

VALIDITY AND RELIABILITY: QUESTIONNAIRES FOR UNDERSTANDING AND INTERPRETATION TOWARDS THE MALAYSIAN HEALTHIER CHOICE LOGO

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Abstract

Development and administration of the HCL by the Ministry of Health was a major step and initiative in reducing the number of non-communicable diseases related death cases in Malaysia. However, there needs to be more on how the consumers understand and interpret the HCL as it reflects the quality and uses of the invented HCL. Hence, this study aimed to develop a validated reliability questionnaire in assessing the understanding and interpretation of HCL among consumers. One set of questionnaires consisting of 26 questions was designed and validated by 13 experts. The content validity index (CVI) and content validity ratio (CVR) were decided in validating each question. As well as the reliability of the questions was determined by finding the internal consistency value and test-retest method. Eighteen (18) questions from the initial 26 questions made it through to the finalised questionnaire. Almost all the questionnaire's items had CVR values above 0.54, except for the same for CVI value which only five questions had a value of below 0.79. The Cronbach's alpha coefficients value for domain understanding and interpretation were 0.502 and 0.503, respectively. The ICC scores of the questions in the questionnaire ranged between 0.682 and 1.000 (moderate to excellent reliability). This study conveys the good validity and reliability of the questionnaire, which can be used in determining the understanding and interpretation of HCL among consumers in Malaysia.

Keywords: Consumer, Food Industries, Food Label, Healthier Choice Logo

Introduction

Non-communicable diseases (NCDs) have become an alarming issue, locally and worldwide, over the years. It was found that 36 out of 57 million global deaths in 2008 were due to NCDs (1). NCDs have become one of the biggest threats to Malaysian health as the prevalence is still high. According to reports, 3.5 million Malaysian people suffer from hypertension and diabetes, and over half have excessive cholesterol (2). This is worrying as the numbers will increase over the years if no better action is taken as a curative or preventive measure. Therefore, Healthier Choice Logo (HCL) was developed by the Ministry of Health Malaysia to promote healthy eating practices among consumers.

As a reference, a limited study has been conducted on the Healthier Choice Logo (HCL) topic. However, the insight was limited as the study only focused on the consumers' understanding of food labels and their perception of HCL in Malaysia (3). Other studies also have the same limitation:

they only investigated less educated and illiterate consumers and those confused by the nutrition labelling schemes associated with more consumer acceptability (4). Developing a better labelling system is much needed in helping consumers make informed decisions about food and nutrition.

Due to the abovementioned problems, this study aims to develop the questionnaires for the Malaysian HCL, focusing on understanding and interpreting HCL among consumers. In addition, this study also intends to support the Ministry of Health (MOH) Malaysia in reducing the numbers or prevalence of NCD and making any necessary improvements to the logo based on the findings of the study later.

Based on the pilot study regarding the HCL in Malaysia, they initially expected that the perception of HCL would be high and have some impact on the consumers' purchasing behaviour (3). However, there is still a lack of knowledge on the consumers' perspectives in understanding and

interpreting the logo since its debut in 2017. There hasn't been any more study to look at these issues, which is most likely because of no existence of a validated questionnaire addressing the issues. With that, the main purpose of this study is to develop questionnaires focusing on the understanding and interpretation towards HCL for consumers. Moreover, this study also works on the developed questionnaire's validation and reliability score analysis.

Materials and Methods

Research design

This quantitative cross-sectional study involved three phases: questionnaire development, validity, and reliability. These phases were needed in fulfilling the research aims of developing, validating, and assessing the reliability of the questionnaire addressing the understanding and interpretation of the HCL among consumers. The questionnaire was developed based on the HCL guidelines and HCL nutrient criteria published by the Ministry of Health Malaysia and referring to previous studies on understanding and interpreting food labels. In the validity phase, content validation of the questionnaire was done by the expert panels that consisted of dietitians, lecturers and nutrition officers. The questionnaire's appropriateness for every item was identified by calculating the Content Validity Index (CVI) and Content Validity Ratio (CVR). Then, the reliability phase was performed to assess the inter-item and test-retest reliability by looking at Cronbach's Alpha value and Intraclass Correlation Coefficient (ICC).

Study location

This study was carried out across all 14 states of Malaysia.

Sampling

Two sampling methods are used in this study: purposive and convenience sampling. The purposive sampling approach is used for validity as the respondent must meet the inclusion criteria. In this part, the expert panels play the role of the respondent. Experts are chosen based on their qualifications, experience, and expertise in the specific field. They have a track record of publications, research, or practical experience related to the research topic. With that, the expert panels involved in the nutrition and food labelling field, aged above 20 years old and with English literacy, were chosen as this study's expert panels. We include specific questions about English language usage or understanding in the screening process. These questions can assess participants' ability to read and comprehend English text. In contrast, non-Malaysian nationals and those with physical and mental impairments are stated as exclusion criteria.

The convenience sampling method was utilised in the reliability part of obtaining the data from the respondents. The inclusion criteria listed that the respondents must be Malaysian citizens, aged above 15 years old but not

more than 60 years old, free from any mental or physical impairments and able to speak and understand the English language well. However, the exclusion criteria included illiterate people and those with uncontrolled or unstable conditions such as dementia or mental disorder. In addition, the participants who do not have access to an internet connection or mobile devices also have been excluded from this study as the questionnaires were distributed online.

For the sample size calculation, there were two kinds of sample sizes. For validity, a minimum of ten expert panels were determined to evaluate the questionnaires. As for the reliability part, the sample size was calculated using Intraclass Correlation (ICC) hypothesis testing method (5). With the determined parameter of 0.7 for minimum acceptable reliability (R_0), 0.9 for expected reliability (R_1), two-tailed significance level, and 2 repetitions per subject (k). According to the formula below, the sample size for the reliability part is 23 respondents.

$$n = 1 + \frac{2(Z\alpha + Z\beta)^2 k}{(\ln \ln C_0)^2 (k - 1)}$$

$$C_0 = \frac{1 + k\theta_0}{1 + k\theta_1}$$

$$\theta_0 = \frac{R_0}{1 - R_0}; \theta_1 = \frac{R_1}{1 - R_1}$$

Measurement

Validity

Content validity is the kind of validity used in this study, which relates to how far a measurement construct extends and is crucial to bolstering the validity of the newly created questionnaire (6). Researchers identify individuals who possess relevant expertise in the subject area of the research, such as experts in health promotion, nutrition, public health, or consumer behaviour. Panels of experts, including representatives from the Malaysian Ministry of Health (MOH), the Centre for Nutrition and Dietetics Studies, Universiti Teknologi MARA (UiTM) and dietitians from Kuantan Medical Centre (KMC), Spark Child Centre (SCC) and Gleneagles Hospital Penang have decided the questions' contents. The reliability phase has been completed in evaluating the test-retest and inter-item dependability. Using a quantitative approach, the experts provided a score for each question on the questionnaire based on the appropriateness, ambiguity and accuracy: "1 = The item is not relevant", "2 = The item is somewhat relevant", "3 = The item is quite relevant", and "4 = The item is highly relevant" in considering the appropriateness, ambiguity, and accuracy of each item in the questionnaire. Following the computation, the relevance rating has been

shown as 1 (on a scale of 3 or 4 for relevance) and 0 (on a scale of 1 or 2). Consequently, the result for content validity has been determined by using the Content Validity Index (CVI) and Content Validity Ratios (CVR) (CVI). The Lawshe formula was used in calculating the CVR (7), as shown below:

$$CVR_i = (n_e - N/2) / (N/2)$$

CVRI = value for an item on the test

n = number of experts indicating that an item is essential

N = total number of experts in the panel

Meanwhile, the CVI was calculated averagely according to the relevance rating. The CVI value definition and calculation are tabulated below in Table 1 (6).

Table 1: The definition and formula of S-CVI/Ave

The CVI Indices	Definition	Formula
S-CVI/Ave (scale-level content validity index based on the average method.	The overall consensus on significance among professionals determines the average CVI score. Experts who rate the proportion of relevance give it a score of 3 or 4.	S-CVI/Ave = (sum of proportion relevance rating) / (number of experts)

In evaluating the scale’s validity, a minimum CVR value of 0.78 is necessary (8). On the other hand, it is stated in an article that if an item receives less than 0.78, it should be improved or eliminated (9). Also, in an article by Yusoff (6), 0.78 is considered an acceptable CVI value for at least 9 experts.

Reliability

As for the reliability part, two types of reliability were used in determining the internal consistency and correlation in this study. This includes inter-item reliability and test-retest reliability. The Cronbach’s alpha coefficients were determined after the first round of responses from the respondents. This study used a 2-week gap between tests to collect data for time 2 since it gives respondents enough time to react to questions without recalling their last replies. The similarity answers at times 1 and 2 were analysed and compared using the intraclass correlation coefficient (ICC).

Data collection

Data collection started in February 2022 until July 2022.

Data analysis

The data obtained in this study has been analysed using the Statistical Package for Social Science (SPSS) version 22.0 (SPSS Incorporation, Chicago, IL, USA). With a significance level of 0.05, Cronbach’s alpha was used to calculate the developed questionnaire’s inter-item reliability. On the other hand, the intraclass-correlation coefficient (ICC) was used in identifying the test-retest reliability. In addition, the respondents’ socio-demographic information will be analysed using descriptive analysis.

Results

Content validity

The questionnaire was developed and consisted of 3 sections: socio-demographic background and two focused domains of the study. The questions on the socio-demographic background were adapted from a previous survey of Izzati as it suits and is relevant to the target population of this study (10).

For domain understanding and interpretation, the questionnaire has 26 items with distribution numbers of 8 and 18, respectively. The I-CVI value for most of the items in the questionnaire for both domains were over 0.79, as seen in Table 2, demonstrating the items’ suitability as they met the necessary CVI value for validity. However, five items have I-CVI below 0.78, which are A5, A6, A8, B1(5) and B1(8). For each item, Lawshe CVRs were then determined. The values for most items, except for A8, are shown in Table 2, while Table 3 includes the summary of both parts.

Table 2: Summary for I-CVI and CVR of the questionnaire

Items	Experts in agreement	I-CVI	CVR	Interpretations
Domain A: Understanding				
A1	12	0.92	0.85	Appropriate
A2	11	0.85	0.69	Appropriate
A3	13	1.00	1.00	Appropriate
A4	13	1.00	1.00	Appropriate
A5	10	0.77	0.54	Not Appropriate
A6	10	0.77	0.54	Not Appropriate
A7	11	0.85	0.69	Appropriate
A8	9	0.69	0.38	Not Appropriate

Table 2: Summary for I-CVI and CVR of the questionnaire (continued)

Items	Experts in agreement	I-CVI	CVR	Interpretations
Domain B1: Interpretation				
B1(1)	11	0.85	0.69	Appropriate
B1(2)	13	1.00	1.00	Appropriate
B1(3)	13	1.00	1.00	Appropriate
B1(4)	13	1.00	1.00	Appropriate
B1(5)	10	0.77	0.54	Not Appropriate
B1(6)	13	1.00	1.00	Appropriate
B1(7)	12	0.92	0.85	Appropriate
B1(8)	10	0.77	0.54	Not Appropriate
Domain B2: Interpretation				
B2(1)	12	0.92	0.85	Appropriate
B2(2)	12	0.92	0.85	Appropriate
B2(3)	12	0.92	0.85	Appropriate
B2(4)	11	0.85	0.69	Appropriate
B2(5)	12	0.92	0.85	Appropriate
B2(6)	12	0.92	0.85	Appropriate
B2(7)	13	1.00	1.0	Appropriate
B2(8)	12	0.92	0.85	Appropriate
B2(9)	12	0.92	0.85	Appropriate
B2(10)	12	0.92	0.85	Appropriate

Table 3: Summary of S-CVI/Ave and CVR/Ave of the questionnaire

Domain	S-CVI/Ave	CVR/Ave
Understanding	0.86	0.71
Interpretation	0.92	0.84

Content reliability

Table 4 shows the socio-demographic data of the questionnaire, consisting of 23 respondents among consumers in Malaysia. The pre-test (inter-item reliability) was conducted through an online platform, Google Forms. It was spread to the respondents via WhatsApp and Telegram to reach the respondents. Most respondents were 18 to 28 years old (n = 20, 87%), while the others were 40 to 60 (n = 3, 13%). It is relatively more female (n = 21, 91.3%) than male (n = 2, 8.7%), and all respondents are Malay. Nineteen respondents have a bachelor’s degree level of education (82.6%), and the remaining 4 have a diploma (17.4%). Most respondents came from federal

territory regions with n = 8 (34.8%). The second highest came from the central region (n = 7, 30.4%), followed by the northern and east coast regions with the same value of n = 4, 17.4%. There are no respondents from the southern region and Sabah & Sarawak. As for the household income, most respondents were in the range of RM 0 - RM 4,849, with 52.2% (n = 12). As for the other respondents, there are 8 (34.8%) and 3 (13%) respondents in the range of RM 4,850 - RM 10,959 and >RM 10,960, respectively. Lastly, 52.2% (n = 12) of the respondents are primary food grocers in their family, while the others are not (n = 11, 47.8%).

Table 4: Socio-demographic characteristic on reliability study of consumers (N = 23)

	Frequency (n)	Percentage (%)
Gender		
Male	2	8.7
Female	21	91.3
Age		
15 - 17 years old	0	0
18 - 28 years old	20	87.0
29 - 39 years old	0	0
40 - 60 years old	3	13.0
Race		
Malay	23	100
Chinese	0	0
Indian	0	0
Others	0	0
Education Level		
Lower secondary assessment	0	0
Malaysian certificate of education	0	0
Malaysian higher school certificate	0	0
Diploma	4	17.4
Bachelor	19	82.6
Master	0	0
PhD	0	0
State		
Federal Territory (Kuala Lumpur, Putrajaya & Labuan)	8	34.8
Northern Region (Perlis, Kedah, Penang, Perak)	4	17.4

Table 4: Socio-demographic characteristic on reliability study of consumers (N = 23) (continued)

	Frequency (n)	Percentage (%)
East Coast Region (Kelantan, Terengganu, Pahang)	4	17.4
Central Region (Selangor)	7	30.4
Southern Region (Negeri Sembilan, Melaka, Johor)	0	0
Sabah & Sarawak	0	0
Household income		
RM 0 – RM 4,849	12	52.2
RM 4,850 – RM 10,959	8	34.8
> RM 10,960	3	13.0
Primary food grocer in family		
Yes	12	52.2
No	11	47.8

Pre-test (Inter-item reliability)

Based on the results obtained from the prior analysis, Cronbach's alpha values of the items in the questionnaire were 0.502 for domain understanding and 0.503 for domain interpretation. By taking the average of both values for both domains in the questionnaire, the overall Cronbach's alpha coefficient was 0.503 for all 18 items, representing the internal consistency of the questionnaire. As a result, the questionnaire's alpha value, which is within the acceptable range, made it reliable in analysing the consumer's understanding and interpretation of HCL. The Cronbach alpha value for all domains in the questionnaire was summarised in Table 5.

Table 5: Inter-item reliability (Cronbach's alpha coefficient) of the questionnaire

Domain	Number of questions/items	Cronbach's alpha coefficient
Understanding	10	0.502
Interpretation	8	0.503
Overall	18	0.503

Test-retest to measure correlation (Test-retest reliability)

Table 6 below tabulates the information on the ICC value (r) and p-value for each question in the questionnaire. The

data shows how reliable the research field is. The findings indicate that all 18 questionnaire items across all aspects meet the recommended ICC value of ≥ 0.5 , portraying the items' reliability with acceptable values. The correlation of the items in domain understanding ranged between $r = 0.849$ to $r = 0.972$, while for domain interpretation, it is $r = 0.682$ to $r = 1.000$. Hence, the overall result of reliability for this questionnaire was good.

Table 6: Test-retest reliability (ICC) of the questionnaire

Items	ICC, r	p-value
Domain A: Understanding		
1. I use the Healthier Choice Logo to aid myself when making a purchase.	0.849	0.000
2. I find it difficult to understand the Healthier Choice Logo.	0.856	0.000
3. I think it is easier to identify a healthier product with the existence of the Healthier Choice Logo.	0.970	0.000
4. I am confused with the terminology/ words used in the Healthier Choice Logo.	0.960	0.000
5. I do not read the food label because I have a limited understanding of the Healthier Choice Logo.	0.944	0.000
6. Based on my knowledge, the food company must apply to the Ministry of Health to be eligible to use the HCL on a product.	0.959	0.000
7. Only food products that are complied with all the provisions and requirements will be permitted to use the Healthier Choice Logo on their food packaging.	0.972	0.000
8. A company can use the Healthier Choice Logo of its existing product on its brand-new product's packaging without sending a new application.	0.964	0.000
9. Food products with Healthier Choice Logo on the packaging do not need to include Nutrition Information Panel (NIP) on the food packaging.	0.967	0.000
10. Food industries can produce their own style of Healthier Choice Logo to be used on the food packaging of their food products.	0.961	0.000
Domain B: Interpretation		
1. I believe the logo of the healthier choice without checking the nutrition table.	0.839	0.000
2. I consume products with Healthier Choice Logo to plan my daily energy intake and/ or other nutrient intakes.	1.000	0.000

Table 6: Test-retest reliability (ICC) of the questionnaire (continued)

Items	ICC, r	p-value
3. Healthier Choice Logo provides me with reliable and trustworthy information.	1.000	0.000
4. The healthier choice claim on the logo means the product is a healthier choice in any food products category.	0.912	0.000
5. Referring to the picture above, the healthier choice claim on the logo gives a meaning that this product is a healthier choice within the prepared cereal food category only.	0.682	0.004
6. Referring to the picture above, the healthier choice statement on the logo means this product is healthier than other products in the tea drink category only.	0.708	0.002
7. I feel the HCL food products had undergone better food production processes, making it safer to consume and healthier compared to the foods without HCL.	0.889	0.000
8. I think food products with Healthier Choice Logo can be consumed without limits.	0.879	0.000

Discussion

The process of performing the validity and reliability of the questionnaire consists of several steps or phases that start with the questionnaire development, validation and testing the reliability through the pre-test and test-retest study. Apart from that, the questionnaire was self-administered by reaching the nationwide socio-demographic backgrounds, including multiple races, varied levels of educational achievement and diverse economic circumstances, as it was specifically designed for Malaysian consumers. Therefore, the results obtained from this study were valid, reliable and credible in assessing the understanding and interpretation of the HCL among consumers.

An extensive reading and comprehensive literature have been conducted on the understanding and interpreting of food labels in developing the questionnaire. This concept or method was similar to the process of questionnaire development performed in research on food and nutrition literacy for Chinese school-age children in identifying and determining the dimensions and core components of the study area (11). On top of that, keywords such as "food label", "consumer understanding", "consumer interpretation", "nutrition label", and "healthy choice logo" have been used in searching the literature through the available, accessible online journal databases, including Google Scholar, Scopus, ScienceDirect and Springerlink. The existing report and documentation related to the research

area, such as the pilot study on the HCL, HCL Guidelines and HCL Nutrient Criteria provided by the Ministry of Health, also help create the questions to be included in the questionnaire.

The main thing in content validation is the selection of experts. The number of experts was done by referring to the article on ABC of Content Validation and Content Validity Index Calculation (6). The maximum number of experts in the content validation process is recommended to be 10, and the minimum is 2. However, considering the return of the questionnaire rate is low, we have decided to approach more than 10 experts. Fourteen experts were approached and given the final draft of the questionnaire to assess the content validity. It turns out that 13 out of 14 experts returned the filled questionnaire.

Therefore, we decided to include all experts in the study, which is 13 experts with a validity index (CVI) value of 0.78 since it is the acceptable value of CVI for experts of at least 9 (12). On the other hand, the recognised figure for the content validity ratio (CVR) for 13 experts is 0.54 (7). People from the Ministry of Health are subject-matter experts in this study, together with the lecturers of the Centre for Dietetics Studies, Universiti Teknologi MARA and dietitians of Kuantan Medical Centre, Spark Child Centre and Gleneagles Hospital Penang. The returning questionnaires from the experts containing comments and suggestions were collected and analysed to update and improve the surveys.

Almost all objects' CVI values in the understanding part were 0.78 and above except for three questions which are A5, A6 and A8. Moreover, the CVR value for most questions in this part was also good, as most items achieved 0.54 above, except for A8. The CVI and CVR value determination was done by referring to Yusoff's (6) and Rutherford-Hemming & Frey (8) suggestions. With this, the results acquired from the validation of this study on the questionnaire were appropriate as it had a high validation and acceptable score. However, some of the questions need to be removed due to the low CVI or CVR value, with comments from the experts recommending that the questions be removed. Therefore, there are 8 question combinations from both parts that have been deleted and not included in the final draft of the questionnaire. Plus, the placement of the questions of both parts was changed following the feedback received by the experts. Some of the questions from the understanding were stated to be in the interpretation part as it reflects on the domain more than the previous domain, and vice versa for some questions in the interpretation that need to be transferred to the other domain. Some complex sentences must also be rephrased to enhance the structure to understand the respondents better. An almost identical process was applied in a study where the researchers took the expert panels' suggestions and advice in reviewing and amending the questionnaires (13). Lastly, the final draft of the questionnaire consisted of 10 questions for understanding and 8 for reliability.

Inter-item reliability is the method used in measuring the correlation of items in each domain by referring to Cronbach's alpha coefficient (14). The correlation value illustrates the internal consistency of the items in each domain. The tested and analysed items were the final and latest version of the questionnaire after the experts had validated the content with some revisions for a better form of the questionnaire. This phase of conducting the inter-item reliability is called a pre-test. The questionnaire was distributed for the first time after validation, which started in June 2022. A total of 23 respondents were needed to answer the questionnaire for this phase, inter-item reliability. This sample size has been calculated by using the Intraclass Correlation (ICC) hypothesis method (5).

The results of Cronbach's alpha for both domains in the questionnaire showed moderate reliability (Understanding: 0.502, Interpretation: 0.503). Overall, the questionnaire achieved medium or moderate reliability as Cronbach's alpha value for the whole questionnaire consisting of two domains was 0.503. This indicates that the responses from the respondents towards the questions of each domain have a good correlation within them. It also demonstrated an acceptable internal consistency as it complies with acceptable and moderate values (15).

Slightly similar results were obtained in a study assessing the eighth item of the Morisky Medication Adherence Scale MMAS. The Cronbach's alpha value recorded was 0.675, indicating the MMAS scores had a moderate internal consistency (16). The same goes for a study held at a preschool in northern Greece where Cronbach's alpha values ranged from 0.51, 0.70 and 0.66 for manual dexterity, aiming and catching, and balance tasks group (17). As Cronbach's alpha value was classified as moderate reliability and supported by other homogenous studies, no item was removed in this study.

In addition, a few possible factors lead to moderate reliability, indicating moderate internal consistency within the items. Firstly, the study's number or sample size affects the value of Cronbach's alpha. This has been reported in a study where the coefficient would be somewhat sensitive towards a small sample size, resulting in low or moderate values with unstable correlation (18). Apart from that, the existence of outliers for the ordinal item will inflate the coefficient alpha value (11). Ordinal data were frequently used in reliability-related studies using Cronbach's alpha value. It can be seen through neither the types of items' responses which usually involved Likert scale responses nor other types of ordinal or rating scale items, including the ordered categorical type of responses for the items.

The Intra-class Correlation Coefficient (ICC) was used to determine this questionnaire's stability (test-retest reliability). It was assessed by the two-week interval of administration, which requires two times administration of the questionnaire to the respondents. The duration of the interval stated above has been put by referring to the suggestion by Bolarinwa (14) where a two-weeks

time frame within the tests was suitable enough for the respondents to minimise their perception changes and be unable to recall their first responses.

From the result, most of the ICC scores obtained for all items of each domain were in a good range as values from $r = 0.682$ (moderate reliability) to $r = 1.000$ (excellent reliability) (13). Moreover, the p-value for all of the items from both domains has lower than 0.05 indicating a significant result. Hence, the result of the test-retest on the questionnaire in this study had good reliability and stability, which was aligned with the research conducted by Bolarinwa (14).

This study's limits and recommendations have been identified, and they must be considered to improve the outcomes and question structure. Firstly, the data distribution was not even as most respondents who answered the questionnaire ranged from 18-20 years old, and the others came from older adults. This age gap might influence the need for understanding and interpretation of HCL. With that, it is recommended that future researchers have or make sure a uniform number of respondents for every age category receive better feedback. It could increase the reliability of the questionnaire. Other than that, the sentence structure of the questions in the developed questionnaire was complex, which hardened the respondents in one time read. Therefore, in the future, the questions should be built with a simple or moderate sentence structure to help the respondents easily understand the context of the questions. This will contribute to the reliability of the questionnaire as the respondents answered not with a limited reading capability. In addition, the variations in feedback or filling the content validation form by the expert panels lead to confusion in the researcher to analyse. Therefore, clearer guidelines and instructions should be drafted and listed at the beginning of the form to assist the expert panels in writing and giving the comments more appropriately.

Conclusion

The initial 26 questions were drafted during the development of the questionnaire and finalised with 18 questions that passed through and were accepted throughout both phases, validation and reliability. This was evidenced by the relevant CVI and CVR values on the validation part, followed by rational Cronbach's alpha and ICC values for the reliability tests performed on the data. Consequently, this study exhibits that the questionnaire's high reliability and validity can help understand and interpret the HCL among consumers in Malaysia.

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Competing interests

The authors declare there is no conflict of interest.

Ethical clearance

We obtained approval from the Research Ethics Committee ref.no: REC/06/2021 (MR/396) and Medical Research and Ethics Committee (MREC) and the Ministry of Health Malaysia (MOH), registered under NMRR-21-1062-60203.

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