gender	
Male	86 (57.3)
female	64 (42.7)
Academic qualification	
Professional (first-degree and above)	42(28)
Non-professional (diploma and below)	108 (72)
Age	
Below 35	60 (40)
35 and above	90 (60)
Occupation	
Government sector	27 (18)
Non- government sector	28 (18.7)
Self-employee	58 (39.7)
Student	37 (24.7)
Race	
Bumiputera	127 (84.7)
Non-Bumiputera	23 (15.3)
Location of stay	
Urban	75 (50)
Rural	75 (50)

The principal axis factoring extraction with Promax rotation was applied to the readiness domain's exploratory factor analysis (EFA) (12 items). Kaiser-Meyer- Olkin (KMO) was 0.826 with a significant Bartlett's test of sphericity (P- value<0.001). Due to low communalities and factor loadings, Item Q5 was not included.

The principal axis factoring extraction with Promax rotation was applied to the exploratory factor analysis (EFA) of the reaction domain (independent group) with five items. Kaiser-Meyer- Olkin was 0.723 with a significant Bartlett's test of sphericity (P-value<0.001). No item was removed for this domain. A second group of reaction items consisting of five items based on the knowledge level was analyzed using principal axis factoring extraction with Promax rotation, with the assumption of item correlation. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.800, and Bartlett's test of sphericity was significant (P-value < 0.001), indicating suitability for factor analysis. No items were removed from this domain, as all the items showed adequate factor loadings.

The principal axis factoring extraction with Promax rotation was applied to the principal component analysis (PCA) on the willingness domain (6 items). Kaiser-Meyer- Olkin was 0.574 with a significant Bartlett's test of sphericity (P- value<0.001). Due to low communalities and factor loadings, two items (Q21 and Q22) were not included. Out of 28 items in the pre-validated version, three were removed for several reasons. The final version of a newly developed Malay-version questionnaire assessing readiness, reactions, and willingness towards terrorism consisted of 25 items.

Based on the value of Cronbach's alpha values of the readiness, reaction, and willingness domains, the internal consistency reliability was above 0.70 (ranging from 0.730 to 0.883). The highest Cronbach's alpha was for the readiness domain, whereas the lowest was for the reaction domain (an independent group).

DISCUSSION

Preparedness for disasters, particularly acts of terrorism, requires serious attention because of its crucial role in supporting the nation in times of crisis. Learning from other countries' experiences will improve our preparedness. However, the degree of readiness among the public to confront and handle terrorism is still uncertain. There is a need for Malaysia to improve its public understanding, perception, and response.[14,15] The need for information or data registries on Malaysia's public perception towards terrorism is crucial. Anxiety and panic conditions are anticipated among local community members, including healthcare workers, since they face a dilemma between their family's safety and their community members' safety.[14,15] Based on the above issues, current researchers have a reasonable justification for developing a validated questionnaire that assesses the Malaysian perspective on all aspects of terrorism. Useful information about terrorism can be obtained from a questionnaire adapted to local cultures, values, and practices.[15] Such beliefs and practices, which are based mainly on the geographical

Table 2: Extracted factors, factor loadings, communality, and reliability

Domain	Item	Factor loading	Communality	Cronbach's α
Readiness	Q1	0.368	0.135	0.883
	Q2	0.905	0.819	
	Q3	0.735	0.540	
	Q4	0.655	0.429	
	Q6	0.462	0.213	
	Q7	0.438	0.192	
	Q8	0.878	0.770	
	Q9	0.765	0.586	
	Q10	0.643	0.413	
	Q25	0.755	0.571	
	Q27	0.361	0.130	
Reaction (independent group)	Q11	0.485	0.235	0.730
	Q14	0.374	0.140	
	Q17	0.895	0.801	
	Q18	0.603	0.363	
	Q26	0.840	0.705	
Reaction (dependent group)	Q13	0.854	0.729	0.871
	Q20	0.942	0.887	
	Q23	0.533	0.284	
	Q24	1.000	0.999	
	Q28	0.431	0.186	
Willingness	Q12	0.850	0.723	0.816
	Q15	0.556	0.309	
	Q16	0.946	0.895	
	Q19	0.880	0.774	

location of the residence, can involve specific issues unique to local people in Malaysia. For example, those who live in rural areas have less exposure to knowledge of terrorism. In addition, knowledge about the existing plan of action against terrorism among Malaysians also needs to be determined. It would also be helpful for other studies in the same field to use this newly developed questionnaire to help build comparable data and knowledge from different terrorist studies.[16]

Therefore, accurate and credible studies must be carried out so that data about terrorism in Malaysia obtained from the public can be relied on. Validity refers to the usefulness, appropriateness, and meaningfulness of inferences derived from test scores.[16,17,18,19] An instrument is valid if it determines what it is intended to measure.[16] Construct validity applies, among other forms of validity, to the degree to which a measure relates to other measurements associated with theoretically derived assumptions about the concepts being evaluated.[16,20,21] Factor analysis is a widely used statistical method for evaluating construct validity. Factor analysis is a statistical technique used to analyse a large number of variables to assess whether specific identifiable dimensions can be used to classify several variables in the sample.[16,22,23] Exploratory factor analysis, which summarizes data by inter-correlated grouping variables, is one of the forms of factor analysis.

Factor analysis is typically accompanied by the computation of Cronbach's alpha coefficient, a measure of internal consistency reliability. Reliability refers to the extent to which a measurement process can be repeated.[16,24,25] The degree to which items "hang together" and are related to each other is determined by internal consistency reliability. When grouped into a scale, items that form a strong factor in factor analysis yield appropriate alpha coefficients, thus showing evidence of internal consistency reliability and supporting initial evidence of construct validity for a developing scale.

This study revealed the preliminary reliability of the self-developed Malay version of the questionnaire in assessing Malaysian readiness, reactions and willingness towards terrorism. The outcome

demonstrated good internal consistency, with Cronbach's alpha values varying across all three domains from 0.730 to 0.883. This finding indicated that a Cronbach's alpha of 0.7 or 0.8 suggests excellent internal consistency. The readiness domain (0.883) had the highest Cronbach's alpha, indicating that all the items were well explained and structured. Our findings also revealed that the lowest Cronbach's alpha value for the reaction (independent group) domain was 0.730. This finding could be explained by the different feelings of respondents regarding terrorism when involving external influences such as government agencies.[4]

The findings from the study are limited to two districts from Kelantan, Kota Bharu and Gua Musang, and future research should involve a larger, more diverse sample to increase generalizability. The standard Malay language was used. The questionnaire can be adapted for use in other Malay-speaking countries, such as Brunei and Indonesia, given the shared language and cultural context.

CONCLUSION

The newly developed Malay version of the questionnaire demonstrated strong reliability and validity, with excellent internal consistency (as indicated by high Cronbach's alpha values). This positive result shows that the questionnaire can be used by a Malay-speaking nation, paving the way for a potential evidence-based rollout at the national and international levels.

CORRESPONDENCE

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