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Malay version of the mhealth app usability questionnaire (M-MAUQ): Translation, adaptation, and validation study
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Abstract
Background: Mobile health (mHealth) apps play an important role in delivering education, providing advice on treatment, and monitoring patients' health. Good usability of mHealth apps is essential to achieve the objectives of mHealth apps efficiently. To date, there are questionnaires available to assess the general system usability but not explicitly tailored to precisely assess the usability of mHealth apps. Hence, the mHealth App Usability Questionnaire (MAUQ) was developed with 4 versions according to the type of app (interactive or standalone) and according to the target user (patient or provider). Standalone MAUQ for patients comprises 3 subscales, which are ease of use, interface and satisfaction, and usefulness. Objective: This study aimed to translate and validate the English version of MAUQ (standalone for patients) into a Malay version of MAUQ (M-MAUQ) for mHealth app research and usage in future in Malaysia. Methods: Forward and backward translation and harmonization of M-MAUQ were conducted by Malay native speakers who also spoke English as their second language. The process began with a forward translation by 2 independent translators followed by harmonization to produce an initial translated version of M-MAUQ. Next, the forward translation was continued by another 2 translators who had never seen the original MAUQ. Lastly, harmonization was conducted among the committee members to resolve any ambiguity and inconsistency in the words and sentences of the items derived with the prefinal adapted questionnaire. Subsequently, content and face validations were performed with 10 experts and 10 target users, respectively. Modified kappa statistic was used to determine the interrater agreement among the raters. The reliability of the M-MAUQ was assessed by 51 healthy young adult mobile phone users. Participants needed to install the MyFitnessPal app and use it for 2 days for familiarization before completing the designated task and answer the M-MAUQ. The MyFitnessPal app was selected because it is one among the most popular installed mHealth apps globally available for iPhone and Android users and represents a standalone mHealth app. Results: The content validity index for the relevancy and clarity of M-MAUQ were determined to be 0.983 and 0.944, respectively, which indicated good relevancy and clarity. The face validity index for understandability was 0.961, which indicated that users understood the M-MAUQ. The kappa statistic for every item in M-MAUQ indicated excellent agreement between the raters (κ ranging from 0.76 to 1.09). The Cronbach α for 18 items was .946, which also indicated good reliability in assessing the usability of the mHealth app. Conclusions: The M-MAUQ fulfilled the validation criteria as it revealed good reliability and validity similar to the original version. M-MAUQ can be used to assess the usability of mHealth apps in Malay in the future. © Norashikin Mustafa, Nik Shanita Safii, Aida Jaffar, Nor Samsiah Sani, Mohd Izham Mohamad, Abdul Hadi Abd Rahman, Sherina Mohd Sidik.

Author Keywords
Education; Malay; Malay language; Malay MAUQ; MHealth; MHealth app; Mobile phone; Questionnaire; Questionnaire translation; Questionnaire validation; Usability; Usability

Index Keywords
human, language, Malaysia, mobile application, questionnaire, reproducibility, telemedicine, young adult; Humans, Language, Malaysia, Mobile Applications, Reproducibility of Results, Surveys and Questionnaires, Telemedicine, Young Adult

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