

TRANSLATION AND VALIDATION OF THE HEALTHCARE TEAMWORK SURVEY QUESTIONNAIRE: STUDY DESIGN FOR THE MALAYSIAN CONTEXT

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ABSTRACT

Cross-professional teamwork in healthcare is necessary to support integrated service delivery. However, cross-professional teamwork has not been given sufficient attention in developing country contexts. This paper presents a study design for translating and validating a teamwork survey questionnaire (TSQ) for the Malaysian context. The original TSQ was previously used in a developed country context. The tool will be translated into Malay which is the national language of Malaysia. Survey data will be subject to exploratory factor analysis to assess construct validity and Cronbach's alpha test for reliability. The forward-backward translation approach of cross-cultural adaptation will be utilized. Two independent translators shall initially translate the questionnaire before reconciliation by the research team. The reconciled Malay version will then be back-translated into English. English translation will be contrasted against the original TSQ for further accuracy improvements in the Malay version. Face validation will be conducted with five academicians and five healthcare professionals to obtain feedback on necessary further adjustments. Upon finalizing the Malay version TSQ, interviews with service managers and senior healthcare professionals will be conducted to identify services with cross-professional teamwork at a designated hospital. A total of 150 respondents for survey validation will be recruited from identified services within the hospital. Different healthcare professionals having cross-communication and sharing patient care objectives will meet the criteria for a cross-professional team service. The validated Malay version TSQ could provide an invaluable tool for the assessment and improvement of cross-professional teamwork in the Malaysian healthcare context.

Keywords: study design, translation and validation, teamwork survey, healthcare

1.0 Introduction

Cross-professional teamwork in healthcare refers to the interaction between individuals with different expertise and training backgrounds, working together towards shared patient care and service delivery goals (Morgan, Pullon, & McKinlay, 2015; Reeves, Lewin, Espin, & Zwarenstein, 2010). Teamwork among different professionals is necessary to support the multiple facets of patient needs, disease complications and treatment options (Burtscher & Manser, 2012; Chamberlain-salaun, 2013). Patient diagnosis, treatment planning and continuity of care are no longer dominated by clinician focused approaches to service delivery. The paradigm shift of patient centred care requires medical, nursing and allied health professionals to collaborate in managing a patients' journey upon admittance, though interventions, discharge and follow up (Hartgerink et al., 2014).

Successful cross-professional teamwork has been associated with more effective healthcare delivery, higher patient satisfaction and improved patient survival rates (O'Leary, Sehgal, Terrell, & Williams, 2012). Work cultures incorporating cross-professional teamwork contribute towards good physical and mental wellness of healthcare professionals (Aase, Aase, & Dieckmann, 2013; Smith, 2012). Healthcare organizations benefit from savings in resource utilization when healthcare professionals collaborate effectively (Goh C., Chan, Kuziemsky, & Goh, 2011). However, not all healthcare organizations have a culture of teamwork within their patient services.

In some healthcare settings, teamwork may be limited and adversely affected by professional tribalism. Professional tribalism is an attachment of health professionals to their respective medical, nursing and allied health groupings instead of collaborating and identifying as cross-professional team members (Weller, 2012). Professional tribalism might hinder recognition of other disciplines required for team care. Apart from professional tribalism, the dominance of older medical and nursing professions compared to newer allied health professions can be a barrier for teamwork (Sinclair, Lingard, & Mohabeer, 2009). Doctors and nurses might be perceived as higher up in the patient care hierarchy. Therapists and auxiliary professionals may be relegated to merely secondary patient care roles without meaningful authority. Healthcare services might have diverse professional composition but professionals in such services might not identify as being part of cross-professional teams when they are not granted equal or significant status in their roles.

Appreciating the elements of teamwork is the existing benchmark for identifying and evaluating cross-professional services. In general, the elements of teamwork indicate membership within a team and provide insights for effective team interactions.

1.1 Elements of teamwork

Elements of teamwork include team composition (Reeves et al., 2010; Youngwerth & Twaddle, 2011) and team functioning (Buljac-Samardzic, van Wijngaarden, van Wijk, & van Exel, 2011; Thylefors, Persson, & Hellström, 2005). Team composition comprises of demographics and team size. Demographics reveals team members' information such as age, gender, education (Tanco, Jaca, Viles, Mateo, & Santos, 2011) and experiences (Buljac-Samardzic et al., 2011). Team size indicates the number of members in a team. From a cross-professional perspective, team composition provides an overview of a team's professional diversity.

Team functioning refers to the process of team members working together in meeting shared patient care delivery objectives (Alexander, Lichtenstein, Jinnett, D'Aunno, & Ullman, 1996). Team functioning commonly includes dimensions of integration (Smith, 2012), efficiency (Tanco et al., 2011) and climate (Hartgerink et al., 2014). Team integration concerns the degree of cohesiveness between team members and the interdependence of roles in delivering services (Thylefors et al., 2005). Efficiency in healthcare teamwork is related to the achievement of team goals (Reeves et al., 2010) and the way teams achieve their objectives (Tanco et al., 2011). Team climate represents the cross-professional interaction and the relationship environment among team members (Hartgerink et al., 2014). A Swedish study has indicated greater team integration to be connected with higher efficiency and the better climate among team members (Thylefors et al., 2005). These interactions could indicate whether a service practices good or poor teamwork. Therefore, the assessment of teamwork in healthcare has been a foundational research goal in developed contexts before interventions and more complex studies can be conducted for service delivery improvement (Valentine, Nembhard, & Edmondson, 2015).

1.2 Assessment of teamwork

Teamwork has been widely assessed in healthcare contexts of developed countries including the United States (Upenieks, Lee, Flanagan, & Doebbeling, 2010), the United Kingdom (Smith, 2012), Sweden (Thylefors et al., 2005), Australia (Nugus, Greenfield, Travaglia, Westbrook, & Braithwaite, 2010), Canada (Orchard, King, Khalili, & Bezzina, 2012), and the Netherlands (Hartgerink et al., 2014). Teamwork is commonly assessed through surveys; survey studies have the benefit of not being resource intensive and can be efficiently utilized with larger samples (Valentine et al., 2015). Many survey tools have been developed for the evaluation of healthcare teamwork, for instance, the Team Climate Inventory (TCI) (Anderson & West, 1998), the Relational Coordination Scale (Hartgerink et al., 2014), the Healthcare Team Vitality Instrument (Upenieks et al., 2010), the Assessment of Interprofessional Team Collaboration Scales (Orchard et al., 2012) and the Teamwork Survey Questionnaire (TSQ) (Pereira, 2013). Besides team composition, the scales of the mentioned tools assess the core dimensions of team functioning such as team integration, climate, communication, coordination, and efficiency.

Most of the teamwork assessments in healthcare originated from developed countries. There is limited cross-professional teamwork assessments conducted in the developing countries. However, research approaches and evidences from developed countries may offer insights for initiating studies in developing countries (Sunguya, Hinthong, Jimba, & Yasuoka, 2014). As an advanced developing country, Malaysia presents an ideal context for the assessment of cross-professional healthcare teamwork. There are Malaysian studies inferring patient and staff outcomes to be mitigated by teamwork. A study of customer satisfaction among urban and rural Malaysian public healthcare providers suggested a patient satisfaction link with teamwork (Sharifa Ezat et al., 2010). Research involving employees from 23 Malaysian public hospitals also documented teamwork together with quality management practices to be associated with patient satisfaction (Hazilah, 2009). Clinician sense of belonging in the workplace was also attributed to teamwork in the Malaysian context (Mohamed, Newton, & Mckenna, 2014). The promising research findings can be validated and explored further in Malaysian settings by addressing the local research gap of comprehensively assessing cross-professional teamwork.

Due to the availability of credible survey tools, the authors do not seek to ‘reinvent the wheel’ with regards to teamwork assessment. Evaluation of cross-professional teamwork in Malaysian healthcare will require culturally adapting and tailoring an existing survey questionnaire to be linguistically suitable for local context. Adapting an existing teamwork questionnaire for local context requires following a process of translation and validation (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Sousa & Rojjanasrirat, 2011).

2.0 AIMS

Building upon the reviewed literature, this paper proposes a study design with detailed justification for each of the following objectives:

- i. Translating a teamwork survey questionnaire (TSQ) from English to Malay language.
- ii. Identifying cross-professional teams in a Malaysian healthcare setting.
- iii. Validating the Malay version TSQ for usage in Malaysian healthcare settings.

3.0 STUDY DESIGN

This study has been granted ethics approval by Universiti Sains Malaysia’s Human Research Ethics Committee (USM/JEPeM/1403111). All prospective participants will be briefed pertaining to the purpose of the study and will only be recruited after informed voluntary consent. This study design is divided into four parts: i) Tool for translation and validation study, ii) Translation process of TSQ from English to Malay, iii) Identification of cross-professional teams and iv) Validation process of Malay version of TSQ

3.1 *Tool for translation and validation study*

The tool for adaptation in this study is the Teamwork Survey Questionnaire (TSQ) which comprises of 35 items. The TSQ was originally used for evaluating Australian public rehabilitation services teams (Pereira, 2013). Cross-professional teamwork components are assessed by the TSQ, namely team demographics (7 items), team size (1 item), team integration (6 items), team efficiency (6 items), and team climate (15 items). The TSQ’s evaluation of integration, efficiency and climate adopts three indexes originally formulated by Thylefors et al. (2005) for Swedish team settings.

Confirmation of content validity for the TSQ will be conducted by the research team’s four members who have expertise in study areas of teamwork, health sciences, statistics and survey methodology. Content validity confirmation focuses on ensuring the relevance of questionnaire information in relation to the measurement of cross-professional teamwork for the Malaysian study context. The original TSQ is in English and will require translation into the Malay language (Bahasa Melayu), the national language of Malaysia.

3.2 Translation process of TSQ from English to Malay

Forward-backward approach will be used in line with the international cross-cultural adaptation guidelines for translation (Beaton et al., 2000). These guidelines require forward translation, reconciliation and backward translation. In forward translation, the original English TSQ will be translated to the Malay language. Forward translation will be done by two qualified independent translators. Translators will be requested to produce forward translation versions that are conceptually equivalent to the original TSQ independently. The two forward translations will be reviewed and reconciled by the research team's four members who have a good working command of both English and Malay. Review of the translations shall compare similarities and differences in questionnaire items between Malay translations and contrast conceptual accuracy in relation to the original English version. The reconciliation of translations will strive for consensus among research team members in producing a preliminary forward translation version of the TSQ.

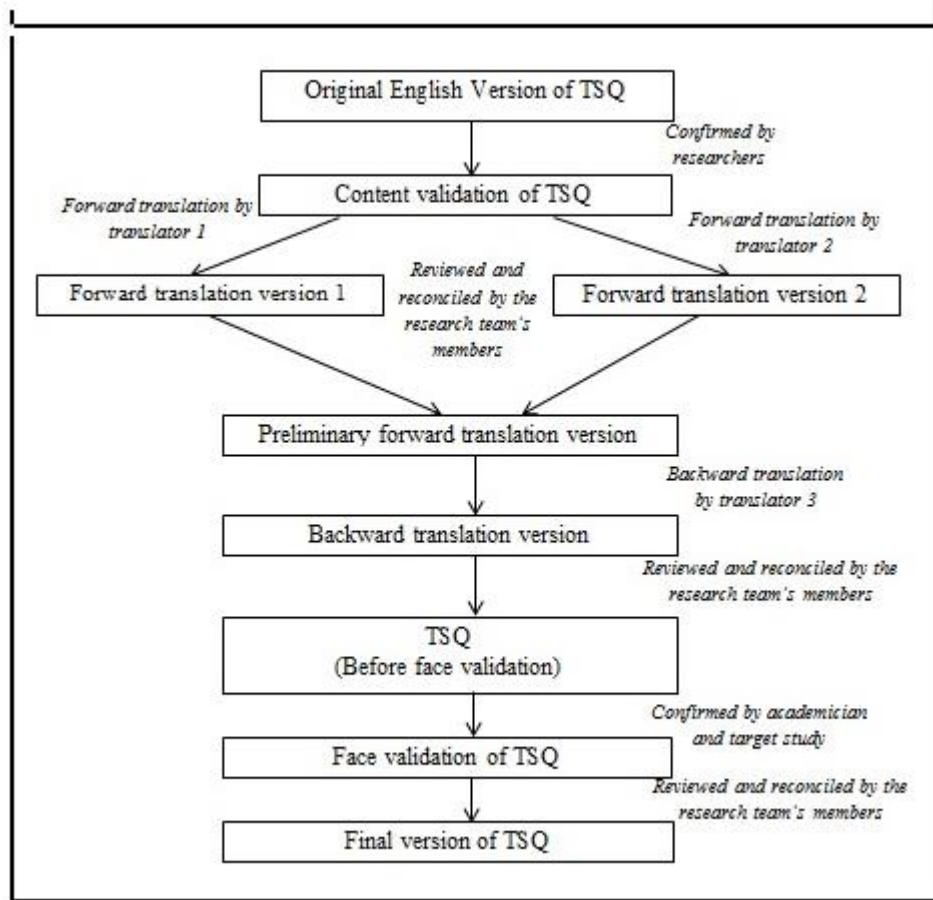
The preliminary forward translation Malay version of the TSQ will be sent to a third translator. The third translator will back translate the tool from the target language (Malay) into the original language (English). To avoid reference to existing sources of teamwork assessment, translator will not be informed that tool is being back translated. After the backward translation version is produced, research team members need to reconcile the two English versions, where the backward translated version and the original version will be compared and contrasted. The research team member needs to give attention to linguistic equivalence aspects which are; semantic, idiomatic, experiential and conceptual (Beaton et al., 2000). Any arising discrepancies of the words between the back-translated version and the original version will be discussed by research team members in guiding the choices of phrasing and words in the target Malay language version. The meaning for linguistic equivalence is detailed in Table 1.

Table 1: The meanings for aspects of linguistic equivalence

Linguistic equivalence aspect	Meaning
Semantic equivalence	Singularity meaning of words
Idiomatic equivalence	Degree of similarity in expression of the target language proverb
Experiential equivalence	Fitting the situation in an item to target language in term of cultural contex

Source: Beaton et al., 2000; Sousa & Rojassnasrirat, 2011

After completion of the forward-backward translation process, face validation will be conducted with five academicians and five healthcare professionals. The purpose of face validation is to ensure the quality of the translated tool and also obtain constructive feedback from respondents (Albaroodi et al., 2014; Parsian & Dunning, 2009). The quality of the translated tool will be considered good when the respondents do not have any difficulties in responding to the questions (Albaroodi et al., 2014). Figure 1 provides an overview of the translation process.



Source: Beaton et al., 2000; Sousa & Rojassnasrirat, 2011

Figure 1: Overview of the translation process

3.3 Identification of cross-professional teams

Once face validation has been completed, preliminary interviews will be conducted to identify cross-professional teams from the wards of a hospital designated for tool administration. The preliminary interviews will be conducted at 20 to 25 wards that cover a range of specialties such as orthopaedic, psychiatric, gynaecology, cardiology, renal, diabetic, paediatric, oncology and surgery wards (Hartgerink et al., 2014; Nugus et al., 2010). Preliminary interviews will elicit input from key professionals such as managers and senior healthcare staffs. Different healthcare professionals having cross-communication and sharing patient care objectives will meet the criteria for a cross-professional team (Morgan et al., 2015; Reeves et al., 2010). The interview questions are shown in Table 2 below.

Table 2: Interview questions for cross-professional team identification

No.	Interview question	Criteria of team
1.	Who are your teammates besides your own profession in this ward?	Membership
2.	What patient care/service objectives do you share with your teammates from other healthcare professions?	Shared objective
3.	How are patient care duties/tasks carried out in this ward	Interdependence and interaction
4.	Does your team have weekly performance progress meetings?	Interaction
5.	How often do you discuss patient care with teammates from other professional disciplines?	Interaction
6.	How is the effective and efficiency of patient care service performance reviewed?	Interaction

After identifying the cross-professional teams, 150 respondents will be recruited randomly from selected wards. A sample of 150 respondents will be sought to give better precision to the reliability and validity of the study. Team size could range between <4 to >15 members per team (Smith, 2012). Based on possible team size, it is estimated that the 150 respondents will be recruited from more than ten cross-professional teams. Inclusion and exclusion criteria for individual respondents are detailed in Table 3.

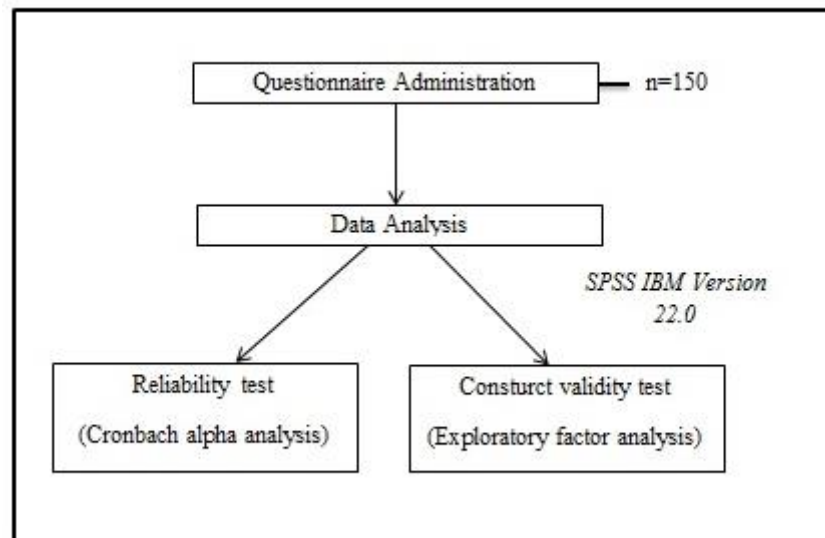
Table 3: Inclusion and Exclusion Criteria for Respondents

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> Identify as a doctor, nurse or allied health professionals Self-identification as members of an cross-professional team 	<ul style="list-style-type: none"> Less than 6 months experience

3.4 Validation process for Malay version of TSQ

Construct validation is the vital test score measurement in assessing the tool's validity. Construct validity refers to the degree of which the test measures what it claims to be measuring (Parsian & Dunning, 2009). In this study, team integration, team efficiency and team climate will be used as constructs for the questionnaire's items. Construct validity will be assessed using exploratory factor analysis (Parsian & Dunning, 2009) and factor loadings above 0.4 will be considered as good (Talwar & Mohd Fadzil, 2014). Loading represents a measure of association between an item and a factor (Bryman & Cramer, 2005), while a factor indicates a list of related items that fit together as same construct (Parsian & Dunning, 2009). After that, internal consistency reliability using Cronbach alpha value will be assessed to determine reliability of the TSQ. Internal consistency reliability assesses inter-item correlations within an instrument and indicates how well the items fit together conceptually (Tavakol & Dennick, 2011). Total score of all the items will be assessed according to team category respectively (integration, efficiency and climate). Obtaining an alpha correlation value of more and equal to 0.7 would generally indicate that this tool is reliable in the early

stage of new tool development (Nunnally 1976). Figure 2 below provides the overview of validation process.



Source: Talwar & Mohd Fadzil 2014

Figure 2: Overview of the validation process

4.0 Discussion

The selection of TSQ over other team survey assessment tools is suggested for use in Malaysia because of its comprehensive coverage of cross-professional teamwork categories, while still being user-friendly and not overly time consuming. Due to its comprehensive coverage of teamwork, the TSQ's scope is reasonably sufficient without additional team assessment tools. An alternative tool such as the TCI is limited to measuring team climate elements; hence complementary tools might be required for non-climate or relationship aspects of teamwork. The TSQ's language is user-friendly as a result from its simple phrasing and less theoretical wording which can be understood by non-research lay persons (Pereira, 2013).

The forward-backward translation approach suggested for this study has elements of the one-way and committee approach together with the added benefit of back translation. One-way (forward) translation involves directly translating a tool from its original language to the target study language. However, one-way translation may produce a translated tool of poor quality without proper cross-cultural adaptation to the target study populations (Sousa & Rojjanasrirat, 2011). The reconciliation process between researchers in reviewing translation mirrors the committee approach. However, it is noted that the reconciliation process can be poor if committee members are reluctant to disagree and the researchers are affected by group-think. To avoid this, research members from different disciplinary backgrounds are suggested for constructive input and differing individual reviews before reaching group consensus. Research members need to aware about cultural adaptation to produce equivalency between source and target context based on content (Beaton et al., 2000). Translated items might differ from the original items due to the conceptual differences of cultural phenomena. Therefore, researchers need to reach consensus to modify the items to fit it with target study

context while retaining the original tool's conceptual meaning. Ignoring cultural adaptation in the translation process may produce poor translated version of TSQ which lack in the concept meaning of the original TSQ. Back-translation strengthens the translation process and reduces researcher bias by providing an opportunity to contrast original, translated and back translated versions of the questionnaire before final reconciliation (Beaton et al., 2000).

Identification of cross-professional teams through preliminary interviews is one of the key strengths proposed in this study design. Similar to other developing countries, Malaysian healthcare services may have issues of professional tribalism and dominance of older profession groups. These issues may influence perceptions of interdisciplinary membership and team composition (Sunguya et al., 2014; Weller, 2012; Youngwerth & Twaddle, 2011). This study strives to ascertain services where healthcare professionals from medical, nursing and/or allied health backgrounds identify as team members. Researchers may need to aware and attentive towards how team identification varies between developed and developing healthcare contexts. While professionals in developed countries might perceive healthcare workers from differing backgrounds to be team members, professionals in developing countries might only consider those with similar training and expertise to be teamwork partners (Weller, 2012).

Validation tests namely content validation, face validation and construct validation are suggested in this study to ensure the translated TSQ accurately measures its intended constructs (Parsian & Dunning, 2009). Content validation will involve a teamwork expert for appropriateness of team constructs; and a statistician for useful feedback regarding the TSQ's statistical analysis component. Subsequently, face validation with a sample of target respondents and academicians is beneficial in tailoring the original TSQ to fit local nuances. Construct validation in this study will be required to statistically assess suitability of items reflecting constructs of integration, climate and efficiency. Internal consistency reliability analysis will contribute to effectively assess the reliability of results across items for the same construct within the measure (Parsian & Dunning, 2009). This study does not need to assess inter-rater reliability because only one observer will be involved in data collection. This can minimize the probability of inconsistency from multiple observers which might influence the study results.

5.0 Conclusion

The authors regard this proposed study design to be beneficial and useful for systematically translating and validating the TSQ's 35 items in the Malay language. In addition, this study design offers a resource efficient approach adapted for health services research in the Malaysian context. Incorporating cross-professional team identification in the study design can reveal healthcare services fulfilling cross-professional criteria in a developing country context. The reliable and valid Malay version TSQ could provide a primary tool for assessing cross-professional teamwork in the local context. This assessment could also support evaluations of performance association, interventions and strategic planning to further improve cross-professional teamwork. In the Malaysian developing country context, team assessment can potentially provide data for benchmarking against collaborative patient care in first world settings.

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Declaration

The authors declare that there is no conflict of interest.

Authors contribution

Author 1: Study conception and design; Drafting of manuscript

Author 2, Author 2, Author 3: Study conception and design; Critical revision

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