

# **ADAPTATION OF SAFETY ATTITUDE QUESTIONNAIRE (SAQ) IN MALAYSIA HEALTHCARE SETTING**

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## **Abstract**

Safety culture has been shown to be related to patient outcomes and Safety Attitude Questionnaire (SAQ) is one of the measures of safety culture that has good psychometric properties. The present study attempts to adapt the short version of the Generic SAQ for use in Malaysian healthcare setting. The process of adaptation included forward translation and backward translation method, followed by content validity analysis by seven subject matter experts. All 36 items of the SAQ was retained for the field test. The MSAQ was distributed to 400 healthcare workers in a hospital in Kuala Lumpur. There were 126 returned and usable questionnaires (31.5% return rate). The internal consistency Malay version of SAQ is acceptable: the overall alpha value is .85 and alpha values for the six dimensions of MSAQ range from .67 to .85. Two items in two different dimensions need to be revised due to low corrected item-total correlation. The MSAQ can be further refined and used to investigate the relationship between safety culture and patient outcomes in Malaysian hospitals.

*Keywords: safety culture, adaptation, healthcare*

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## 1.0 INTRODUCTION

It is widely recognized that if psychological measurement instruments are to be used cross-culturally, they cannot just simply be translated from one language to another; it is a requirement for the instruments to be adapted culturally. The term adaptation refers to the process of modifying existing questionnaire in terms of content or design of a questionnaire to make it more suitable for another context or a specific population (Harkness, 2010). In addition, Beaton, Bombardier, Guillemin, and Ferraz (2000) described cross-cultural adaptation as a process that includes translation and cultural adaptation of an existing test to produce another equivalent test. In other words, cross-cultural adaptation is a process that includes the process of translation and modification of an existing test to make it more suitable for a targeted context or population. In order to ensure that the new test is equivalent to the original test, psychometric properties of the resulting new test such as reliability and validity should be assessed (Beaton et al., 2000).

The present paper reports a study that attempted to adapt a safety climate questionnaire into Malaysian healthcare setting. Specifically, the objectives of the study are:

1. to translate the original version of SAQ into Malay language
2. to examine content validity of the translated version of MSAQ
3. to examine internal consistency of the Malay SAQ version

The next section describes the need for the adaptation for research purposes followed by a review of previous adaptation studies of the same questionnaire.

### 1.1 Background of Study

In 2003, Malaysian Ministry of Health established Malaysian Patient Safety Council (MPSC) to improve patient safety in Malaysian health care. MPSC introduced 'systems approach' as a strategy to improve patient safety. Systems approach is based on the principle that error are more commonly caused by faulty systems, processes, and conditions that cause peoples to make mistakes or fail to prevent them' (Mohd Ismail, 2009, p. 13). It is an attempt to build safety learning culture where every medical error must be reported. The error then will be discussed in order for others to learn from it. This represents a shift from a blame culture to a learning culture. However, this approach is reactive: in order to detect the weakness of a system, errors or accidents must happen first.

According to Dellemin, Noor-Shufiza, and Mohamed-Izham (2004), about 20 cases of medication errors occurred daily and estimated cost of the medication errors was RM301 daily or RM9 327 a month and approximately RM 111 924 a year among geriatrics at one outpatient pharmacy in Malaysia. Note that the estimated cost was only on medication error at one outpatient pharmacy. The overall cost would be very high. In the United States of America and United Kingdom, the estimated cost for adverse events is approximately between \$17 to \$29 billion and £2 billion annually (Sandars & Cook, 2007). In addition, when an adverse event occurred, the patient may be forced to prolong their stay at the

hospital and have to undergo additional medical procedures, which in turn, would cost more medication expenses. Thus, adverse event is very expensive.

Since the publication of “To Err Is Human” by the American Institute of Medicine in 1999, interest in patient safety research had increased. In the report, Kohn, Corrigan and Donaldson (2000) suggested that, to improve patient safety, the first thing healthcare institutions need is to change the attitude of their personnel and work culture. Since then, safety culture is seen as a way to improve patient safety. Subsequently, safety climate assessment has been increasingly recognized as a necessary approach to improve patient safety (Flin, Mearns, & Bryden, 2000; Pronovost & Sexton, 2005) and to assess the quality of care provided (Nordén-Hägg, Sexton, Kalvemark-Sporrong, Ring & Kettis-Lingblad, 2010; Nieva & Sorra, 2003). Safety climate measures are based on the assumption that an individual perception or attitude regarding safety is an opinion, while the aggregate opinions of employees’ working in the same area, unit, department, or organization are safety climate (Sexton et al., 2006). In other words, safety climate denotes shared perceptions and attitudes of the priority of safety among the employee in their unit and organization (Zohar, Livne, Tenne-Gazit, Admi, & Donchin, 2007). For instance, if the level of safety climate is high, it is expected that the workers prioritize patient safety at work. In sum, patient safety is a very important issue in health care worldwide, especially in Malaysia, as Malaysian government is currently promoting Malaysia as a medical tourism destination. Improving safety culture is a necessity for healthcare institutions in order to improve patient safety and gain a competitive advantage.

Published reviews of safety climate measures (e.g., Colla et al., 2005; Flin, Burns, Mearns, Yule & Robertson, 2006; Singla, Kitch, Weissman & Campbell, 2006; Robb & Seddon, 2010) show that most of the measures were developed in English-based culture. In order to use safety climate measures in Malaysia, there are two options: developing a new measure or adapting an existing measure. However, developing a new measure needs a lot of resources such as time, money and available expertise (Hambleton & Patsula, 1998). Therefore, adapting an existing measure is a better option. Colla et al. (2005) listed three general guidelines on choosing appropriate instruments to measure safety climate.

a) First, the instrument should have comprehensive and sound psychometric properties. Sexton et al. (2006) had administered SAQ in a variety of inpatient and outpatient settings in over 200 sites across US, UK and New Zealand and their composite scale reliability that measured through Raykov’s  $\rho$  coefficient is high ( $\rho = .90$ ).

b) Second, it should be chosen based on its purpose. SAQ is used to measure caregivers’ attitudes and perceptions relevant to the safety of healthcare. It was also used as a diagnostic tool to assess safety climate in healthcare as well as a tool for improvement (Nieva & Sorra, 2003). SAQ has been used as part of training, either as a need assessment measure, or as a tool to measure improvement. In addition, SAQ is the only survey that demonstrates a link between survey responses and patient outcomes like medication errors, pneumonia rates, bloodstream infection rates and mortality rates (Colla et al., 2005).

c) The third guideline states that if the instrument is to be used to examine the association between safety climate and patient safety outcomes, one should choose an instrument that has been used extensively. According to Deilkås and Hofoss (2008) SAQ is the most thoroughly adapted and widely used instrument to assess safety climate in health care setting.

Based on these guidelines, Safety Attitudes Questionnaire (SAQ) was chosen for this adaptation study.

## **1.2 Previous Adaptations of SAQ**

Safety Attitude Questionnaire is a modification of Intensive Care Unit Management Attitudes Questionnaire (ICUMAQ), which in turn was derived from Flight Management Attitudes Questionnaire (FMAQ) that was used in commercial aviation industry for more than 20 years (Sexton, Thomas & Grillo, 2003). The full version of SAQ has six domains and 60 items, including demographic variables. The short version has 40 items, including demographics. The generic version of SAQ is intended for general frontline health care staffs. SAQ also was adapted into different versions involving minor modification of items to reflect the corresponding clinical areas (Sexton, Thomas & Grillo, 2003) like intensive care units, operating rooms and Ambulatory Clinics. Never the less, all SAQ versions includes similar 30 core questions that are used to assess caregivers' attitudes in six domains namely Teamwork Climate, Safety Climate, Perceptions of Management, Job Satisfaction, Working Conditions and Stress Recognition. Other additional questions include items for additional aspects of safety, which vary according to the particular unit type being surveyed. SAQ has been translated and cross-culturally adapted to more than ten languages as presented in Table 1.

The most popular translation method used in past adaptation studies is back-translation method and a combination of forward and backward translation method. Back-translation method is popular because it can give an indication of semantic equivalence and can enhance the validity of SAQ (Beaton et al., 2000). Some of the adaptation studies were conducted in English-speaking countries, but with different cultures. These studies usually involved simple modification of the terms. For example, the term 'attendings' in the original SAQ was changed to 'consultants' in the Irish SAQ.

In addition, the purpose of the adaptation is related to the amount of psychometric details reported. Studies like Relihan et al. (2009)'s and Lee et al. (2010)'s were conducted as a big-scale research to cross-culturally adapt SAQ and provide benchmarking data. For this type of studies, the authors reported detailed psychometric properties of the SAQ. In contrast, other studies adapted SAQ as part of a bigger research, thus, little information about psychometric properties of their SAQ were reported. Table 2 provides a snapshot of the psychometric properties of different versions of SAQ.

Table 1: Adaptation studies of SAQ

Author(s)	Country/ Language	Sample	Adaptation process	SAQ's version
Sexton et al. (2006)	UK, US & New Zealand English	General	Simple translation of terminology (e.g., 'Residents' to 'Registrar')	SAQ
Nordén-Hägg et al. (2010)	Sweden Swedish	Pharmacist	Forward translation Preliminary test (n= 10) Back-translation Pilot study (n= 155)	Generic SAQ Short Form
Deilkås & Hofoss (2008)	Norway Norwegian	General	. Back- translation . Review . Pilot study	Generic SAQ Short Form
Lee et al. (2010)	Taiwan Chinese	General	Back- translation Pilot study	Generic SAQ Short Form
Carvalho (2011)	Brazil Portuguese	General	. Back- translation . Content validity . Pre-test	Generic SAQ Short Form
Poley et al. (2012)	Netherland Dutch	Paediatrics Surgical Intensive Care Unit	. Forward translation . Reconciliation . Backward translation . Harmonization . Pre-test . Cognitive interviewing . Finalization	SAQ-ICU
Relihan et al. (2009)	Ireland English	Acute Medical Admission Unit (AMAU)	Simple translation of terminology (e.g., 'Attendings' change to 'consultants')	SAQ
Abdou & Saber (2011)	Egypt Arabic	Nurse	. Translation into Arabic . Content validity . Pilot Study	Generic SAQ Short Form
Mahfoozpour & Mojdehkar (2010)	Iran Farsi	General	. Translation into Farsi . Content validity . Pilot study	Partial SAQ
Kaya, Barsbay & Karabulut (2010)	Turkey Turkish	General	Back Translation	SAQ
Raftopoulos, Savva, & Papadopoulou (2011)	Greek Cyprus	Maternity Units	. Forward translation . Review . Backward translation . Review . Content validity	SAQ Labour version
Harmsen et al (2010)	Netherland Dutch	Primary Care personnel	Forward translation Backward translation	SAQ Ambulatory version

Table 2. Cronbach alpha for dimensions of various versions of SAQ

SAQ's version	Teamwork Climate	Safety climate	Working conditions	Job satisfaction	Stress recognition	Perceptions of management
SAQ Sexton et al. (2006)	–	–	–	–	–	–
Swedish SAQ Nordén-Hägg et al. (2010)	$\alpha = 0.81$	$\alpha = 0.75$	$\alpha = 0.72$	$\alpha = 0.89$	$\alpha = 0.86$	$\alpha = 0.72$
Norwegian SAQ Deilkås & Hofoss (2008)	$\alpha = 0.68$	$\alpha = 0.76$	$\alpha = 0.71$	$\alpha = 0.85$	$\alpha = 0.82$	H: $\alpha = 0.82$ U: $\alpha = 0.84$
Chinese SAQ Lee et al. (2010)	$\alpha = 0.79$	$\alpha = 0.82$	$\alpha = 0.79$	$\alpha = 0.91$	–	$\alpha = 0.87$
Portuguese SAQ Carvalho (2011)	$\alpha = 0.65$	$\alpha = 0.67$	$\alpha = 0.65$	$\alpha = 0.77$	$\alpha = 0.78$	H: $\alpha = 0.75$ U: $\alpha = 0.79$

$\alpha$  = Cronbach's alpha

H: Hospital management level; U: Unit management level

The most common method to measure reliability is Cronbach alpha. Sexton et al.'s (2006) is the only research that used Raykov ( $\rho$ ). Job satisfaction domain is consistently reported as the most reliable domain, while teamwork climate has the weakest reliability index. On the other hand, Mahfoozpour and Mojdehkar (2010) assessed the reliability of the Farsi SAQ using test-retest method with two-week interval. They reported a high correlation coefficient ( $r = 0.9$ ) which indicates high stability. Overall, the various versions of SAQ has sound reliability.

Adaptation of SAQ in Malaysia health care research is based on the combination of guidelines provided by Hambleton and Patsula (1998) and past adaptation studies. Hence, this adaptation study undergone five similar processes, (1) to determine whether the test can assess same construct cross-culturally, (2) choose translators, (3) determine accommodations to be made for the test to be use in target culture, (4) adapting the test and (5) analyse the reliability of the adapted version. The five processes were carried out in three phases as described in the next section.

## 2.0 METHOD AND RESULTS

### 2.1 Phase 1: Translation Phase

#### 2.1.1 Participants

The translation phase involved three steps: forward translation, backward translation and harmonization. The translation involved five participants that were approached through simple convenience sampling method. Selection of the participants for forward and backward translation processes were based on the following criteria: fluent in both Malay

language and English, and familiar with tests construction. Translation processes involved two translators for forward translation and one backward translator and two reviewers.

The participants for the translation processes were female psychology postgraduate students (26 and 30 years old). The two reviewers were a 36 year-old male teacher with 13 years teaching experience, and a 28 year-old female English lecturer with two years teaching experience.

### ***2.1.2 Measure***

The short version of the Generic Safety Attitude Questionnaire (SAQ) was used for the adaptation study. There are three reversed-scored items (2, 11 and 36). The response format is 5-point Likert scale, which ranges from (Disagree Strongly, Disagree Slightly, Neutral, Agree Slightly, Agree Strongly).

### ***2.1.3 Procedure***

First, the original version of SAQ was translated independently into Malay by two translators. The two translated versions were compared and a working version was derived by a discussion between the researcher (first author) and one of the translators. The Malay version of the SAQ was translated back into English by a translator who has no knowledge about original version of SAQ. Then, the back- translated version and the original version were compared and reviewed by the researcher and one of the translators. No modification was made to the Malay version of SAQ. Finally, a reviewer was responsible to 'smooth out' and to check for grammar. Another reviewer was asked to check the equivalency of both original SAQ and Malay SAQ and the use of words for the items. Modifications were made accordingly.

## **2.2 Phase 2: Pre-Test Phase**

### ***2.2.1 Participants***

Seven subject matter experts (SME) were approached to rate the items in MSAQ for content validity using convenient sampling. SMEs were staffs working in a health care institution. The inclusion criterion was the staffs must work at least four weeks prior to the administration. The respondents were one male and six female age range from 27 – 41 years old, holding different positions (one resident physician, two nurses, two clinical social workers and two administration support staff) with working experience ranging from one to 20 years.

### ***2.2.2 Measure***

The Malay version of Safety Attitude Questionnaire (MSAQ) includes the translated 40 items, including demographic items.

The validation instrument includes four scales; relevance, clarity, simplicity, and ambiguity. The response format for the validation is as follow.

- a. relevance scale: 1 = not relevant, 2 = item need some revision, 3 = relevant but need minor revision and 4 = very relevant.
- b. clarity scale: 1 = not clear, 2 = item need some revision, 3 = clear but need minor revision and 4 = very clear.
- c. simplicity scale: 1 = the item is not simple, 2 = the item needs some revision, 3 = the item is simple but need some revisions and 4 = the item is very simple.
- d. ambiguity scale: 1 = doubtful, 2 = item need some revisions, 3 = no doubt but need minor revisions and 4 = meaning is clear.

### **2.2.3 Procedure**

The researcher briefly explained the scales and the rating process involved to the SMEs. After consents were obtained, the researcher gave the respondents a week to complete the content validity form.

### **2.2.4 Data Analysis**

The formula for CVI is:

$$\text{CVI} = \frac{(\# \text{ of judges rated 3 and 4})}{\text{Total number of judges}}$$

Acceptance level for CVI for present study is .80 and above.

Furthermore, Intraclass Correlation Coefficient (ICC) method was done to assess inter-rater consistency of the raters. The ICC model that was used is (2, 7). The inter-rater consistency coefficient was analysed used two- way random and the unit of reliability in interest is consistency among the raters. This model was used because the raters were considered as random sample from the population of raters.

### **2.2.5 Results**

The items with CVI that is more than .80 were not changed. Items that has CVI which is less than .80 for any scale were revised. CVI for item 1 “Maklum balas dari jururawat diterima baik di kawasan klinikal ini” is low for relevancy scale (.57), clarity scale (.57) and ambiguous scale (.50). The item was revised and changed to “Pandangan dan maklum balas dari jururawat diterima baik di kawasan klinikal ini”. In addition, the only item that was not clear is item 26 “Pihak pengurusan menjalankan tugas dengan baik” (CVI clarity scale = .67). The item was revised and changed to “Pihak pengurusan menjalankan tugas mereka dengan baik”. Meanwhile, item 24 “Pihak pengurusan menyokong usaha harian saya” is ambiguous (CVI ambiguity scale = .71). The items are reviewed and changed into “Pihak pengurusan menyokong usaha harian saya (mengenai hal keselamatan pesakit)”.

In short, there were six items that have lower CVIs, four items low on relevance scale and two items on clarity and ambiguous scale respectively. The four items that have low CVIs



on relevance scale are retained and item 1, which low on all four scale is revised and changed. The other two items that have low content validity is also revised and changed. Thus, in line with Pallant (2007) recommendation, no item is removed, and three out of 36 MSAQ's items were changed during the content validity process. These items were included in field test study phase.

Intraclass correlation (ICC) is conducted to assess consistency among the raters in content validity processes based on four scale: relevance, clarity, simplicity, and ambiguity. The inter-rater consistency coefficient is measured by ICC (2,7). This model described that each of the items is measured by each rater, and the raters are sample of a population of health care staffs in Malaysia (two- way random model). The inter-rater consistency coefficients are concerns with consistency of average measure of raters.

The benchmark for the coefficients is as follow:  $>.75$  = excellent, between  $.40$  and  $.75$  = moderate,  $<.40$  = poor (Stone, et al., 2010).

Table 3  
Intraclass Correlation Coefficient for average measure

Scale	Intraclass Correlation	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Relevance	.631	.404	.793	2.708	33	198	.000
Clarity	.616	.362	.794	2.605	29	174	.000
Simplicity	.533	.224	.749	2.140	29	174	.001
Ambiguous	.688	.473	.837	3.206	27	162	.000

Based on the benchmark of ICC, the result showed that the inter-rater consistencies for the seven raters during pre-test study across the four scales are moderate. The result showed that the inter-rater consistency coefficients for the pre- test study is moderate, indicates the reliability of the measurement and the ratings are moderate. The result means that the scales have moderate ability to derive scores in a systematic way by various raters with enough training.

### 2.3 Phase 3: Field Test Phase

#### 2.3.1 Participants

The field test phase for MSAQ was conducted at a teaching hospital in Klang Valley area. Convenience sampling method was used. Inclusion criteria are (1) the staff must work at least four weeks prior to the administration, (2) (for physicians) admit two or more patients per month, and (3) those who work about 20 hours per week in/for the clinical area. Four hundred questionnaires were distributed with the aim to get at least 100 participants.

According to Kline (2000), in relation with internal consistency measurement, sample size should be at least 100.

### 2.3.2 Measure

No item was removed or added to the MSAQ based on the content validity phase.

### 2.3.3 Procedure

The researcher sought permission from the Director of the Health Care Centre to conduct the study. When the permission was granted, the researcher asked the staffs at the health care centre to participate through a representative from the health care centre. The written informed consent was obtained from the health care staff. All participants were informed about the nature and the purpose of the study. On receiving the informed consent, the researcher distributed the MSAQ to the health care staffs. The questionnaire took between 20 to 30 minutes to complete.

### 2.3.4 Data Analysis

The data was analysed used IBMSPSS Statistic version 20. Descriptive statistics was used to analyse the demographic data of the participants. Cronbach alpha was used to measure the MSAQ's internal reliability. The score on the first 5-point Likert scale (1 = disagree strongly, 5 = agree strongly) were converted into 100-point scale (1=0, 2=25, 3=50, 4=75 and 5=100) to calculate the 100 point scale score for an individual respondent as recommended by the SAQ developers. In order to create a scale score, responses to each item in a scale was summed and divided by the number of items in that scale to create that ranged from 0 to 100. The scores obtained represented individual perceptions with higher scores reflecting more favourable perceptions of the item.

### 2.3.5 Results

Table 4: Demographic variables

Position	N	Percentage	Primary Working Unit	N	Percentage
Physician Assistant	5	4.1%	Adult	53	43.8%
Nurse Manager or Matron	2	1.7 %	Paediatric	8	6.6%
Nurse	42	34.7%	Both Units	59	49.6%
Pharmacist	4	3.3 %			
Therapist	2	1.7%			
Clinical Social Worker	12	9.9%			
Dietician	1	0.8%			
Clinical Support	21	17.4 %			
Technologist or Technician	30	24.8 %			
Administration Support	2	1.7%			
			Working Experience	N	Percentage
			6 to 11 months	8	6.6%
			1 to 2 years	19	15.6%
			3 to 4 years	22	18%
			5 to 10 years	29	23.8%
			11 to 20 years	26	21.3%
			21 years and more	21	14.8%
Gender	N	Percentage			
Male	31	25.2%			
Female	92	74.8%			

É Response rate for the field test is 31.5% (126 questionnaires were returned). All of the returned questionnaires were complete and used for data analysis. Demographic questions on MSAQ cater for four aspects (as in Table 4): position, gender, primary working unit and working experience.

Table 5: Cronbach Alpha for MSAQ and its dimensions

	Cronbach Alpha
MSAQ	0.85
Teamwork Climate	0.68
Safety Climate	0.67
Job Satisfaction	0.80
Stress Recognition	0.85
Perception of Management	0.80
Working Condition	0.78

The Cronbach alphas for MSAQ and its dimensions are listed in Table 5. The internal consistency reliability for the field test of MSAQ is .85. The alpha coefficients for its dimensions range from .67 to .85. Two of the dimensions have values lower than .70. However, values between .65 to .70 are still acceptable (Cohen & Swerdlik, 2005). Therefore, the alpha values for teamwork climate and job satisfaction climate are considered acceptable.

Based on overall inter-item correlation of MSAQ, the items of MSAQ correlate more with their own total score compared to other total score. The overall scale of MSAQ have high internal structure consistency coefficient. For dimension level, internal structure consistency for all of the six dimensions of MSAQ is acceptable. Corrected item-total correlations were computed. The cut-off point for the correlations was set at 0.3. According to Pallant (2007), if the values are lower than 0.3, it could indicate that the item is measuring a different construct. All items has corrected item-total correlation above 0.3 except for item 13 and 29. The item-total correlation for item 13 (from Safety Climate dimension) is 0.25. However, if deleted, the  $\alpha$  for Safety Climate dimension would decrease by 0.01. Item 29 (Perception of Management dimension) also has a low corrected item-total correlation (.18). However, if deleted, the  $\alpha$  would increase by 0.01.

### 3.0 DISCUSSION

#### 3.1 Translation Process

There are a few words that the translators have problem to find equivalence word in Malay. For item 1 “Nurse input is well received in this clinical area”. The word ‘input’ can be used in Malay as well. However, based on the Swedish SAQ, the word ‘input’ refers to views and feedback. Thus, the word was change to ‘Pandangan dan maklum balas’. Other words that were quite difficult to translate were ‘less effective’ (item 21), ‘tense or hostile situation’

(item 22) and ‘constructively’ (item 27). The phrase ‘less effective’ was translated literally as ‘kurang berkesan’ and ‘tense or hostile situation’ was translated as ‘situasi yang tegang dan bermusuhan’ and ‘constructively’ was translated into ‘secara membina’.

After the translation process finished, the MSAQ was reviewed by another reviewer to check the use of word and grammar of the items. Few modifications were made, especially the aforementioned ‘difficult word’. The word ‘effective’ was translated as ‘kurang berkesan’ in previous step was change to word ‘efektif’ an English adapted word. ‘tense or hostile situation’ was translated into ‘situasi yang tegang dan tertekan’ and ‘constructively’ translated into ‘secara konstruktif’. The final versions of the items were included in the questionnaire for pre-test stage.

### **3.2 Pre- Test Stage**

Although there were four items with low index on relevance scale, they were not removed to retain MSAQ’s ability to be used for cross- cultural study. Other items that had low indexes on other scales were revised and changed. Thus, the MSAQ retained its 40 items.

### **3.3 Field- Test Stage**

In general, the internal structure of MSAQ for its first field test can be considered as good. The alpha value range is similar to Norwegian SAQ and higher than Portuguese SAQ. Further analysis on MSAQ’s internal consistency showed that all items in each dimensions are positively correlated except for Perception of Management dimension. The inter-item analysis showed that item 25 “Pihak pengurusan tidak menyedari yang mereka berkompromi dengan keselamatan pesakit” correlated negatively with other items, indicating the item may measure different construct compared to other items.

During the field test, MSAQ received both positive and negative responses. Many of the respondents mentioned that MSAQ is a good measure for performance evaluation and feedback as well as for teamwork evaluation and feedback. As the samplings for the field test was convenient sampling, some of the respondents were not front line personnel like technicians, technologists and administration support staff. Most of them commented that the questionnaires are not suitable for them as many of the items are not applicable for them. They also commented that some of the questions need revisions.

## **4.0 LIMITATIONS AND RECOMMENDATIONS**

The sampling of the field study phase did not capture all of health care’s front line personnel (e.g., attending physicians, nurses, therapists, pharmacists, unit coordinators, environmental health, clinical and laboratory workers). During the field test stage, there were no physicians participating in the study and only one-third of the respondents were male. According to Van de Vijder and Poortinga (2005), sample bias “concerns inequalities in the representativeness of samples for cultural populations from which they are drawn” (51). For a cross- cultural study, sample bias should be minimized as possible. The inequality in the

representativeness can effect generalization ability of a study. Nonetheless, the main focus of present study is not the generalization of the result, but, to test whether SAQ can be adapted in Malaysia's healthcare setting or not. Result showed that the MSAQ have acceptable psychometric properties, indicating that adapted SAQ can be used in Malaysia.

The second limitation regards translation method. Some the items in MSAQ sound 'unnatural' and to some people, they may be difficult to understand. This can lead to response bias, in which the participant may misunderstood the question or just guest what the researcher want to know. In order to limit this weakness, present research uses forward and backward method, in which provide more judgmental analysis. The content validity process provides additional protection against this limitation. Nevertheless, during the field test process, some of the respondents commented that some of the items were quite difficult to understand.

Future research can build on the works reported in this paper. The MSAQ items should be further reviewed and modified to make them sound as natural as possible. Second, a more comprehensive sample size that represents front line healthcare personnel is needed to further establish the use of MSAQ in Malaysia healthcare setting. Third, the factor structure of the MSAQ should be investigated with a suitable sample size. It is desirable to have a more robust and psychometrically-sound measure of safety culture in Malaysia. The measure will assist further research and practice in improving patient safety in hospitals.

## 5.0 REFERENCES

- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine, 25*, 3186 – 3191.
- Cohen, R. J., & Swerdlik, M. E. (2005). *Psychological testing and assessment: An introduction to tests and measurement* (6<sup>th</sup> edn.). New York: McGraw-Hill.
- Colla, J., Bracken, A., Kinney, L., & Weeks, W. (2005). Measuring patient safety climate: A review of surveys. *Quality and Safety in Health Care, 14*, 364 – 366.
- Deilkås, E., & Hofoss, D. (2008). Psychometric properties of the Norwegian version of the Safety Attitudes Questionnaire (SAQ) Generic version (Short Form 2006). *BMC Health Services Research, 8*, 191 – 201.
- Dellemin Che Abdullah, Noor Shufiza Ibrahim, & Mohamed Izham Mohamed Ibrahim (2004). Medication errors among geriatrics at the outpatient pharmacy in a teaching hospital in Kelantan. *Malaysian Journal of Medical Sciences, 11*, 52 – 58.
- Flin, R., Burns, C., Mearns, K., Yule, S., & Robertson, E. (2006). Measuring safety climate in health care. *Quality and Safety in Health Care, 15*, 109 – 115.
- Flin, R., Mearns, K. O., & Bryden, R. (2000). Measuring safety climate: Identifying the common features. *Safety Science, 34*, 177 – 192.

- Hambleton, R. K., & Patsula, L. (1998). Adapting tests for use in multiple languages and cultures. *Social Indicators Research*, 45, 153 – 171.
- Harkness, J. (2010). Adaptation. In Survey Research Center (ed.), *Guidelines for Best Practice in Cross-Cultural Surveys* (VIII-VIII19). Michigan: Survey Research Center, Institute for Social Research, University of Michigan.
- Kline, P. (2000). *The handbook of psychological testing* (2<sup>nd</sup> edn.). California: Routledge.
- Kohn, L., Corrigan, J., & Donaldson, M. (2000). *To err is human: Building a safer health system*. Washington, DC: National Academy of Science.
- Lee, W. C., Wung, H. Y., Liao, H. H., Lo, C. M., Chang, F. L., Wang, P. C., Fan, A., Chen, H. H., Yang, H. C., & Hou, S. M. (2010). Hospital culture in Taiwan: A nationwide survey using Chinese version Safety Attitude Questionnaire. *BMC Health Services Research*, 10, 234 – 242.
- Mahfoozpour, S., & Mojdehkar, R. (2010). Attitudes of health caregivers on teamwork and safety climate in an educational medical center. *Pakistan Journal of Medical Sciences*, 26, 450 – 453.
- Mohd Ismail Merican. (2009, July). Patient safety in the teaching curriculum of healthcare workers. Presentation at International Healthcare Conference and Exhibition 2009, Kuala Lumpur.
- Nieva, V., & Sorra, J. (2003). Safety culture assessment: A tool for improving patient safety in healthcare organization. *Quality and Safety in Health Care*, 12, 17 – 23.
- Nordén- Hägg, A., Sexton, J., Kalvemark-Sporrong, S., Ring, L., & Kettis-Lingblad, A. (2010). Assessing safety culture in pharmacist: The psychometric validation of the Safety Attitudes Questionnaire (SAQ) in a national sample of community pharmacies in Sweden. *BMC Clinical Pharmacology*, 10, 8 – 20.
- Pallant, J. (2007). *SPSS survival manual*. Crows Nest: Allen & Unwin.
- Pronovost, P., & Sexton, B. (2005). Assessing safety culture: Guidelines and recommendations. *Quality and Safety in Health Care*, 14, 231 – 233.
- Relihan, E., Glynn, S., Daly, D., Silke, B., & Ryder, S. (2009). Measuring and benchmarking safety culture: Application of the Safety Attitudes Questionnaire to an acute medical admission unit. *Ireland Journal of Medical Science*, 178, 433 – 439.
- Robb, G., & Seddon, M. (2010). Measuring the safety culture in a hospital setting: A concept whose time has come? *Journal of the New Zealand Medical Association*, 123, 66–76 .
- Sanders, J. & Cook, G. (2007). *ABC of patient safety*. Oxford: Blackwell Publishing Ltd..
- Sexton, J. B., Helmreich, R., Neiland, T., Rowan, K., Vella, K., Boyden, J., Roberts, P.R., & Thomas, E.J. (2006). The Safety Attitudes Questionnaire: Psychometric

properties, benchmarking data and emerging research. *BMC Health Service Research*, 6, 44 – 54.

Sexton, J. B., Thomas, E. J., & Grillo, S. P. (2003). *The Safety Attitudes Questionnaire guideline for administration*. Texas: The University of Texas Center of Excellence for Patient Safety Research and Practice.

Singla, A., Kitch, B., Weissman, J., & Campbell, E. (2006). Assessing patient safety culture: A review and synthesis of the measurement tools. *Journal of Patient Safety*, 2, 105 – 115.

Stone, A. T., Bransford, R. J., Lee, M. J., Vilela, M. D., Bellabarba, C., Anderson, P. A., & Agel, J. (2010). Reliability of classification systems for subaxial cervical injuries. *Evidence-Based Spine-Care Journal*, 1, 19 – 26.

Van de Vijver, F. J. R., & Poortinga, Y. H. (2005). Conceptual and methodological issues in adapting tests. In R. K. Hambleton, P. F. Merenda, & C. D. Spielberger (eds.), *Adapting educational and psychological tests for cross-cultural assessment* (pp. 39-63). New Jersey: Lawrence Erlbaum Associates.

Zohar, D., Livne, Y., Tenne-Gazit, O., Admi, H., & Donchin, Y. (2007). Healthcare climate: A framework for measuring and improving patient safety. *Critical Care Medicine*, 35, 1312 – 1317.

## **Appendix: The MSAQ Items**

- 1 Maklum balas dari jururawat diterima baik di kawasan klinikal ini
- 2 Dalam kawasan klinikal ini, amat sukar untuk mengutarakan pendapat sekiranya saya merasakan ada masalah berkaitan penjagaan pesakit.
- 3 Sekiranya terdapat perbezaan pendapat di kawasan klinikal ini, ianya diselesaikan berdasarkan prinsip bukan siapa yang betul atau salah, tetapi apa yang terbaik untuk pesakit.
- 4 Saya mendapat sokongan yang saya perlukan daripada kakitangan lain seperti dalam hal penjagaan pesakit
- 5 Sangat mudah bagi kakitangan di sini untuk bertanya soalan apabila ada sesuatu yang mereka tidak faham
- 6 Doktor dan jururawat di sini bekerjasama sebagai satu pasukan yang baik
- 7 Saya akan merasa selamat jika dirawat di sini sebagai seorang pesakit
- 8 Kesilapan perubatan dikendalikan dengan sewajarnya di kawasan klinikal ini
- 9 Saya tahu saluran yang betul untuk bertanya soalan mengenai keselamatan pesakit di kawasan klinikal ini
- 10 Saya mendapat maklum balas yang sewajarnya tentang prestasi saya
- 11 Dalam kawasan klinikal ini, sukar untuk kami berbincang kesalahan-kesalahan yang dilakukan
- 12 Saya mendapat galakkan dari rakan-rakan saya untuk melaporkan sebarang keraguan mengenai keselamatan pesakit
- 13 Budaya di kawasan klinikal ini membuatkan ianya mudah untuk saya belajar dari kesilapan orang lain
- 14 Jika saya menyuarkan cadangan mengenai keselamatan pesakit, pihak pengurusan pasti akan mengambil tindakan.
- 15 Saya sukakan kerja saya
- 16 Bekerja di sini seperti menjadi sebahagian daripada keluarga yang besar
- 17 Kawasan klinikal ini adalah tempat yang baik untuk bekerja
- 18 Saya merasa bangga bekerja dalam kawasan klinikal ini
- 19 Kawasan klinikal ini mempunyai nilai moral yang tinggi

- 20 Apabila beban kerja saya berlebihan, prestasi saya akan terjejas
- 21 Saya kurang efektif di tempat kerja apabila kepenatan
- 22 Saya lebih cenderung untuk membuat kesilapan dalam situasi yang tegang dan tertekan
- 23 Keletihan menjejaskan prestasi saya kerja saya terutamanya dalam keadaan kecemasan (cth., kecemasan resusitasi, sawan)
- 24\* Pihak pengurusan menyokong usaha harian saya
- 25\* Pihak pengurusan tidak menyedari yang mereka berkompromi dengan keselamatan pesakit
- 26\* Pihak pengurusan menjalankan tugas dengan baik
- 27\* Kakitangan yang bermasalah akan ditangani secara konstruktif oleh:
- 28\* Saya mendapat maklumat yang lengkap dan tepat pada masanya mengenai perkara yang boleh menjejaskan kerja saya dari:
- 29 Jumlah kakitangan dalam kawasan klinikal ini mencukupi untuk mengendalikan pesakit
- 30 Hospital ini melakukan tugas yang baik dalam melatih kakitangan yang baru
- 31 Saya sentiasa mempunyai semua maklumat yang diperlukan untuk keputusan diagnostik dan terapeutik
- 32 Pelatih di dalam bidang saya mendapat penyeliaan yang secukupnya
- 33 Saya mendapat kerjasama yang baik daripada jururawat di dalam kawasan klinikal ini
- 34 Saya mendapat kerjasama yang baik daripada pakar-pakar perubatan di dalam kawasan klinikal ini
- 35 Saya mendapat kerjasama yang baik daripada ahli farmasi di dalam kawasan klinikal ini
- 36 Masalah komunikasi yang menyebabkan kelewatan rawatan adalah perkara biasa

\* assessed at two level: unit management (Pihak pengurusan unit) and hospital management (Pihak pengurusan hospital)