

# Translation for cultural adaptation of a breast cancer questionnaire

Yuzana Mohd Yusop<sup>1\*</sup>, Azlini Chik<sup>2</sup>, Rosliza Yahaya<sup>1</sup>, Muhammad Takiyuddin Abdul Ghani<sup>3</sup>, Wan Mohamad Asyraf Wan Afthanorhan<sup>3</sup>, Zakirah Ahmad Nawi<sup>1</sup>, Harmy Mohamed Yusoff<sup>1</sup>

<sup>1</sup>Department of Medicine, Universiti Sultan Zainal Abidin, Medical Campus, Terengganu, Malaysia

<sup>2</sup>Department of Applied Social Science, Universiti Sultan Zainal Abidin, Gong Badak Campus, Terengganu, Malaysia

<sup>3</sup>Department of Business and Management, Universiti Sultan Zainal Abidin, Gong Badak Campus, Terengganu, Malaysia

**ABSTRACT** **Background:** Malaysia, a country with a population of nearly 35 million, consists of diverse ethnicities and races. This diversity highlights the need for research tools or measures validated across different cultures. The objective of this article was to translate and culturally adapt the Southeast Asian Women's Breast Cancer Questionnaire (SAWBCQ) to fit the Malaysian context.

**Materials and methods:** The translation and cultural adaptation of the SAWBCQ followed Beaton's recommended steps. This includes translation, synthesis of discrepancies, back translation, and expert committee review and pretesting, and the adaptation procedure involves examining the conceptual and item equivalence. An expert committee synthesized and compared two forward and two back-translations. Subsequently, the instrument underwent pretesting, and necessary adjustments were made. In the pretest, a total of 25 participants answered the questionnaires and evaluated them based on understandability, clarity, relevance, and simplicity. Vocabulary variations were resolved through consensus among translators during the translation process.

**Results:** The expert committee concluded that the Malay version achieved semantic, idiomatic, cultural, and conceptual equivalence, although some adjustments were necessary. Pretesting and face validity were conducted on the adult participants, with 80.0% finding the items comprehensible. The SAWBCQ was successfully translated and culturally adapted to the Malay version, which is easily understandable, clear, simple and relevant to Malaysian culture.

**Conclusion:** It is crucial to assess the questionnaire's properties to ensure that an adapted version can be made available. The incompatibility of the original questionnaire emphasizes the importance of adapting instruments to current research settings. It also emphasizes the significance of ensuring that concepts within an instrument are equal between the original and target language and context. Thus, it is essential to consider possible barriers when directly comparing different nations, cultures, and times.

**Keywords:** Breast cancer; Screening; Translation; Cultural; Adaptation; SAWBCQ

## INTRODUCTION

Breast cancer is the most prevalent form of cancer and the primary cause of cancer-related deaths among women globally. It is the most commonly diagnosed cancer and continues to be a major contributor to cancer-related fatalities in women. The impact of breast cancer on individuals and societies is significant, highlighting the need for ongoing efforts in research, prevention, early detection, and treatment. In Asia, including Malaysia, the Age-Standardized Incidence Rate (ASR) stands at 34.1 per 100,000 individuals. The World Health Organization (WHO) has introduced a new Global Breast Cancer Initiative Framework, aiming to save 2.5 million lives from breast cancer by 2040. A study conducted in 2020 by the International Agency for Research on Cancer revealed that out of an estimated 4.4 million women who died from cancer in 2020, nearly 1 million children were left orphaned by cancer, with breast cancer accounting for 25.0% of cases. Despite the various challenges, screening programs that encompass self and clinician breast examinations and mammograms have been recommended as crucial initial steps in enhancing public awareness [1]. This ensures timely diagnosis and treatment and promotes cancer prevention. Despite the availability of preventive services, the level of community involvement in these activities has been inconsistent and limited. The uptake of breast cancer screening in developed countries has been associated with various factors, including age, marital status, higher socioeconomic status, endorsement from physicians, and higher social status. In addition, multiple research studies conducted in Malaysia have indicated that the topics of knowledge and awareness have been centered around the neglect of breast cancer screening, with various tools being utilized to assess the situation [2].

The initial step in this significant research project involves utilizing the Southeast Asian Migrant Women's Breast Cancer Questionnaire (SAWBCQ) from Australia to investigate the factors contributing to the low rates of breast cancer screening among Malaysian women. The first stage of the study will focus on translating and culturally adapting the questionnaire to ensure its relevance and appropriateness for the Malaysian context. No consensus exists on the appropriate approach to modify an instrument for utilization in a different cultural environment. Nevertheless, it is widely acknowledged that directly translating and employing a questionnaire in another linguistic context is unsuitable. Malaysia boasts a rich tapestry of diverse ethnic groups, languages, and cultural traditions. Notably, the way individuals perceive and react to research inquiries may be significantly shaped by their cultural heritage and fluency in language. Translating research instruments into the appropriate languages spoken in Malaysia can guarantee that participants grasp the questions thoroughly and offer precise responses. In addition, the process of adaptation extends beyond

### Address for correspondence:

Yuzana Mohd Yusop  
Department of Medicine  
Universiti Sultan Zainal Abidin, Medical Campus,  
Terengganu, Malaysia  
E-mail: yuzanayusop@unisza.edu.my

**Word count:** 4478 **Figures:** 01 **Tables:** 01 **References:** 41

**Received:** 10 September, 2024, Manuscript No. OAR-25-147655;

**Editor assigned:** 12 September, 2024, PreQC No. OAR-25-147655 (PQ);

**Reviewed:** 30 September, 2024, QC No. OAR-25-147655;

**Revised:** 05 December, 2025, Manuscript No. OAR-25-147655 (R);

**Published:** 29 December, 2025, Invoice No. J-147655

simple translation [3]. It entails thoroughly examining the questionnaire's content and language to ensure its resonance with the Malaysian population. This may involve refining the wording of questions, altering response choices, and integrating culturally significant examples or references. Through this adaptation, researchers can mitigate the potential for misinterpretation, enhance the pertinence of the inquiries, and elevate the overall caliber of the gathered data. The significance of translation, adaptation, and cultural assimilation in research questionnaires for the Malaysian context cannot be emphasized enough. Malaysia is a society that is rich in diversity, with multiple languages, customs and beliefs [4]. To ensure the credibility and dependability of research findings, it is imperative to tailor research instruments to the local context, considering cultural, linguistic, and social factors. Furthermore, the translation process involves converting research instruments from the original language to the desired language while maintaining conceptual equivalence. This is crucial to ensure that the translated instrument accurately captures the intended meaning and concepts. Meanwhile, adaptation entails modifying the research instrument to suit the local context, considering cultural, linguistic, and social factors. This includes adjusting the language, content, and format of the instrument to make it more pertinent and accessible to the target population. Notably, cultural adaptation plays a vital role in the translation and adaptation process [5-7].

Thus, this paper aims to elucidate the translation processes employed in adapting the SAWBCQ questionnaire to the Malaysian context, encompassing language translation, cultural assimilation and adaptation.

## **MATERIALS AND METHODS**

This study can be classified as a methodological study. This article is part of the translation process, and researchers have adapted it culturally for the purpose of the main study. The study's design, setting, and time frame adhere to the guidelines established by Beaton et al. in 2000, which have also been implemented by several other researchers. This process follows internationally accepted guidelines, which make it costly and time-consuming. Researchers evaluated the need for the proposed and internationally accepted methodological steps in the translation and cultural adaptation of Southeast Asian Women's Breast Cancer Questionnaire (SAWBCQ) questionnaires. However, the pilot study and validation of the entire questionnaire will not be part of the process

for the main study [8].

### **Original instrument**

Hossain, Robinson, and Clarke initially created the original questionnaire, which is SAWBCQ in English, and employed it in a prior study on breast screening for Southeast Asian migrant women in Australia. This instrument will be modified for multiracial Malaysians to know about awareness of breast cancer screening nationwide for the major study. The questionnaire consisted of 69 questions, primarily focusing on closed-ended questions. It encompassed six categories: Socio-demographic information (14 questions), breast cancer knowledge (6 questions), breast self-examination, clinical breast examination and mammography practices and knowledge (22 questions), breast cancer history (7 questions), personal health (10 questions), and breast cancer concerns (10 questions). The questionnaire design was influenced by the Health Belief Model (HBM) [9-13].

### **Instrument selection**

A significant number of Malaysian women, regardless of their location (urban or rural), have reported facing more barriers to breast cancer screening, particularly mammograms. The awareness and health-seeking behavior of women in Malaysia are influenced by their ability to adapt and adopt the local culture. The research team extensively reviewed various articles related to the breast cancer tool, finally leading to the selection of the Southeast Asian migrant women's breast cancer questionnaire [14-16].

### **Translation and adaptation process**

This process involved translation stages to the Malay language, synthesis of translations, back-translation to the original language, evaluation by an expert committee, and pretesting, all documented in a written report. The entire process spanned several months to finalize and required specific funding for the professional service.

### **Study procedure**

As the original questionnaire was from another country and in English, there is a need for translation and cultural adaptation to be used in Malaysia. Beaton et al. described the translation process as having several stages. Figure 1 displays a proposed order of the translation and adaptation process of the SAWBCQ instrument. Initially, it is crucial to evaluate whether there is a consistent relationship between the questionnaire and the underlying concept in both the original and target environments (Figure 1) [17-20].

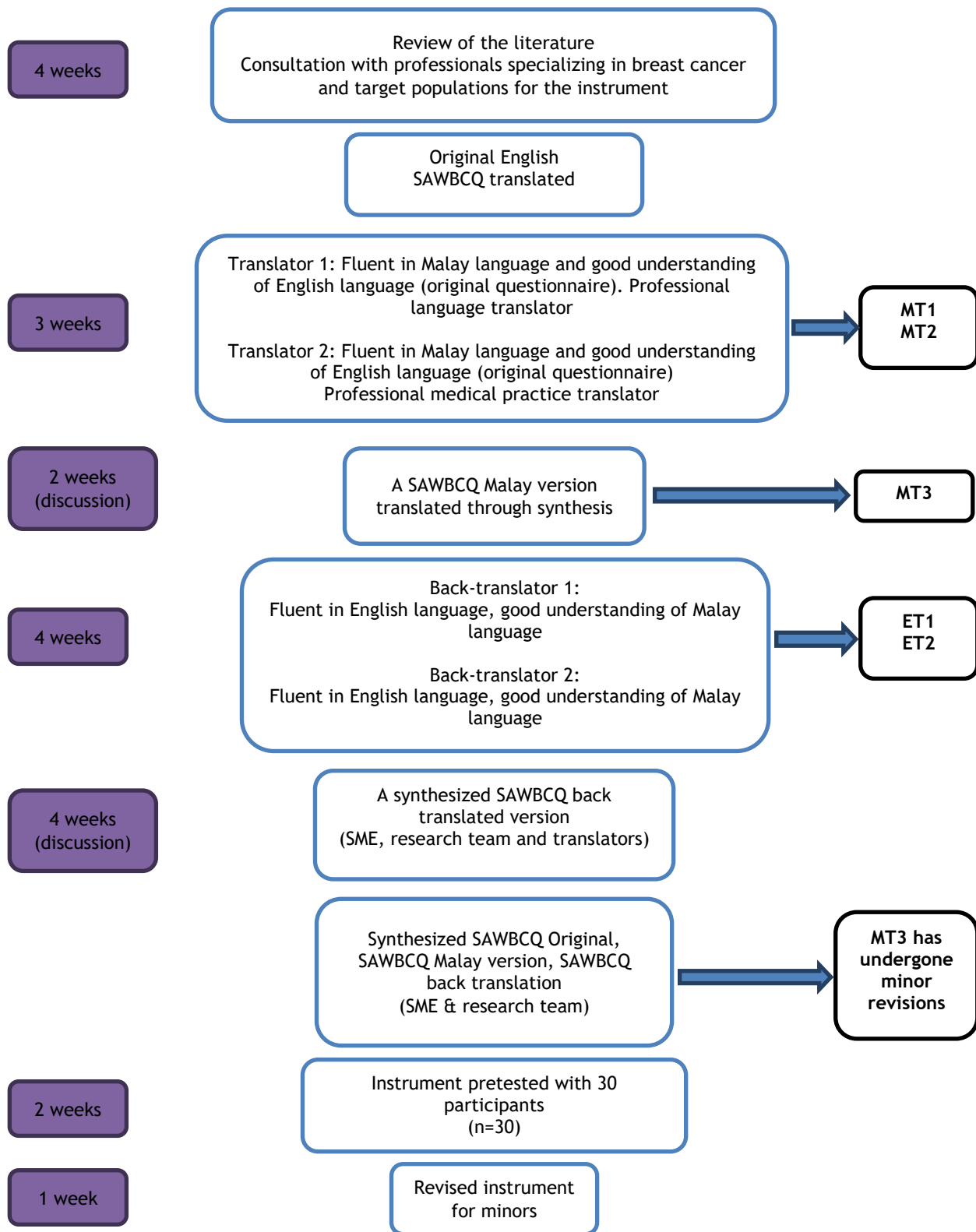


Fig. 1. Translation and adaptation process of SAWBCQ.

**First stage: Initial translation:** Two Malaysian language translators initiated the process. The translator from Malaysia, referred to as MT1 in this project, is the initial professional translator who is a native speaker of Malaysia and possesses a high proficiency in English. As Malaysian Translator number two (MT2), another translator was a medical doctor familiar with the issue and a Malaysian who spoke English fluently. The medical professional was previously employed as a medical interpreter within the field of medical research. Each translator prepares a written report detailing their translation work. They also include additional notes to point out any confusing phrases or uncertainties they encounter.

**Second stage: Synthesis of the translations:** Once the instrument has been translated, the subsequent stage involves assessing the translated version by a panel of proficient researchers and evaluators who are well-versed in the specific field of study and fluent in both the original language and the language into which the instrument has been translated. In addition, these two Malay questionnaire versions were analyzed and compared, with the wording of those items evaluated as presenting difficulties in comprehension or inadequately communicating their intent resolved by consensus among the researchers' team, professionals in the breast cancer field and translators, resulting in MT3, a synthesis of these translations [21-25].

**Third stage: Back-translation:** To move the process forward, at the third stage, the synthesis of the first two translations (MT3) was independently back translated by two bilingual translators. These translators spoke English as their first language, were fluent in Malay, and lived in Malaysia; one is a Singaporean with a background in health science and the other is an international staff member with no health-related background. The initial phase of the translation process did not involve any of these translators and they were unaware of the original version of the questionnaire. As a result of this stage, two new English translation versions of the questionnaire (ET1 and ET2) were created [26,27].

**Fourth stage: Expert committee review:** The new versions (ET1 and ET2) were carefully examined, and any inconsistencies were resolved by the translators' suggestions, allowing any proposed changes to be incorporated into the Malaysian version. A consensus version was derived from this evaluation. Given the absence of significant disparities, it was determined that the synthesized Malaysian translation version was suitable for submission to the expert committee. To achieve apparent or face validity for the subsequent phase, which involves MT3 content and the development of the pre-final version for pretesting, a panel of experts in the relevant field possessing specific knowledge of the assessed work through the questionnaire acknowledged the synthesis of the translated version [28-30].

The panel of experts consisted of two radiologists who are medical specialists and two social science lecturers. One of the lecturers is an expert in community-based cancer-related projects, while the other is a certified social mentor in psychology. Moreover, all the specialists meet the inclusion criterion of having more than ten years of experience in health science. The professionals evaluated various factors, including each questionnaire item's equivalence of semantics, idioms, experience and concepts. They provided recommendations for necessary modifications and improvements. Additionally, they were asked to assess the structure, layout, and instructions for filling out the questionnaire.

**Fifth stage: Test of the prefinal version:** The pretest is the final stage of the adaptation process. During this stage, researchers administer the new questionnaire to participants from the target setting using the pre-final version. A total of thirty subjects were recruited to provide their feedback by completing the questionnaire. However, a mere twenty-five individuals provided accurate responses to the questionnaire, while the remaining participants failed to answer nearly half. Participants could provide comments on any unclear terms or questions, as well as offer suggestions for improvement [31-33]. Several individuals have expressed their thoughts by leaving comments on specific words and questions. Upon receiving the questionnaires, the researchers inquired about the participants' perception of the overall questionnaire difficulty level. Most participants indicated they found the questions easy to comprehend, with only a few confusing terms. This feedback was specifically provided in response to a particular question. It is vital to acknowledge that while this phase offers a valuable understanding of how individuals interpret the questionnaire items, it does not encompass the construct validity, reliability, or item response patterns equally crucial in describing a successful cross-cultural adaptation. However, the outlined procedure does contribute to a certain extent of quality in terms of content validity [34].

**Final stage: Submission of documentation to the coordinating committee for appraisal of the adaptation process:** The final step in the SAWBCQ adaptation process involves submitting all reports and forms to the researchers' committee responsible for monitoring the translated version of the instrument. Note that the

research committee is not responsible for modifying the content; it is expected that a reasonable translation has been accomplished by adhering to this procedure.

## RESULTS

A range of Beaton et al.'s steps for questionnaire translations were assessed for each specific item. Some items included a combination of terms from both translations, especially from English to Malay. It was verified that there were no major conflicting words or phrases in the forward and backward translation processes. Nevertheless, slight differences in vocabulary were detected and resolved through discussion and consensus among the translators, Subject Matter Experts (SMEs), and the research team. Despite the diverse racial makeup of Malaysia, all Malaysians are required to learn the Malay language as the primary subject to ensure that everyone can effectively communicate in Malay. However, the phrases and terminology in the Malay language cannot be directly translated from English. The original meaning of the Malay terms and phrases related to health is preserved and can be understood by all members of the Malaysian community if they are used within the context of breast cancer [35-37].

The SME and the research team carefully selected items that better aligned with the original goal for this phase. They specifically select items that preserved the semantic equivalence of "Do the words have the same meaning?" For example,

- God's punishment as takdir
- Fate as takdir
- Convenience location as mudahdikunjungior berdekatan

For the idiomatic equivalence of "Is there equivalence in slang and colloquial expressions?" and the conceptual equivalence of "Are concepts consistent across cultures?"; and had a clear and simple vocabulary, particularly in medical terms. For instance:

- Prescriptions as preskripsiubat or slip ubat
- Cost as kos perubatan or hargaperubatan
- Homeopath as perubatantradisional

Correspondingly, recommendations for adjustments primarily centered on the language and phrases utilized during the expert assessment stage. Given the diverse population in Malaysia comprising Malays, Chinese, Indians and other ethnicities, it is crucial that the Malay translation of the questionnaire is comprehensible to all.

For the back translation process from Malay to English, several phrases may differ from the original SAWBCQ; however, the meaning is the same as the original version. When the research team did the process of back translation by hiring a skilled person, they wanted to maintain the accuracy that involves translating materials and then translating them back into the language of the original source text. For example,

- "Apakahalasananda?" as "What was the reason?"
- "Temujanji" as "Make an appointment"
- "Apakah yang anda pertimbangkan..." as "What are the following factors important for you..."
- "Tiada kebenaransuami" as "Objection from husband"

The initial version of SAWBCQ primarily offered numerous answer options tailored to the Australian Asian population residing in that developed country. Nevertheless, it does not align with the

Malaysian community and the country's circumstances, multiracial and Muslim as the main religion of the country. For example, in the original version of the questionnaire, the highest education level has listed seven option answers from no formal education to the postgraduate level. For the Malay translation version, from the translation and adaptation procedure, the research team has minimized the answer to four choices. Researchers and SMEs have reached a consensus that certain answers in the questionnaire should be reduced or grouped together for the Malaysians to gain a better understanding, as indicated in Table 1. However, several answers provided in the original version of SAWBCQ are not pertinent to the Malaysian environment and culture [38]. These modifications ensured that the language, format, and answer choices could be applied in various settings and among different demographics. Most of the terminology and phrases were used to answer the question of language familiar to the community. Furthermore, researchers, translators and SMEs evaluated whether the expressions were appropriate for the target population and if the question arrangement and questionnaire length were suitable for gathering the desired information.

## DISCUSSION

The systematic translation and cultural adaptation of the breast cancer questionnaire for the Malaysian community were carried out, ensuring satisfaction at each stage of the process. The structure and presentation of the questionnaire were preserved as per the original version, as no difficulties or errors were encountered in its completion. There were no significant differences between the two translations examined in the study. However, the research team has incompatible opinions regarding the suggestions provided by one of the translators, who lacked expertise in the field of health. This selection was made since the alternative translation was deemed more suitable and easily understandable for the questionnaire's target population. Regarding the overall translation process, it is worth highlighting that it successfully achieved its objective by ensuring that the questionnaire remained unaffected by any external influences during the development of the consensus version. During the back-translation stage, no issues were identified that could impede the method's accuracy or deviate from the Malay language context [39]. The back translation method can also be beneficial in creating creative content for easy understanding of the layman's terminology and phrases (Table 1).

<b>Tab. 1.</b> Translation and adaptation items in SAWBCQ.	<b>Original english SAWBCQ questionnaire item</b>	<b>SAWBCQ has been translated back into english from the Malay-translated questionnaire</b>	<b>Justifications</b>
	Highest attained level of education: i. No formal education ii. Primary school iii. Secondary iv. Tertiary v. Diploma vi. Undergraduate degree vii. Postgraduate degree	Level of education: i. Primary School ii. Secondary School iii. Institute/Center of Higher Education iv. Others/Informal Education (e.g. MaahadTahfiz/ SekolahPondok)	Reduce the answer choices to cater to the Malaysian culture, ensuring that they are easily comprehensible, concise, straightforward and pertinent to the local population
	Employment status (main employment): i. Unemployed ii. Full time iii. Part-time iv. Casual/Contract	Employment status: i. Working full time ii. Work part-time iii. Not working Others state:-----	
	Which of the following treatment services did you seek? (You can choose more than one answer from the following): i. General practitioner ii. Paramedic iii. Pharmacy iv. Hospital v. Naturopath vi. Homeopath vii. Oncologist viii. Radiologist	What are the treatment options if you have breast cancer? i. Modern treatment ii. Traditional treatment iii. Not related Others state:-----	

Regarding the questionnaire assessment phase conducted by the experts' committee, essential adjustments were made and subsequently evaluated by the research team members, taking cultural relevance into account. Upon assessing the challenges, adjustments were made to the items. While the outcomes were deemed satisfactory regarding item comprehension, it is worth mentioning that certain items posed technical jargon and translation difficulties.

As a result, this study identified the necessity to make conceptual modifications to specific words and phrases that impeded semantic equivalence and subsequently, comprehension of the original questionnaire's information. Concerning the face validity phase, most participants over 18 were given instructions to report any challenges they encountered in understanding the items. This questionnaire needs to be evaluated by adults of diverse ages, backgrounds, professions, and residing in different areas or regions, as it will be used for adults in Malaysia once it has been validated [40].

Even though the questionnaire underwent translation, back translation, and review by professionals with expertise in the subject matter, the most authentic and human perspective is that of the subjects when confronted with the item of study. Nevertheless, to reduce potential response biases, the researchers personally administered the questionnaire, as this is a critical moment for clarifying any uncertainties and confirming the respondents' interpretations, as well as allowing for an estimation of the time required to complete the questionnaire.

In this scenario, the questionnaire had already determined the questions, with the researcher simply presenting them and explaining the topic under study. One advantage of this direct interaction approach is that it yields higher and speedy response rates. Furthermore, the usability of the questionnaire was always taken into consideration, given the effort required from participants in terms of time and costs. In essence, aspects such as comprehension, relevance, and clarity of each item were initially examined through expert analysis and suggestions. Subsequently, the target population was involved in the face validity phase to ensure agreement between the expert committee and the local context, specifically in relation to Malaysian reality [41].

## Progress made in the field of healthcare research

In terms of knowledge in the field of health science, it can be stated that utilizing a questionnaire will facilitate the acquisition of various knowledge by the adult population to take care of their health. Additionally, it will enable spouses and family members to undergo breast cancer screening, thereby allowing the development of strategies and approaches for future intervention programs.

## CONCLUSION

The Southeast Asian migrant women's breast cancer questionnaire underwent a meticulous selection process, translation and cultural adaptation, adhering to the recommended stages both within Malaysian culture and internationally. This process was performed successfully, ensuring that the translation and cultural adaptation maintained crucial elements of validity. The results indicate that comprehension, agreement, clarity and pertinence were effectively achieved, even with the required modifications. However, it is essential to note that this process was prepared before the pilot study and the main validation process.

## Reflection of this study

Developing a questionnaire or research tool for a particular cultural setting, like raising awareness about breast cancer in Malaysia, necessitates meticulous attention to detail and a comprehensive comprehension of the cultural intricacies at play. This undertaking encompasses various essential stages, such as translation, cultural adaptation, and back translation, which demand considerable time and resources. Note that the entire process of crafting a culturally tailored questionnaire typically takes around six months to accomplish. This timeframe encompasses the following pivotal stages:

**The questionnaire:** Finding an appropriate questionnaire for breast cancer awareness may take up to a month, depending on the availability of existing questionnaires and the time needed to evaluate and select the most suitable one. Additionally, obtaining permission from the questionnaire's owner can further extend the overall duration of the process.

**Process of translation:** It is crucial to identify a competent translator who is well-versed in the specific cultural context and possesses expertise in the relevant field, such as breast cancer awareness. This step can take several weeks to a few months, depending on the availability of qualified translators.

**Cost considerations for hiring translators:** The cost of hiring professional translators can vary significantly, depending on their qualifications, experience and the complexity of the translation task. It is essential to include this expense in the overall budget for the research project.

**Establishing a subject matter expert committee:** Forming a committee of SMEs with knowledge of breast cancer awareness requires substantial time and effort to secure their commitment. This process can take several weeks. Once the SMEs have been identified and agreed upon, an official appointment letter must be issued, which can contribute to the overall duration of the process.

**Back translation:** Back translation is a process that involves translating a translated questionnaire back into the original language to ensure accuracy and cultural relevance. The duration of this process can vary from several weeks to a few months, depending on the complexity of the translation and the availability of translators.

**Time and space for the translator:** The translator plays a vital role in this process as they need to thoroughly understand the cultural context and accurately convey the intended meaning of the questionnaire. It is crucial to carefully consider the time and space requirements of the translator to ensure that they can efficiently and effectively complete the task.

Creating a culturally tailored questionnaire for breast cancer awareness in Malaysia is a complex and time-consuming endeavor that demands meticulous planning, attention to detail and substantial resources. Researchers must dedicate time and effort to locating proficient translators, engaging SMEs and verifying the cultural appropriateness of the questionnaire prior to piloting it and proceeding with the validation process. Notably, the translation phase itself was time-consuming, as researchers are required to guarantee the accuracy and quality of the translated content. Despite the arduous process, we were resolute in developing a user-friendly tool that was straightforward, coherent and universally understood across various ethnicities in Malaysia. Furthermore, we recognized the significance of this tool for our research and its potential to enhance our comprehension of the requirements

and encounters of breast cancer patients in Malaysia. In summary, the translation and cultural adaptation process was protracted and demanding, yet essential to ensure the precision, dependability, and cultural sensitivity of our research instrument.

## ACKNOWLEDGEMENT

Authors acknowledge all the respondents who participated in this study.

## CONFLICT OF INTEREST

The author(s) certify that they have no conflict of interest in the subject matter or materials discussed in this manuscript.

## FUNDING

This project was supported by the UniSZA/2022/KRIS/HPU(007).

## AUTHORSHIP CONTRIBUTION

**Conceptualization:** Yuzana Mohd Yusop, Azlini Chik, Rosliza Yahaya, Muhammad Takiyuddin Abdul Ghani, Wan Mohamad Asyraf Wan Afthanorhan, Zakirah Ahmad Nawawi, Harmacy Mohamed Yusoff.

**Research:** Yuzana Mohd Yusop, Zakirah Ahmad Nawawi, Azlini Chik, Rosliza Yahaya, Muhammad Takiyuddin Abdul Ghani, Wan Mohamad Asyraf Wan Afthanorhan, Harmacy Mohamed Yusoff.

**Data curation:** Yuzana Mohd Yusop, Zakirah Ahmad Nawawi, Azlini Chik, Rosliza Yahaya, Muhammad Takiyuddin Abdul Ghani, Wan Mohamad Asyraf Wan Afthanorhan, Harmacy Mohamed Yusoff.

**Formal analysis:** Yuzana Mohd Yusop, Azlini Chik, Zakirah Ahmad Nawawi, Rosliza Yahaya, Muhammad Takiyuddin Abdul Ghani, Wan Mohamad Asyraf Wan Afthanorhan, Harmacy Mohamed Yusoff.

**Methodology:** Yuzana Mohd Yusop, Azlini Chik, Rosliza Yahaya, Wan Mohamad Asyraf Wan Afthanorhan, Muhammad Takiyuddin Abdul Ghani, Zakirah Ahmad Nawawi, Harmacy Mohamed Yusoff.

**Writing-original draft:** Yuzana Mohd Yusop, Zakirah Ahmad Nawawi, Azlini Chik, Rosliza Yahaya, Muhammad Takiyuddin Abdul Ghani, Wan Mohamad Asyraf Wan Afthanorhan, Harmacy Mohamed Yusoff.

**Writing-revision and editing:** Yuzana Mohd Yusop, Azlini Chik, Rosliza Yahaya, Muhammad Takiyuddin Abdul Ghani, Wan Mohamad Asyraf Wan Afthanorhan, Zakirah Ahmad Nawawi, Harmacy Mohamed Yusoff.

## REFERENCES

1. Al-Hanawi MK, Hashmi R, Almubark S, Qattan AM, Pulok MH. Socioeconomic inequalities in uptake of breast cancer screening among Saudi women: A cross-sectional analysis of a national survey. *Int J Environ Res Public Health*. 2020; 17:2056.
2. Akhtari-Zavare M, Juni MH, Ismail IZ, Said SM, Latiff LA. Barriers to breast self-examination practice among Malaysian female students: A cross-sectional study. *SpringerPlus*. 2015; 4:1–6.
3. Alaudeen SRBS, Ganesan K. Knowledge, attitude, and practice of Malaysian medical students towards breast cancer: A cross-sectional study. *Intern Med Care*. 2019; 3:1-7.
4. Appiah KA. Thick translation. In: Venuti L, editor. *The Translation Studies Reader*. London: Routledge; 2021. p. 339–351.
5. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*. 2000; 25:3186–3191.
6. Britt KL, Cuzick J, Phillips KA. Key steps for effective breast cancer prevention. *Nat Rev Cancer*. 2020; 20:417–436.
7. Consedine NS, Magai C, Krivoshekova YS, Ryzewicz L, Neugut AI. Fear, anxiety, worry, and breast cancer screening behavior: A critical review. *Cancer Epidemiol Biomarkers Prev*. 2004; 13:501–510.
8. Daikeler J, Bošnjak M, Lozar Manfreda K. Web versus other survey modes: An updated and extended meta-analysis comparing response rates. *J Surv Stat Methodol*. 2020; 8:513–539.
9. Elangovan N, Sundaravel E. Method of preparing a document for survey instrument validation by experts. *MethodsX*. 2021; 8:101326.
10. El-Kassas WS, Salama CR, Rafea AA, Mohamed HK. Automatic text summarization: A comprehensive survey. *Expert Syst Appl*. 2021; 165:113679.
11. Fallas-Escobar C, Henderson K, Lindahl K. "I look Mexican, so they assume I speak Spanish": Latinx teacher candidates' experiences with raciolinguistic policing. *Mod Lang J*. 2022; 106:196–215.
12. Geldsetzer P. Use of rapid online surveys to assess people's perceptions during infectious disease outbreaks: A cross-sectional survey on COVID-19. *J Med Internet Res*. 2020; 22:e18790.
13. Guillemin F. Cross-cultural adaptation and validation of health status measures. *Scand J Rheumatol*. 1995; 24:61–63.
14. Gong Y, Gao X, Li M, Lai C. Cultural adaptation challenges and strategies during study abroad: New Zealand students in China. *Lang Cult Curric*. 2021; 34:417–437.
15. Goyal AK, Bakshi J, Panda NK, Kapoor R, Vir D, et al. A hybrid method for the cross-cultural adaptation of self-report measures. *Int J Appl Posit Psychol*. 2021; 6:45–54.
16. Hawkins M, Cheng C, Elsworth GR, Osborne RH. Translation method is validity evidence for construct equivalence: Analysis of secondary data routinely collected during translations of the health literacy questionnaire (HLQ). *BMC Med Res Methodol*. 2020; 20:1–13.
17. Herdman M, Fox-Rushby J, Badia X. A model of equivalence in the cultural adaptation of HRQoL instruments: The universalist approach. *Qual Life Res*. 1998; 7:323–335.
18. Hernandez A, Hidalgo MD, Hambleton RK, Gómez Benito J. International Test Commission guidelines for test adaptation: A criterion checklist. *Psicothema*. 2020; 32:390–398.
19. Htay MNN, Donnelly M, Schliemann D, Loh SY, Dahlui M, et al. Breast cancer screening in Malaysia: A policy review. *Asian Pac J Cancer Prev*. 2021; 22:1685.
20. Hossain SZ, Robinson L, Clarke J. Breast cancer knowledge and participation in breast screening practices among Southeast Asian women living in Sydney. *GSTF J Nurs Health Care*. 2016; 3.
21. Kelly KM, Shetty MK, Fregnani JHTG. Breast cancer screening and cervical cancer prevention in developing countries: strategies for the future. In: *Breast and Gynecological Cancers*. New York: Springer; 2013. p. 301–329.
22. Lee MS, Ma'aruf CAA, Izhar DPN, Ishak SN, Jamaluddin WSW, et al. Awareness on breast cancer screening in Malaysia: A cross-sectional study. *BioMedicine*. 2019; 9.
23. Ministry of Health Malaysia. *Malaysia cancer statistics: Data and figures Peninsular Malaysia*. National Cancer Registry. Putrajaya: Ministry of Health Malaysia; 2019.
24. Mohan D, Su TT, Donnelly M, Hoe WMK, Schliemann D, et al. Breast cancer screening in semi-rural Malaysia: Utilisation and barriers. *Int J Environ Res Public Health*. 2021; 18:12293.
25. Pashayan N, Antoniou AC, Ivanus U, Esserman LJ, Easton DF, et al. Personalized early detection and prevention of breast cancer: ENVISION consensus statement. *Nat Rev Clin Oncol*. 2020; 17:687–705.
26. Pommée T, Balaguer M, Maclair J, Pinquier J, Woisard V. Intelligibility and comprehensibility: A Delphi consensus study. *Int J Lang Commun Disord*. 2022; 57:21–41.
27. Reichenheim ME, Moraes CL. Operationalizing the cross-cultural adaptation of epidemiological measurement instruments. *Rev Saude Publica*. 2007; 41:665–673.
28. Salem H, Daher-Nashif S. Psychosocial aspects of female breast cancer in the Middle East and North Africa. *Int J Environ Res Public Health*. 2020; 17:6802.
29. Sekhon M, Cartwright M, Francis JJ. Development of a theory-informed questionnaire to assess the acceptability of healthcare interventions. *BMC Health Serv Res*. 2022; 22:279.
30. Shan Y, Xing Z, Dong Z, Ji M, Wang D, et al. Translating and adapting the DISCERN instrument into a simplified Chinese version and validating its reliability: Development and usability study. *J Med Internet Res*. 2023; 25:e40733.
31. Sharma H. How short or long should be a questionnaire for any research? Researchers' dilemma in deciding the appropriate questionnaire length. *Saudi J Anaesth*. 2022; 16:65–68.
32. Sit HF, Ling R, Lam AIF, Chen W, Latkin CA, et al. The cultural adaptation of Step-by-Step: An intervention to address depression among Chinese young adults. *Front Psychiatry*. 2020; 11:650.
33. Stantcheva S. How to run surveys: A guide to creating your own identifying variation and revealing the invisible. *Annu Rev Econ*. 2023; 15:205–234.
34. Swami V, Barron D. Translation and validation of body image instruments: Challenges, good practice guidelines and reporting recommendations for test adaptation. *Body Image*. 2019; 31:204–220.
35. Wang W, Lee H, Fetzer SJ. Challenges and strategies of instrument translation. *West J Nurs Res*. 2006; 28:310–321.
36. Wen X, Piao M. Motivational profiles and learning experience across Chinese language proficiency levels. *System*. 2020; 90:102216.
37. Wilartratsami S, Luksanaprukha P, Santipas B, Thanasomboonpan N, Kulprasutdilok P, et al. Cross-cultural adaptation and psychometric testing of the Thai version of the spinal cord independence measure III-self report. *Spinal Cord*. 2021; 59:291–297.
38. Wolcott MD, Lobczowski NG. Using cognitive interviews and think-aloud protocols to understand thought processes. *Curr Pharm Teach Learn*. 2021; 13:181–188.
39. World Health Organization. *WHO launches new roadmap on breast cancer*. Geneva: WHO; 2023.
40. World Health Organization. *WHO launches new roadmap on breast cancer [Internet]*. Geneva: WHO; 2023.
41. Agic Z, Vulic I. JW300: A wide-coverage parallel corpus for low-resource languages. In: *Proceedings of the Association for Computational Linguistics*. 2019.