

## **CHAPTER 3 : METHODOLOGY**

### **3.1 Introduction**

Research methodology is a systematic structure and analysis of the methods applied in a study. It allows to evaluate the validity and reliability of the research. In this chapter will discuss concerning research approach and design, location of the study, population and sampling, research instrument, methods of data collection, data analysis and ethical approval.

### 3.2 Research Approach and Design

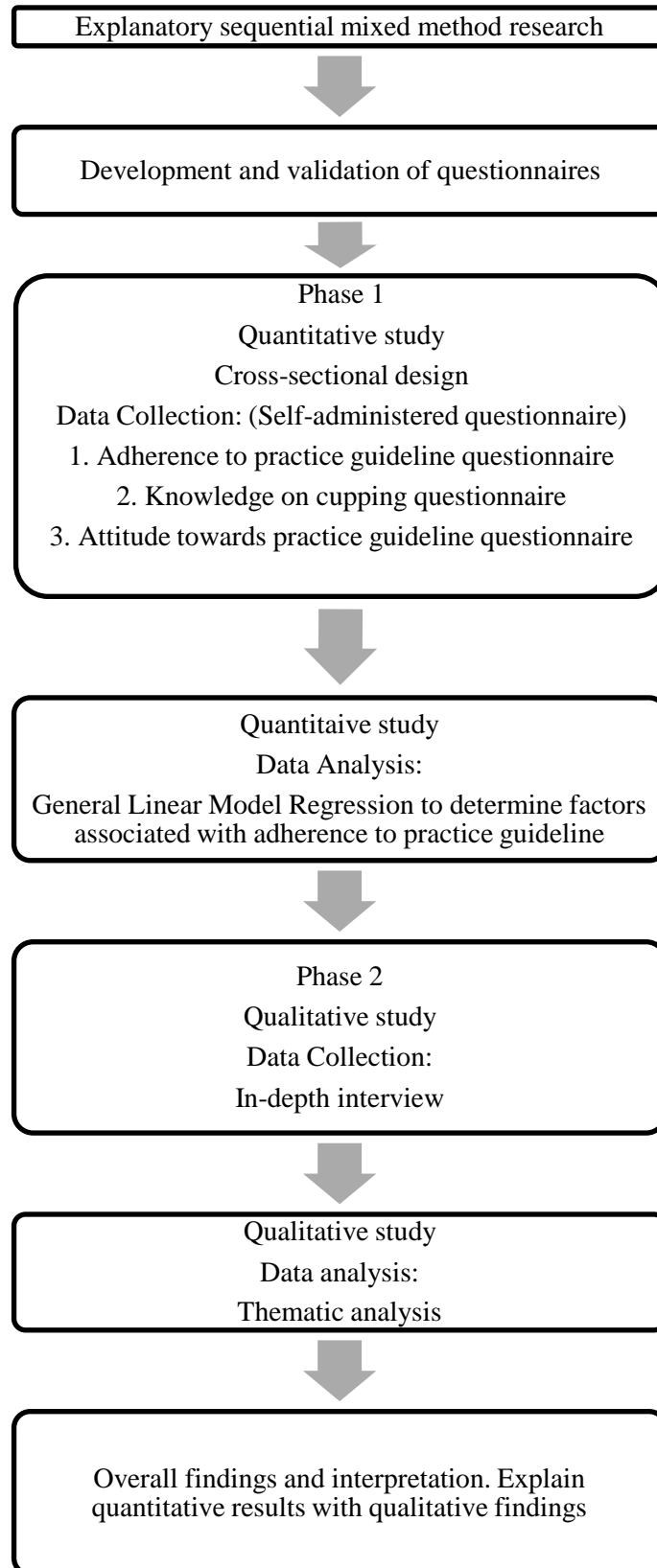


Figure 3.1 Flow of Study

This is an explanatory sequential mixed method study design. The researcher started with quantitative research design, followed by qualitative design to explore the results captured during the initial phase. It was called explanatory due to the preliminary quantitative results were further explained in the subsequent qualitative study design.

In this study there were two major components being employed. The first one was measuring adherence to practice guidelines among Malay cupping practitioners. Prior to this stage, was the development and validation of tools in measuring the variable. Hence, this needed quantitative study design in responding to the objectives. The subsequent crucial part in this study was to explore and understand the barriers of practice guideline use among those who were having low scores in adherence measurement tool. As a result, the combination of quantitative and qualitative study was the most appropriate measure in resolving research questions.

### **3.3 Location of the Study**

Malaysia is separated by two distinct geographical regions which are called as Peninsular Malaysia and East Malaysia. There are 11 states and 2 federal territories in Peninsular Malaysia, which include Perlis, Kedah, Penang, Perak, Kelantan, Terengganu, Pahang, Selangor, federal territories of Kuala Lumpur and Putrajaya, Negeri Sembilan, Melaka, and Johor. East Malaysia is the part of Malaysia located on the island of Borneo. It consists of the Malaysian states of Sabah and Sarawak, and the Federal Territory of Labuan. Islam is the official religion in Malaysia, with a multi-ethnic, multicultural, and multilingual society. The main ethnics in Malaysia are Malay which accounts half over the Malaysian population, followed by Chinese and Indian.

This study involved cupping practitioners from two major areas of central (Selangor) and south Malaysia (Johor).

This study was conducted among study population who attended two events organized by *Gabungan Pertubuhan Pengamal Perubatan Melayu Malaysia* (GAPERA). The venue of the events conducted were Cyberjaya University College of Medical Sciences, Selangor and Universiti Teknologi Malaysia, Johor, which involved participants coming from nearby areas or districts.

### **3.4 Phase One: Quantitative Study**

#### **3.4.1 Target population**

Malay cupping practitioners in Malaysia.

#### **3.4.2 Study population**

Study population was cupping practitioners registered with GAPERA who attended T&CM events.

#### **3.4.3 Sampling Method**

Universal sampling was applied to select the respondents.

#### **3.4.4 Inclusion Criteria**

Cupping practitioners who were:

- i. adults aged 18 years and above.

- ii. Malaysian citizen
- iii. able to understand and speak in Bahasa Malaysia.
- iv. registered with GAPERA

### 3.4.5 Exclusion Criteria

Cupping practitioners who were:

- i. unable to communicate.

### 3.4.6 Sample Size Calculation

One proportion formula was used for sample size calculation (Serdar et al., 2021). Since there was doubt about the value of P (prevalence of cupping practitioners who adhere to practice guideline in Malaysia) with no previous data, the proportion is taken from previous study measuring compliance to standard precautions guideline among healthcare workers in Saudi Arabia, at 90.1% who attained 75% of the maximum score (Haridi, 2018).

$$n = \left( \frac{Z}{m} \right)^2 * P(1 - P)$$

n = sample size

Z = 5% alpha error, 1.96

p = estimated prevalence (90.1%)

m = margin of error (5%)

$$n = \frac{(1.96)^2(0.9)(1 - 0.9)}{(0.05)^2}$$

n = 138 + 10% non-response

n = 151

To compute sample size based on the objective determining factors associated with adherence to practice guideline, two proportion formula was used. Based on prior study determining the association between gender and compliance of standard precautions (Haile et al., 2017), the sample size was as follows:

$$n = 7.84 * \frac{(p_1(1 - p_1) + (p_2(1 - p_2))}{(p_1 - p_2)^2}$$

n = sample size

p<sub>1</sub> = proportion of compliant in female, 22.8%

p<sub>2</sub> = proportion of compliant in male, 8.7%

n = 98 + 10% non-response

n = 107

From the two calculations, the higher sample was taken as final sample size. Thus, sample size in this study was 151.

### **3.4.7 Research Instruments**

A structured questionnaire was designed to fulfil the study objectives. It consisted of three sections. The first section was concerned with the personal, sociodemographic, and working characteristics of the participants, such as age, gender, ethnicity, education level, income, cupping training, employment status, nature of cupping services, types of cups used, working experience, and number of patients treated in a week. The second section enquired about adherence to practice guidelines, knowledge about cupping and attitude towards practice guideline.

In the initial phase of questionnaire development, adherence questionnaire comprised of 28 items, which cover 5 domains, namely (1) cupping procedure, (2) hand washing, (3) standard precautions, (4) documentation and (5) equipment sterilization.

After the process of exploratory and confirmatory factor analysis, the final items included were 18 with 5 Likert scales ranging from “never” to “very often”. Scoring marks were “never=1”, “rarely=2”, “sometimes=3”, “frequent=4” and “very often=5”, giving a total score of 90 points with minimum score of 18 points. The score was then classified into dichotomous (adherence and non-adherence).

**Adherence to cupping practice guideline is defined as cupping practitioner who scores  $\geq 75\%$  of the maximum score for adherence questions.** In the meantime, non-adherence is classified for those who achieved  $< 75\%$  of the maximum score. This method of scoring is coherent and in consistent with prior studies conducted among healthcare providers to measure compliance towards standard precautions (Amanya & Nyeko, 2020; Haridi et al., 2016). In other studies, measuring adherence to practice guideline among healthcare workers, they are notable to be well trained on standard precaution guideline, therefore the cut off point for adherence were quite stringent. Taking into consideration of cupping practitioners were not well and formally trained with the practice guideline, less stringent cut off point was chosen, at  $\geq 75\%$  of the maximum score for adherence.

As for the knowledge on cupping practice questionnaire, it encompasses of 3 domains which are knowledge on (1) precautions, (2) side effects and (3) contraindications. It consisted of 13 items with 5 Likert scales ranging from “strongly disagree=1”, “disagree=2”, “neutral=3”, “agree=4” and “strongly agree=5” to indicate their rating or agreement towards knowledge on cupping practice. Every correct response will be assigned a point value, from 5 to 1. The sum of all values will be the total score. There are 4 items with negative statement, which are items number 4, 5, 8 and 9. Therefore, during the analysis, these items will be reverse scored accordingly. The minimum score is 13 and the maximum will be 65. **Knowledge on cupping is**

**defined as cupping practitioner who scores  $\geq 75\%$  of the maximum score for knowledge questions.**

In terms of attitude towards practice guideline, the questionnaire has been adopted from previous validated questionnaire, to determine attitude towards guideline among general practitioners (Lugtenberg et al., 2011), which comprised of 5 questions with Likert scales varying from “1=strongly disagree”, “2=disagree”, “3=neutral”, “4=agree” and “5=strongly agree”.

### **3.4.8 Questionnaire Development**

Questionnaire development is needed in this study as the tools to measure variables of interest such as adherence to cupping practice guideline and knowledge on cupping were not readily available. Initially, literature search was performed to discover any established validated questionnaire. Due to its nonexistence, the researcher proceeded with questionnaire development based on the components constituted in the Malaysian Traditional and Complimentary Medicine Practice Guideline on Cupping (*Bekam*), first edition 2011 and insights from expert opinion in the field. Domains were selected based on the available components emphasized on this guideline, namely (1) types of cupping (dry and wet cupping), (2) treatment criteria (accepted age, indications, contraindications, recommended time, precautions, side effects and complication), (3) treatment procedure (apparatus, points of application, standard precautions, duration, monitoring, referral), (4) documentation, and (5) practice facilities. In creating domains for questionnaire development process, 5 preliminary adherence domains were chosen, which are: ‘cupping procedure’, ‘hand washing’, ‘standard precautions’,

‘documentation’ and ‘sterilization’, meanwhile for knowledge domains include ‘precautions’, ‘side effects’ and ‘contraindications’.

There are several components need to be assured in the process of developing a new questionnaire. It started with the identification of dimensionality or various components in developing the construct, determination of questionnaire administration such in self-administered, item format determination as in close ended or open ended, item development with no double-barreled and leading questions, determined the length of questionnaire, reviewed and revised initial items of construct by expertise and conducted pilot testing (Tsang et al., 2017).

The language used was in Bahasa Malaysia and has been evaluated to make it simple and understandable to define the concept. The language must be easily understood, simple, avoidance of ambiguous meaning and written in familiar to the respondents (Roopa & MS, 2017). The Malay language questions have been evaluated by a Malay language lecturer together with the content experts to confirm it is tally with the intention of the questions. It was then being back-to-back translated into English version and verified by the bilingual experts gain validity and reliability.

### **3.4.9 Validation of Questionnaire**

After development of adherence to practice guideline and knowledge on cupping questionnaires, the researcher proceeded with content validity among panel of experts and face validity. Newly developed questionnaire required to be thoroughly tested to ensure validity.

Content validity can be defined as how well items reflect specific domain using quantitative techniques (Rodrigues et al., 2017). The method used to test content

validity in this study was measuring content validity index (CVI). CVI can be represented by Item-CVI (I-CVI) and Scale-CVI (S-CVI). Each item will be rated as “1 = not relevant”, “2 = somewhat relevant”, “3 = quite relevant” and “4 = very relevant”. Prior the computation of CVI, the relevance rating is recorded as 1 (relevance scale of 3 or 4) or 0 (relevance scale of 1 and 2). Therefore, I-CVI is computed by number of experts giving relevance rating of “3 = quite relevant” or “4 = very relevant” for each item divided by total number of experts (Shrotryia & Dhanda, 2019; Yusoff, 2019). The value would range between 0 and 1. I-CVI  $>0.79$  means the item is relevant, 0.70 to 0.79 shows the item needs revision and  $<0.70$  represents elimination of the item (Rodrigues et al., 2017). Meanwhile S-CVI (average, AV) is computed to measure content validity for overall scale, where the sum of I-CVI divided by total number of items. The value S-CVI  $\geq 0.9$  symbolizes excellent content validity (Rodrigues et al., 2017). However, a minimum S-CVI (AV) should be 0.8 for reflecting acceptable content validity (Polit et al., 2007; Shrotryia & Dhanda, 2019). Additional space will be provided for any comments and recommendations to improve the items. The instrument will be revised based on the expert’s comments, to be used in next validation phase, exploratory factor analysis. The CVI was reviewed by 6 experts with enormous experiences in cupping area, which involved a public health specialist from Universiti Sains Malaysia (USM) who has vast experiences in cupping study, a representative from Traditional and Complimentary Medicine (T&CM) division, MOH Malaysia, two occupational health specialists from Universiti Sains Islam Malaysia (USIM), a biochemist from USIM and an experienced cupping practitioner who also become member in formulating and developing Malaysian cupping practice guideline.

Face validity measures the readability, feasibility and clarity of statement used in the questionnaire among non-expert but relevant to the actual participants in this

study later (Taherdoost, 2016). In measuring face validity, the items will be rated using Likert scales ranging from “1 = the item is not clear and comprehensive”, “2 = the item is somewhat clear and comprehensive”, “3 = the item is clear and comprehensive”, and “4 = the item is very clear and comprehensive”. Item rated with 3 or 4 is considered as valid clear and comprehensive (Polit & Beck, 2006). Clear or clarity is defined as the absence of ambiguity in the questionnaire, meanwhile comprehensiveness is to see whether the items are understandable by the respondents. Overall, the items must be in appropriate grammar, correct spelling and in good structure. The measurement of FVI is based on the CVI guidelines and it involves 5 cupping practitioners with various backgrounds who agree to participate in this validity study. Item rated 3 or 4 would be considered as valid clear and understandable, and the rest would be non-valid (Polit & Beck, 2006; Yusoff, 2019). The I-FVI and S-FVI assessment were interpreted based on the CVI guidelines. The easy clarity and easy comprehensiveness include appropriate grammar, the clarity of items, correct spelling, and correct structuring the sentences.

Exploratory factor analysis in construct validity and Cronbach’s alpha in internal consistency were used to measure validity and reliability of this newly developed questionnaire.

It is then followed by confirmatory factor analysis. In this CFA analysis, it needs to validate all measurement models of latent constructs for unidimensionality, validity, and reliability (Awang, 2015). The Construct Validity is measured by the Fitness Indices of the measurement model, the Convergent Validity is evaluated through calculating the Average Variance Extracted (AVE), and Discriminant Validity is gauged through the Discriminant Validity Index Summary. As for the reliability, it is acceptable to only computing the Composite Reliability (CR) since it replaces the

traditional value of Cronbach Alpha for analysis using Structural Equation Modeling (SEM).

Some model fit indices and their respective criteria were used to evaluate the goodness-of-fit of measurement model according to these indices: root mean square error of approximation (RMSEA), comparative fit index (CFI) and Tucker-Lewis Index (TLI).

The latent construct is considered valid if its fitness indexes achieve the three Model Fit categories namely Absolute Fit, Incremental Fit and Parsimonious Fit (Awang, 2015). The threshold and its respective index are given in the following Table 3.1.

Table 3.1 The three categories of model fit and their level of acceptance

<b>Name of category</b>	<b>Name of index</b>	<b>Level of acceptance</b>
<b>Absolute Fit Index</b>	<b>RMSEA</b>	< 0.08
	<b>GFI</b>	>0.90
<b>Incremental Fit Index</b>	AGFI	>0.90
	<b>CFI</b>	>0.90
	TLI	>0.90
	NFI	>0.90
<b>Parsimonious Fit Index</b>	<b>Chisq/df</b>	<3.0

The indexes in bold are recommended since they are frequently reported in literatures. (Awang, 2015)

#### 3.4.10 Adherence to Cupping Practice Guideline Questionnaire

This questionnaire intends to assess adherence to cupping practice guideline among cupping practitioners in Malaysia. It is started with questionnaire development by generating items pool based on the existing Malaysian cupping guideline developed by Ministry of Health, Malaysia in 2011. Experts from the area of cupping practice, public health, occupational health, and questionnaire development were involved in deriving items and assessing selected items. Construct were developed, derived from

literature and expert opinions, where it covers components of cupping procedures, hand washing, standard precautions, documentation, and sterilization of equipment. The items were then being assessed for content validity and face validity, which determining the clarity, readability, and relevancy. Based on the expert's feedback, items were rephrased or removed appropriately.

#### **3.4.10.1 Content Validity and Face Validity**

The questionnaire has been developed and consisted of 30 items initially. After undergoing content and face validity, 7 items were deleted due to lower scores as showed in item - content validity index (I-CVI), indicating irrelevant and obscureness of items.

Table 3.2 shows the I-CVI and S-CVI indicating relevancy of each item. The I-CVIs were ranged from 0.17 to 1.00. A total 21 items (70%) had I-CVI = 1.00, 6.7% had I-CVI = 0.83. 7 items (23.3%) with I-CVI <0.8 were deleted due to its irrelevancy to the constructs or domains. Meanwhile, the S-CVI (Average) was 0.83, which indicated acceptable overall content validity.

Table 3.2 I-CVI and S-CVI for content validity, 2017 (N=6)

Item	I-CVI (Relevancy)	Interpretation
Q1	1.00	Relevant
Q2	0.50	Eliminated
Q3	0.50	Eliminated
Q4	1.00	Relevant
Q5	0.33	Eliminated
Q6	1.00	Relevant
Q7	1.00	Relevant
Q8	1.00	Relevant
Q9	1.00	Relevant
Q10	1.00	Relevant
Q11	1.00	Relevant
Q12	0.83	Relevant
Q13	0.83	Relevant
Q14	0.33	Eliminated
Q15	0.17	Eliminated
Q16	1.00	Relevant
Q17	1.00	Relevant
Q18	1.00	Relevant
Q19	1.00	Relevant
Q20	0.33	Eliminated
Q21	1.00	Relevant
Q22	1.00	Relevant
Q23	0.17	Eliminated
Q24	1.00	Relevant
Q25	1.00	Relevant
Q26	1.00	Relevant
Q27	1.00	Relevant
Q28	1.00	Relevant
Q29	1.00	Relevant
Q30	1.00	Relevant
S-CVI (average)	0.83	Acceptable overall content validity

Number of items considered relevant and clear by all experts, N = 6.

Table 3.3 shows face validity, consisting of I-FVI and S-FVI among 5 cupping practitioners as the raters. After eliminating 7 items with lower I-CVI, the remaining 23 items then being face validated. The I-FVI were ranged from 0.8 to 1.00. All items showed clear and comprehensive manner, with all values were above the cut-off-point,

0.8. Hence, no item is omitted from the questionnaire. As for S-CVI, it showed good overall face validity, at 0.96 (Table 3.3).

Table 3.3 I-FVI and S-FVI of face validity, 2017 (N=5)

<b>Item</b>	<b>I-FVI (Clarity &amp; Comprehensiveness)</b>	<b>Interpretation</b>
Q1	1	Clear & Comprehensive
Q4	0.8	Clear & Comprehensive
Q6	1	Clear & Comprehensive
Q7	1	Clear & Comprehensive
Q8	1	Clear & Comprehensive
Q9	1	Clear & Comprehensive
Q10	1	Clear & Comprehensive
Q11	1	Clear & Comprehensive
Q12	1	Clear & Comprehensive
Q13	1	Clear & Comprehensive
Q16	0.8	Clear & Comprehensive
Q17	1	Clear & Comprehensive
Q18	1	Clear & Comprehensive
Q19	1	Clear & Comprehensive
Q21	1	Clear & Comprehensive
Q22	1	Clear & Comprehensive
Q24	0.8	Clear & Comprehensive
Q25	1	Clear & Comprehensive
Q26	1	Clear & Comprehensive
Q27	0.8	Clear & Comprehensive
Q28	1	Clear & Comprehensive
Q29	1	Clear & Comprehensive
Q30	0.8	Clear & Comprehensive
<b>S-FVI (Average)</b>	<b>0.96</b>	<b>Good overall face validity</b>

Number of items considered clear and comprehensive by all experts, N = 5

### 3.4.10.2 Exploratory Factor Analysis (EFA)

The next stage of questionnaire validation is exploratory factor analysis, where it was conducted among 56 cupping practitioners. As shown in Table 3.4, majority of the respondents were male (78.6%), having secondary school as the highest education

(35.9%) and working as part timer (69.1%). The mean age of the respondents was 37 years old, with the mean of working experience was 3.9 years.

Table 3.4 The sociodemographic characteristics of cupping practitioners involved for EFA, 2017 (N=56)

<b>Sociodemographic factors</b>	<b>n (%)</b>
<b>Age (years)</b>	37 (11) *
<b>Gender</b>	56 (100.0)
Male	44 (78.6)
Female	12 (21.4)
<b>Education level</b>	53 (100.0)
Masters	2 (3.8)
Bachelor	15 (28.3)
Diploma	13 (24.5)
Skills certificate	4 (7.5)
Secondary school	19 (35.9)
<b>Employment status</b>	55 (100.0)
Full time	17 (30.9)
Part time	38 (69.1)
<b>Working Experience (years)</b>	3.9 (3)*

\*mean (sd)

Upon commencement of the study, this questionnaire has a total of 28 items to measure adherence to practice guideline. However, due to lower Corrected Item Total Correlation, which is less than 0.3, the researcher decided to drop some items and run the validity and reliability analysis again. After considering removing 5 items from the questionnaire, it finally has 23 items, as shown in Table 3.5. Following to factor analysis, the KMO was 0.64 and Bartlett's test presented significant,  $p$ -value at  $p < 0.001$ . All factor loadings showed reasonable value, which is more than 0.3 (Table 3.5).

Table 3.5 Final exploratory factor analysis and reliability test for all 5 constructs/ domains

No	Item	aComponent					bCorrected Item-Total Correlation	bCronbach's Alpha if item deleted	cConstruct/ Domain	bCronbach's alpha
		1	2	3	4	5				
1	I cleaned the skin with 70% alcohol before scarification.	0.641					0.482	0.808	<i>Treatment/ cupping procedure</i>	0.814
2	I applied each cup not more than 15 min.	0.664					0.638	0.784		
3	I am using not more than 10 cups per procedure.	0.733					0.401	0.822		
4	I monitored patients after cupping procedure to prevent from excessive bleeding.	0.734					0.621	0.783		
5	I advised patients to refrain from work for up to 12 hours post-procedure.	0.788					0.712	0.751		
6	I recorded any complications.	0.732					0.730	0.746		
7	I washed hand before handling each patient.		0.884				0.824	0.919	<i>Hand washing</i>	0.932
8	I washed hand after handling each patient.		0.881				0.890	0.895		

No	Item	aComponent					bCorrected Item-Total Correlation	bCronbach's Alpha if item deleted	cConstruct/ Domain	bCronbach's alpha
		1	2	3	4	5				
9	I washed hand when exposed to blood or body fluids.		0.691				0.819	0.922		
10	I washed hand after take-off gloves.		0.828				0.846	0.910		
11	I wore gloves during treatment			0.567			0.595	0.767	<i>Standard precautions</i>	0.795
12	I wore face mask during treatment.			0.611			0.664	0.74		
13	I wore eye protection during treatment.			0.394			0.308	0.813		
14	I wore apron during treatment.			0.326			0.529	0.772		
15	I mopped the spill area using chlorine (eg chlorox).			0.703			0.498	0.779		
16	I disposed of lancet into 'sharps bin'.			0.716			0.498	0.773		
17	I disposed contaminated waste of blood into yellow 'clinical waste' bin.			0.660			0.742	0.720		

No	Item	aComponent					bCorrected Item-Total Correlation	bCronbach's Alpha if item deleted	cConstruct/ Domain	bCronbach's alpha
		1	2	3	4	5				
18	I asked for patient's consent before the treatment.				0.578		0.295	0.752	<i>Documentation</i>	0.709
19	I recorded number of cups used during cupping.				0.827		0.589	0.587		
20	I recorded location of the cups during treatment.				0.657		0.709	0.488		
21	I recorded estimated amount of blood that was released during cupping.				0.429		0.482	0.67		
22	I sterilized the cups after each treatment.					0.641	0.389	-	<i>Sterile equipment</i>	0.53
23	I used disposable lancet to scarify the skin.					0.832	0.389	-		

a Factor Analysis; Exploratory Factor Analysis with varimax rotation, Kaiser-Meyer-Olkin (KMO) measure was 0.64 and Bartlett's test of sphericity  $p < 0.001$ . Total variance explained by 5 components was 66.9%

b Reliability analysis; Cronbach's alpha Coefficient, overall Cronbach's alpha = 0.887

c Domains were predetermined based on adherence to cupping practice guideline

Table 3.6 shows internal consistency of Cronbach's Alpha for each of the construct. The entire value indicated Cronbach's alpha of more than 0.7, except for one construct which reported to be 0.53 alpha coefficient.

Table 3.6 Cronbach's Alpha of adherence constructs

<b>Adherence constructs</b>	<b>Cronbach's alpha</b>
Cupping procedure	0.81
Hand washing	0.93
Standard precautions	0.79
Documentation	0.70
Sterile equipment	0.53

#### **3.4.10.3 Confirmatory Factor Analysis (CFA)**

The subsequent step of validation is confirmatory factor analysis (CFA). A total of 89 cupping practitioners through convenience sampling were included and their responses were acquired. Confirmatory factor analysis (CFA) using AMOS was conducted and the model fit was discussed. Table 3.7 shows sociodemographic characteristics of the respondents. Majority of the respondents were male (65.2%), having Bachelor (25.9%), and part timers at 69.3%. The mean age of the respondents was 38 years old, meanwhile the mean years of working experiences was 3.8.

Table 3.7 The sociodemographic characteristics of cupping practitioners involved for CFA, 2017 (N=89)

<b>Sociodemographic factors</b>	<b>n (%)</b>
<b>Age (years)</b>	38 (11.2) *
<b>Gender</b>	89 (100.0)
Male	58 (65.2)
Female	31 (38.8)
<b>Education level</b>	85 (100.0)
PhD	1 (1.2)
Masters	3 (3.5)
Bachelor	22 (25.9)
Diploma	20 (23.5)
Skills certificate	20 (23.5)
Secondary school	19 (22.4)
<b>Employment status</b>	88 (100.0)
Full time	27 (30.7)
Part time	61 (69.3)
<b>Working Experience (years)</b>	3.8 (2.8) *

\*mean (sd)

This study consists of the second order constructs as well as first order constructs. The second order construct in this study is Adherence, which consists of 5 first order constructs or sub-constructs namely Standard Precaution (measured using 7 items), Procedure (measured using 6 items), Hand Washing (measured using 4 items), Documentation (measured using 4 items) and Sterilization of equipment (measured using 2 items). The overall framework resembling the model and constructs is presented in Figure 3.2 (initial measurement model). Every item is measured using an interval scale which range from 1 (never) to 5 (always) with the given statement. This study would assess the pooled CFA for each measurement model together and determine the discriminant validity among these constructs.

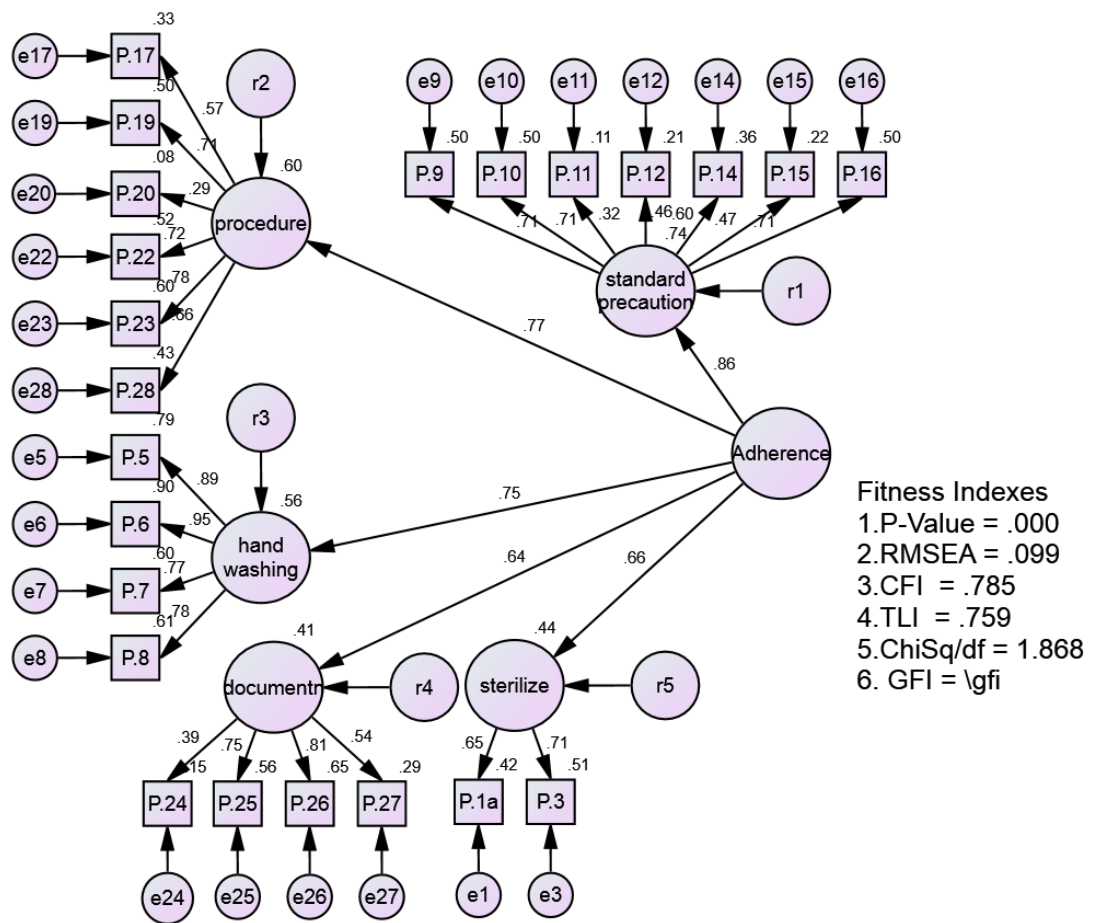


Figure 3.2 Initial measurement model for Adherence

The Fitness Indexes in Figure 3.2 do not meet the required level of acceptance. To solve this problem, Awang (2015) suggested that the researcher to determine the poor factor loading items and remove it from the model as the item is useless in measuring a specific construct. Low factor loading also could have indicates an ambiguous statement of the items. The cut-off point for poor factor loading is below 0.5 since this is a newly developed questionnaire (Awang, 2015).

Based on Figure 3.3, this study identifies several poor factor loading items namely P.11, P.12 and P.15 from sub-construct Standard Precaution, P.20 from sub-construct Procedure and P.24 from sub-construct Documentation. These poor items cause the model to be unfit and need to be removed from the model to achieve better

indices. The deletion needs to be done one item at a time with the lowest factor loading item to be pruned first (Awang, 2015). After the item is deleted, the researcher needs to run again the CFA analysis until the model achieves the acceptable values of the three categories of model fit, which are Absolute fit Index (RMSEA), Incremental fit index (CFI) and Parsimonious fit Index (Chisq/df).

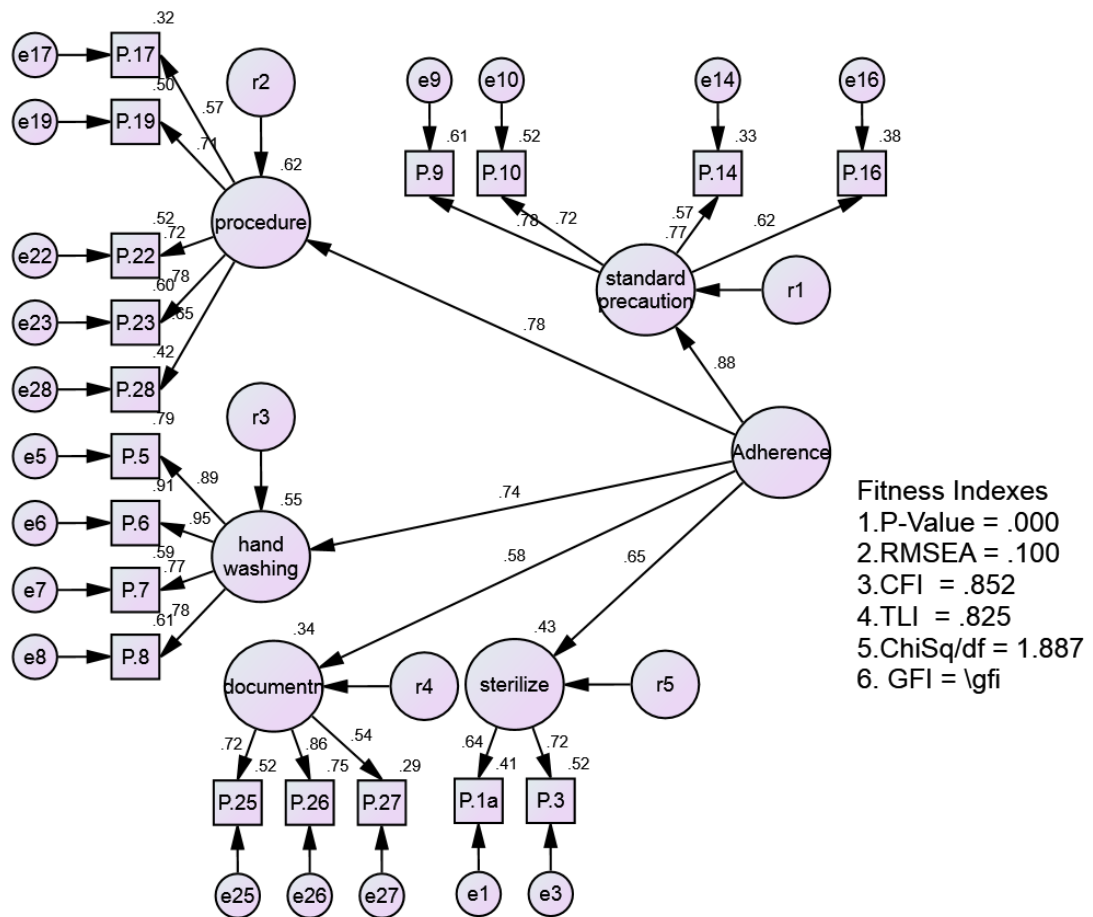


Figure 3.3 The new measurement model after P.20, P.11, P.24, P.12, and P.15 are deleted

After all problematic items with lower factor loading of less than 0.5 were removed, the fitness indices value is still dissatisfied. The next step is to look at the Modification Indices (MI). The value of MI above 15 indicates a pair of items is redundant in the model that affect the fitness of measurement model. The redundancy of items is showed in Table 3.8.

Table 3.8 The Modification Indices presents the Covariance between each pair of items. High MI indicates redundancies between the two items.

The modification indices present the covariance between each pair of items

			<b>MI</b>	<b>Par Change</b>	<b>Comment</b>
e7	< -- >	e8	26.872	0.126	MI>15 indicates item P.7 and P.8 are redundant

Table 3.8 shows the MI for a pair of correlated errors which reflect redundancies exist in the model. The MI value of 26.87 is considered high since it is greater than 15. The correlated measurement error is between e8 and e7, in which it displays the redundancy between P.8 and P.7. This redundancy caused the measurement model to have a poor fit. In dealing with this redundancy, the researcher would opt to set the pair of redundant items as free parameter estimate and run again the measurement model. Deletion of one of the items in the pairs is not possible because it will exceed 20% of items deletion, in which it deems to be invalid since it fails the confirmatory itself (Awang, 2015).

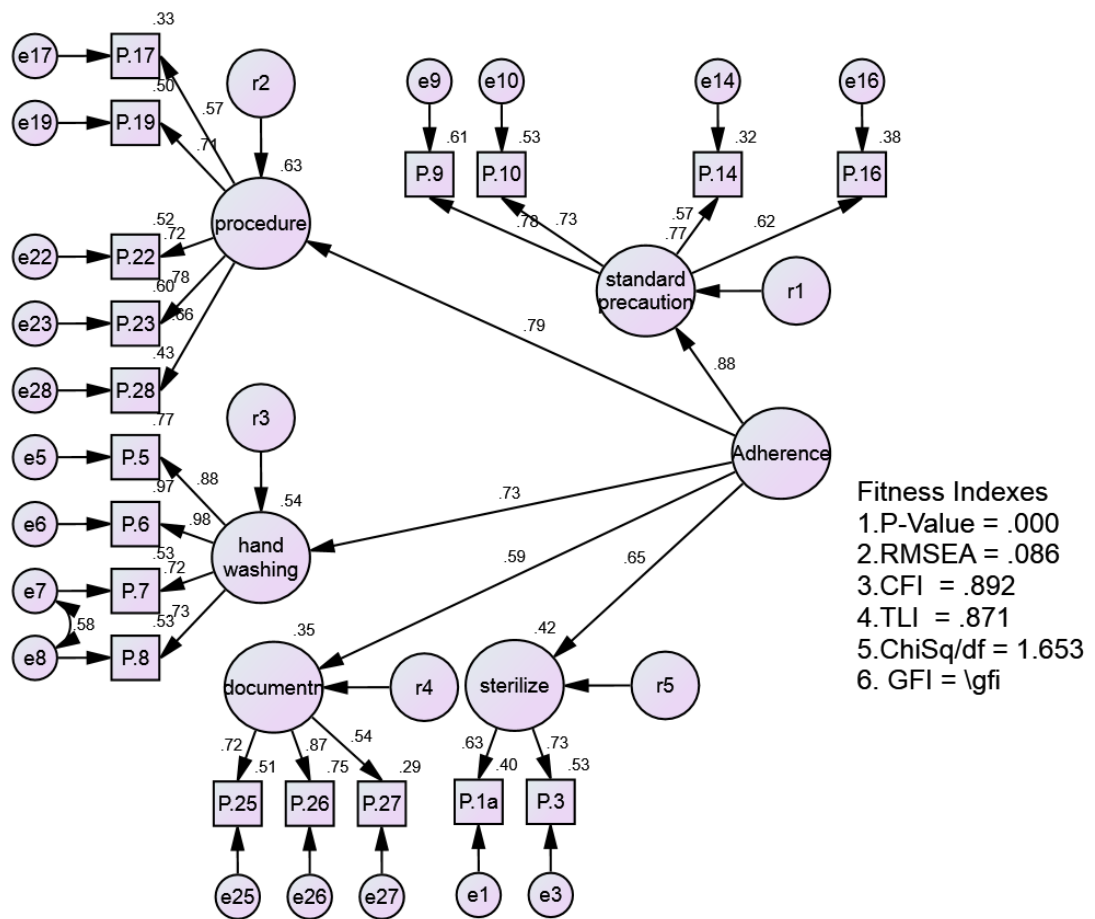


Figure 3.4 The new measurement model after set the pair of e7 and e8 as free parameter estimate

After setting up the free parameter estimate for P.7 and P.8 and re-run the analysis, Figure 3.4 showed the final measurement model for Adherence latent construct. It displays acceptable value of fitness indexes and factor loadings for all constructs.

### The Assessment for Construct Validity

Apparently, some of the results of final model is good but some parts are not achieved the threshold of fitness indices. The Absolute Fit category named RMSEA is 0.086 (slightly higher than the recommended threshold of <0.08), the Incremental Fit category named CFI is 0.892 (slightly lower than the recommended threshold of >0.90),

and the Parsimonious Fit category named the ratio of Chisq/df is 1.653 (good as it is less than the recommended threshold of < 3.0) (Awang, 2015).

In order to discuss on the model fit of CFA, we need to determine the principles of the various model fit indices. According to Fabrigar et al., RMSEA values of less than 0.05 are good, values between 0.05 and 0.08 considered acceptable, values between 0.08 and 0.1 are marginal, and values greater than 0.1 are poor (Fabrigar et al., 1999). Therefore, RMSEA value of 0.086 in this study reveals an acceptable fit. The CFI value in this study is close to 0.9, which indicates a relatively good fit (Bentler, 1990). Furthermore, the other fitness index, which is TLI, it should be above 0.9 for a good fit, however in this study, it shows a little below than the criteria. Based on these indices, this questionnaire has an acceptable fit model (Table 3.9).

Table 3.9 The summary of Fitness Indices for the Measurement Model

<b>Name of category</b>	<b>Name of index</b>	<b>Index value</b>	<b>Comments</b>
<b>1.Absolute fit</b>	RMSEA	0.086	Achieved the requirement, good fit
<b>2.Incremental fit</b>	TLI	0.871	Close to achieve the requirement, relatively good fit
<b>Incremental fit</b>	CFI	0.892	Close to achieve the requirement, relatively good fit
<b>3.Parsimonious fit</b>	Chisq/df	1.653	Achieved the requirement

Note: CFI – Comparative Fit Index; TLI – Tucker Lewis Index; RMSEA – Root Mean Square of Approximation

### **The Assessment for Convergent Validity and Composite Reliability**

Validity is defined as the ability of an instrument to measure what it supposed to measure. The convergent validity can be assessed by computing the Average Variance Extracted (AVE) for every construct. In order the construct to be valid, the

value of AVE should be 0.05 or higher (Awang, 2015). The value of 0.5 and higher suggests adequate convergence and that scale has higher distinct validity (Fornel & Larker, 1981). Meanwhile, reliability is the consistency and repeatability of the measures. In composite reliability, it indicates the internal consistency of a latent construct. The CR need to be 0.6 and beyond to achieve this reliability (Awang, 2015). It means that reliability is good with internal consistency. Table 3.10 displays the formula to compute AVE and CR.

Table 3.10 Formula for AVE and CR

$AVE = \sum K^2/n$	K = factor loading of every item n = number of items in a model
$CR = (\sum K)^2/[(\sum K)^2 + (\sum 1 - K^2)]$	

After being computed, the AVE and CR of the constructs and their respective items were tabulated in Table 3.11 below.

Table 3.11 The AVE and CR for Adherence construct

<b>Construct</b>	<b>Sub construct</b>	<b>Factor loading</b>	<b>CR (<math>\geq 0.6</math>)</b>	<b>AVE (<math>\geq 0.5</math>)</b>
Adherence	Standard precaution	.88	0.852	0.540
	Procedure	.79		
	Hand washing	.73		
	Documentation	.59		
	Sterilization	.65		
<b>Sub construct</b>	<b>Items</b>	<b>Factor loading</b>	<b>CR (<math>\geq 0.6</math>)</b>	<b>AVE (<math>\geq 0.5</math>)</b>
Standard precaution	P.9	.78	0.772	0.463
	P.10	.73		
	P.14	.57		
	P.16	.62		
Procedure	P.17	.57	0.819	0.478
	P.19	.71		
	P.22	.72		
	P.23	.78		
Hand washing	P.5	.88	0.900	0.697
	P.6	.98		
	P.7	.72		
	P.8	.73		
Documentation	P.25	.72	0.760	0.522
	P.26	.87		
	P.27	.54		
Sterilization	P.1	.63	0.633	0.465
	P.3	.73		

As according to Table 3.11, the CR estimates for all items were above the ideal 0.6 cut off. Meanwhile for AVE, only three sub constructs have the value of slightly below acceptable 0.5 cut off. This perhaps has resonance with the low factor loadings obtained for these items. In lieu of all 5 sub constructs, the items were sufficient in terms of how the measurement model was specified. The CR and AVE support the Convergent Validity and composite reliability of the measurement model to a reasonable extent.

Composite reliability is the sum of the reliability of all measured items, which discovered the internal consistency of the constructs. The higher value the reliability revealed the greater internal consistency that would be. All the five sub constructs to measure adherence were having composite reliability in between 0.633 and 0.900. Therefore, the construct reliability of the latent variables was good.

Meanwhile, for average variance extracted, it is the variance interpreted by the latent factors from measurement error. Increasing of AVE would indicate the higher variance interpreted by the latent variables and the smaller relative measured error. There are three sub-constructs with slightly lower AVE than the recommended cut off, which is around 0.4 and it still considered as acceptable. This is because, according to Fornell and Larcker, if AVE is less than 0.5 but the CR is higher than 0.6, the convergent validity of the construct is still adequate (Fornel & Larker, 1981). In addition, it is suggestive of relying on composite reliability alone for concluding the validity of the construct to be adequate.

### The Discriminant Validity Index among the Constructs

Table 3.12 The Discriminant Validity Index summary for the construct

Construct	Standard precaution	Procedure	Hand washing	Documentation	Sterilize
<b>Standard precaution</b>	<b>0.68</b>				
<b>Procedure</b>	0.36	<b>0.69</b>			
<b>Hand washing</b>	0.41	-	<b>0.83</b>		
<b>Documentation</b>	0.14	0.56	0.03	<b>0.72</b>	
<b>Sterilize</b>	0.24 -	0.2 -	0.36 -	-0.21 -	<b>0.68</b>

The discriminant validity for all construct is accomplished when a diagonal value (in bold) is higher than the values in its row and column, in which the diagonal

value is the square root of AVE of the construct. Based on Table 3.12, the researcher can conclude that the discriminant validity for all constructs is valid and achieved.

### **3.4.11 Knowledge on Cupping Practice Questionnaire**

This questionnaire aims to determine knowledge on cupping practice among cupping practitioners in Malaysia. The constructs or domains which derived from literature and expert opinions include three major concerns, which are (1) precautionary measures, (2) side effects and (3) contraindications.

#### **3.4.11.1 Content Validity and Face Validity**

This knowledge on cupping practice questionnaire comprised of 17 items. Table 3.13 shows the I-CVI and S-CVI indicating relevancy of each item. The I-CVIs were ranged from 0.83 to 1.00. A total 12 items (71%) had I-CVI = 1.00, and 29% of items had I-CVI = 0.83. No items were noticed to have I-CVI <0.8, therefore, deletion of items is not needed. In the meantime, the S-CVI (Average) was 0.95, which demonstrated excellent overall content validity.

Table 3.13 I-CVI and S-CVI for content validity, 2017 (N=6)

<b>Item</b>	<b>I-CVI (Relevancy)</b>	<b>Interpretation</b>
Q1	1.00	Relevant
Q2	1.00	Relevant
Q3	0.83	Relevant
Q4	1.00	Relevant
Q5	0.83	Relevant
Q6	1.00	Relevant
Q7	1.00	Relevant
Q8	0.83	Relevant
Q9	1.00	Relevant
Q10	1.00	Relevant
Q11	1.00	Relevant
Q12	1.00	Relevant
Q13	1.00	Relevant
Q14	0.83	Relevant
Q15	0.83	Relevant
Q16	1.00	Relevant
Q17	1.00	Relevant
<b>S-CVI (average)</b>	<b>0.95</b>	<b>Acceptable overall content validity</b>

Number of items considered relevant and clear by all experts, N = 6.

Table 3.14 shows face validity, consisting of I-FVI and S-FVI conducted among 5 cupping practitioners as the raters. The I-FVI were ranging from 0.8 to 1.00. All items were clear, comprehensive, and understandable, with all values were above the cut-off-point, 0.8. Hence, no item is omitted from the questionnaire. As for S-FVI, it showed good overall face validity, at 0.95.

Table 3.14 I-FVI and S-FVI for face validity, 2017 (N=5)

<b>Item</b>	<b>I-FVI (Clarity &amp; Comprehensiveness)</b>	<b>Interpretation</b>
Q1	1	Clear & Comprehensive
Q2	1	Clear & Comprehensive
Q3	1	Clear & Comprehensive
Q4	1	Clear & Comprehensive
Q5	1	Clear & Comprehensive
Q6	1	Clear & Comprehensive
Q7	1	Clear & Comprehensive
Q8	1	Clear & Comprehensive
Q9	1	Clear & Comprehensive
Q10	1	Clear & Comprehensive
Q11	1	Clear & Comprehensive
Q12	0.8	Clear & Comprehensive
Q13	0.8	Clear & Comprehensive
Q14	0.8	Clear & Comprehensive
Q15	1	Clear & Comprehensive
Q16	0.8	Clear & Comprehensive
Q17	1	Clear & Comprehensive

<b>S-FVI (Average)</b>	<b>0.95</b>	<b>Good overall face validity</b>
------------------------	-------------	-----------------------------------

Number of items considered clear and comprehensive by all experts, N = 5

### 3.4.11.2 Exploratory Factor Analysis (EFA)

After factor analysis, the KMO was 0.59 and Bartlett's test presented significant  $p$ -value at  $p < 0.001$ . All factor loadings showed good value, which is more than 0.3 (Table 3.15).

Table 3.15 Final factor analysis and reliability test

No	Item	aComponent			bCorrected Item- Total Correlation	bCronbach's Alpha if item deleted	cDomain	b Cronbach's alpha
		1	2	3				
1	HIV/AIDS can be transmitted if practitioner does not comply with infectious disease control measures.	0.790			0.709	0.791	Precaution	0.829
2	Hepatitis B can be transmitted if practitioner doesn't comply with infectious disease control measures.	0.834			0.735	0.787		
3	Hepatitis C can be transmitted if practitioner doesn't comply with infectious disease control measures.	0.795			0.691	0.792		
4	Bekam should not be done to patient with haemophilia.	0.412			0.323	0.835		
5	Bekam should not be performed on patients with low platelets.	0.585			0.399	0.827		

No	Item	aComponent			bCorrected Item- Total Correlation	bCronbach's Alpha if item deleted	cDomain	b Cronbach's alpha
		1	2	3				
6	Bekam should not be done in the area of deep vein thrombosis.	0.760			0.602	0.803		
7	Bekam should not be done on the body area with ulcers.	0.519			0.415	0.825		
8	Bekam can't be done in patients with bleeding problems.	0.695			0.536	0.811		
9	Emergency medical services must be contacted immediately if the patient fall unconscious (eg:999)	0.614			0.446	0.822		
10	Bekam may cause syncope.		0.802		0.783	0.682	Side effects	0.802
11	Bekam may cause excessive bleeding.		0.621		0.502	0.817		
12	Bekam may cause infection at scarified area.		0.772		0.666	0.728		

No	Item	aComponent			bCorrected Item- Total Correlation	bCronbach's Alpha if item deleted	cDomain	b Cronbach's alpha
		1	2	3				
13	Bekam may cause bruises at the cupping site.		0.573		0.572	0.775		
14	Bekam can be done in cancer patients.			0.722	0.389	0.697	Contra- indications	0.700
15	Bekam can be done over varicose veins.			0.604	0.472	0.644		
16	Bekam can be done in patients on anticoagulant treatment (eg: aspirin, warfarin, heparin)			0.734	0.537	0.606		
17	Bekam can done in bone fracture.			0.656	0.551	0.593		

a Factor Analysis: Exploratory Factor Analysis with varimax rotation, Kaiser-Meyer-Olkin (KMO) measure was 0.59 and Bartlett's test of sphericity  $p < 0.001$ . Total variance explained by 3 components was 55.9%

b Reliability analysis; Cronbach's Alpha Coefficient

c Domains were predetermined based on knowledge on cupping

Table 3.16 shows internal consistency for all the constructs. The entire value indicates a good Cronbach's alpha, >0.7.

Table 3.16 Cronbach's Alpha of knowledge domain

<b>Knowledge domains</b>	<b>Cronbach's alpha</b>
Precautions	0.829
Side effects	0.802
Contraindications	0.700

### **3.4.11.3 Confirmatory Factor Analysis (CFA)**

In this knowledge questionnaire, it entails 3 sub-constructs namely Side Effects (measured using 4 items), Precautions (measured using 9 items), and Contraindications (measured using 4 items). The overall framework resembling the model of constructs is presented in Figure 6. Every item is measured using an interval scale ranging from 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree) and 5 (strongly agree) with the given statement.

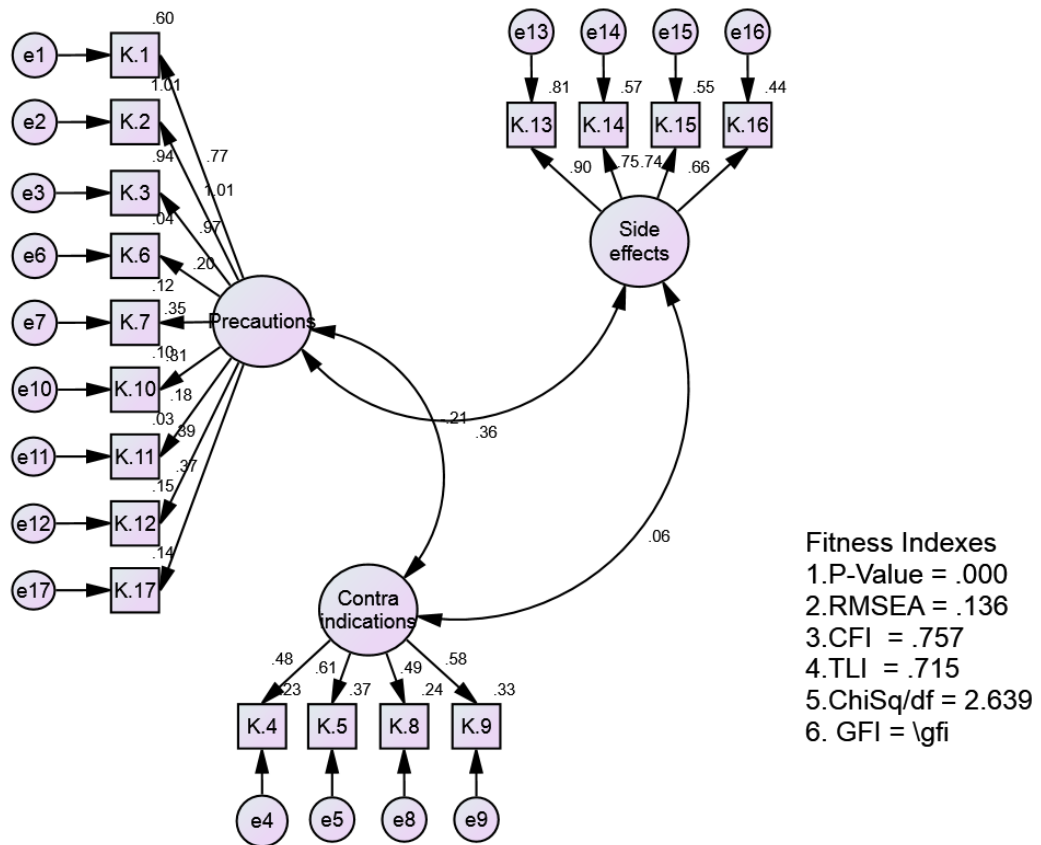


Figure 3.5 Initial measurement model 3 sub constructs of knowledge

The Fitness Indexes in Figure 3.5 do not meet the required level of acceptance. This study identifies several poor factor loading items namely K.11, K.6, K.10, and K.7 from sub-construct Precautions. These poor items cause the model to be unfit and need to be removed from the model to achieve better indices.

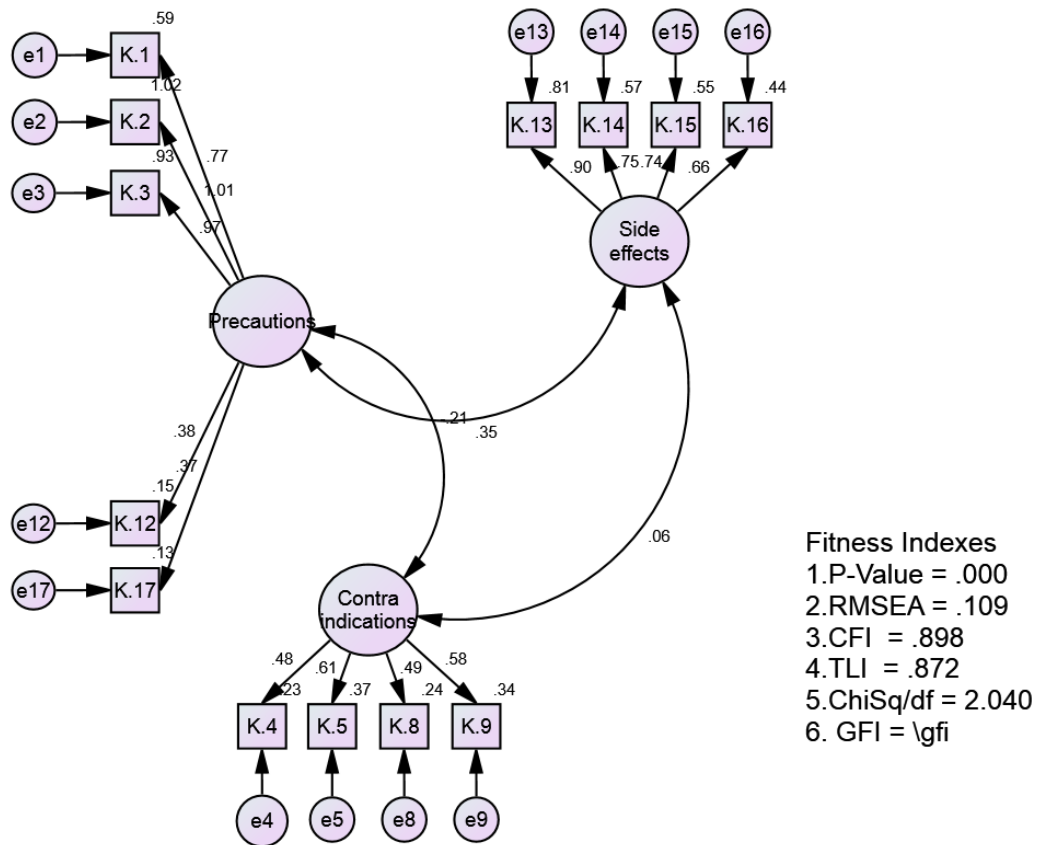


Figure 3.6 The new measurement model after K.11, K.6, K.10, and K.7 are removed

The outcomes are still under cut-off recommended value for fitness indices, and there are two more items which have factor loading less than 0.5, which are K.17 (factor loading 0.37) and K.12 (factor loading 0.39). However, the process of deleting another lower factor loading is not possible because the items deletion is already achieved 20% of total items in the model (Awang, 2015). The next step is to look at the Modification Indices (MI). After checking for MI, resulting in no redundancy among the items, whereby no MI value exceeded cut off value 15. Therefore, the above measurement model in Figure 3.6 represented the final model for knowledge latent constructs.

## The Assessment for Construct Validity

Apparently, some of the results of final model are good but some parts are not achieved the threshold of fitness indices. The Absolute Fit category named RMSEA is 0.109 (slightly higher than the recommended threshold of <0.08), the Incremental Fit category named CFI is 0.898 (slightly lower than the recommended threshold of >0.90), and the Parsimonious Fit category named the ratio of Chisq/df is 2.040 (good as it is less than the recommended threshold of < 3.0) (Awang, 2015).

RMSEA value of 0.10 in this study reveals a marginal fit. The CFI value in this study is close to 0.9, which indicates a relatively good fit (Bentler, 1990). Furthermore, the other fitness index, which is TLI, it should be above 0.9 for a good fit, shows a little below than the criteria. Based on these indices, this questionnaire has an acceptable fit model, as shown in Table 3.17.

Table 3.17 The summary of Fitness Indices for the Measurement Model

<b>Name of category</b>	<b>Name of index</b>	<b>Index value</b>	<b>Comments</b>
<b>1.Absolute fit</b>	RMSEA	0.109	Achieved the marginal fit
<b>2.Incremental fit</b>	TLI	0.872	Close to achieve the requirement, relatively good fit
<b>Incremental fit</b>	CFI	0.898	Close to achieve the requirement, relatively good fit
<b>3.Parsimonious fit</b>	Chisq/df	2.040	Achieved the requirement

Note: CFI – Comparative Fit Index; TLI – Tucker Lewis Index; RMSEA – Root Mean Square of Approximation

### The Assessment for Convergent Validity and Composite Reliability

After being compute, the AVE and CR of the constructs and their respective items are tabulated in Table 3.18.

Table 3.18 The AVE and CR for Knowledge construct

Construct	Sub construct	Factor loading	CR ( $\geq 0.6$ )	AVE ( $\geq 0.5$ )
Side effects	K.13	0.90	0.850	0.589
	K.14	0.75		
	K.15	0.74		
	K.16	0.66		
Contraindications	K.4	0.48	0.623	0.295
	K.5	0.61		
	K.8	0.49		
	K.9	0.58		
Precautions	K.1	0.77	0.850	0.567
	K.2	1.01		
	K.3	0.97		
	K.6	Deleted		
	K.7	Deleted		
	K.10	Deleted		
	K.11	Deleted		
	K.12	0.38		
K.17	0.37			

As according to Table 19, the CR estimates for all items are above the ideal 0.6 cut off. Meanwhile for AVE, only one sub construct has the value of below acceptable 0.5 cut off. This might be due to the low factor loadings obtained for these items. In lieu of all 3 sub constructs, the items were sufficient in terms of how the measurement model was specified. The CR and AVE support the Convergent Validity and composite reliability of the measurement model to a reasonable extent.

All 3 sub constructs were having composite reliability in between 0.623 and 0.850. Thus, the construct reliability of the latent variables was good.

Meanwhile, there is one sub-construct with lower AVE than the recommended cut off, which is around 0.3. This is because, according to Fornell and Larcker, if AVE is less than 0.5 but the CR is higher than 0.6, the convergent validity of the construct is still adequate (Fornel & Larker, 1981) in addition, it is suggestive of relying on composite reliability alone for concluding the validity of the construct to be adequate.

### The Discriminant Validity Index among the Constructs

Table 3.19 The Discriminant Validity Index summary for the construct

<b>Construct</b>	<b>Side effects</b>	<b>Contraindications</b>	<b>Precautions</b>
<b>Side effects</b>	<b>0.77</b>		
<b>Contraindications</b>	0.06	<b>0.54</b>	
<b>Precautions</b>	0.35	-0.21	<b>0.75</b>

The discriminant validity for all construct is accomplished when a diagonal value (in bold) is higher than the values in its row and column, in which the diagonal value is the square root of AVE of the construct. As shown in Table 3.19, the discriminant validity for all constructs is valid and achieved.

#### 3.4.12 Methods of Data Collection

The quantitative study was conducted using self-administered questionnaire, where it was designed to be completed by the respondent without the help of the researcher in collecting the data. Every participant in the GAPERA events who fulfilled the inclusion and exclusion criteria were approached and invited to be involved in this study. Participants were briefed about the study. Only those who gave written consent

were given questionnaire to fill in. Research information sheet containing details regarding to the research and informed consent were briefed to the respondents beforehand. The respondents filled in the consent form before answering the questionnaire.

### **3.4.13 Data Analysis**

All data were analyzed using IBM SPSS version 25. Descriptive statistics such as mean and standard deviation were used to describe the characteristics of numerical variable, meanwhile frequency and percentage were used for categorical variables. Data cleaning is conducted prior to analysis to remove duplicates, errors, or irrelevant data.

Adherence questionnaire consists of comprised of 18 items with 5 Likert scales ranging from “never=1”, “rarely=2”, “sometimes=3”, “frequent=4” and “very often=5”, giving a total score of 90 points with minimum score of 18 points. The score was then classified into dichotomous (adherence and non-adherence). **Adherence to cupping practice guideline is specified as cupping practitioner who scores  $\geq 75\%$  of the maximum score for adherence questions.**

Knowledge on cupping practice questionnaire encompasses of 13 items with 5 Likert scales ranging from “strongly disagree=1”, “disagree=2”, “neutral=3”, “agree=4” and “strongly agree=5” to indicate their agreement towards knowledge items. There are 4 items with negative statement, which are items number 4, 5, 8 and 9. Therefore, during the analysis, these items will be reverse scored accordingly. The minimum score is 13 and the maximum will be 65. **Adequate knowledge on cupping is classified as cupping practitioner who scores  $\geq 75\%$  of the maximum score for**

**knowledge questions, meanwhile inadequate is determined as the score <75% of the maximum score.**

In terms of attitude towards practice guideline, the questionnaire has been adopted from previous validated questionnaire, to determine attitude towards guideline among general practitioners (Lugtenberg et al., 2011), which comprised of 5 questions with Likert scales varying from “1=strongly disagree”, “2=disagree”, “3=neutral”, “4=agree” and “5=strongly agree”.

Prior to multivariate analysis, bivariate analysis such as simple linear regression, t-test and ANOVA were performed to evaluate each of independent variables with the outcome variable, one at a time. After significant independent variables had been identified in the analysis, multivariate analysis was done to confirm that the variables retain their importance in the simultaneous context of the other variables. Independent variables observed with  $p$ -value  $<0.2$  in bivariate analysis were included in multivariate analysis to assure that all pertinent and predictive variables are being studied (Cecatto et al., 2015; Concato et al., 1993). Univariate general linear model was used for multivariate analysis because it is used to model the relationship between one numeric dependent variable and multiple independent predictors of numeric and categorical variables (Data, n.d.). For education level as in independent variable, primary and secondary education group has been selected as reference group when compared with PhD, master & degree (group 1), diploma (group 2), and certificate holder (group 3). The level of significant was set  $p<0.05$ .

### **3.5 Phase Two: Qualitative Study**

#### **3.5.1 Sampling Method**

Purposive sampling was applied to select cupping practitioners to be interviewed. It was a non-probability sampling that based on the researcher's judgement when choosing the participants to be involved in the study (Tongco, 2007). The recruitment was developed following the results of prior quantitative study conducted using adherence to practice guidelines questionnaire. Based on the analysis, those who obtained lower score in the adherence questionnaire were classified as non-adherence.

#### **3.5.2 Research Instruments**

This study employed semi structured interview approach in probing the interviews to obtain dense insights and understanding related to the phenomenon. Semi-structured interview involved a set of open-ended questions that help to lead the conversation in a standardized way but still allowing the emergence of new issues in between the talking (Keeffe et al., 2016). When respondents were having obstacle in answering the questions, the researcher gave the cues to prompt the respondents in contemplating on the questions further. The researcher was able to prob the respondents to explain according to the original questions given or follow the inquest initiated by the respondents. The semi structured questions for in-depth interview were as follows:

- i. Have you aware there is a cupping practice guideline from Ministry of Health?
- ii. Do you use practice guideline in your daily practice?
- iii. What are your views of this guideline?

Why don't you adhere to the practice guideline? Explore the reasons

- iv. What are your views on guidelines characteristics that might facilitate or hinder practitioner's adherence? explore the reasons
- v. Do you agree guideline can be a quality assurance in clinical practice?
- vi. Do you have any comments or suggestions relating to the practice guideline?

### **3.5.3 Methods of Data Collection**

Qualitative study involves in-depth interview approach in exploring the barriers of guideline use among cupping practitioners. In-depth interview is a direct one-to-one individual engagement with the participant during data collection (Showkat & Parveen, 2017). The participants were probed, and body gestures and tone changes were noted to validate the explanation given while interviewing.

The interview involved two individuals including the researcher as the interviewer and a note taker. It took place at the participant's workplace and was conducted at their convenient time. The interview was audio-recorded with 40 to 90 minutes duration each session. All interviews were conducted in Malay language. It is then being transcribed and edited by the interviewer for accuracy. The transcription then has been translated into English to be easily discussed in the findings afterwards. Back-to-back translation from Malay to English has been conducted by the researcher and verified by the expert in both languages to secure valid results. Moreover, in terms of any inaccuracy such as spelling errors in the text were edited properly. The confidentiality of the respondents was maintained by using pseudo names to replace the real name. Informed consent was obtained from practitioners after the procedure had been fully explained to them upon the arrival at the premise. Respondent's consent form

comprised of the research purposes, types of information required, confidentiality and anonymity statement.

#### **3.5.4 Data Validation**

Validation or trustworthiness of data is crucial to maintain credibility of qualitative data. In current study, trustworthiness has been achieved by member checking process. After text were translated and transcribed, it was given to the participants to undergo confirmation, addition, and removal of some text. After the agreement and confirmation by some of the participants, thematic analysis was done, which supported by several codes. The emerging themes were again checked by the participants to see for any arisen feedback and subsequently reaching for participant validation. Then, the process was continued with writing the discussion. On the last phase of member checking, the discussion was shown to some of the participants back for their comments. As a results, participants were agreed on the discussion part with no comments, and it is deemed to be valid and reliable.

#### **3.5.5 Data Analysis**

Qualitative Data Analysis (QDA) Miner Lite has been used as an instrument to structure and organize data and help to manage and explain data descriptively.

Step 1 involved reading the transcripts and highlighting all text that appeared to be the potential barriers to cupping guidelines use. Step 2 involved development of coding based on all the highlighted paragraphs with predetermined codes. These two methods were applied to ensure all possible barriers mentioned in the interviews were

captured efficiently. The predetermined codes were the same as the three main categories of adherence to clinical practice guidelines framework by Cabana et al., namely knowledge, attitude, and external related barriers. Coding is the process of developing a code book to refer to the participant's statement in transcription and it is the categorization of data. The author defined codes for each interviewee, category, subcategory, question, and significant statement. After having code book done, an analysis grid (spreadsheet) is developed either manually or using Excel integrating all major categories involving interviewee at one side and the categories on top. The author needs to fill in all the statement with coded reference against each statement.

To ensure the accuracy of the transcription, the researcher assessed the transcripts while comparing them to audio files. For discrepancies such as spelling errors and abbreviations' interpretation, corrections were made in the transcripts. The interview transcripts were analyzed through thematic content analysis.

#### **3.5.5.1 Thematic Analysis**

This study applied thematic analysis to identify the importance and exciting patterns and themes in addressing some issues concerning qualitative analysis. It helps in identifying, analyzing and reporting the themes (Braun & Clarke, 2006). In step 1, requires the researcher to work on transcription of verbal data like interviews before reading and re-reading it repeatedly as to familiarize with the content and depth of data. It is crucial to check the transcription against the original audio recordings for data accuracy. Next, in second phase, is developing the initial codes. Codes represent interesting and meaningful idea related to a phenomenon. Few codes then will be grouped into a theme.

In the third stage in searching for themes, is when the researcher sorting different codes to develop a theme. Several related codes were gathered to form a theme and may have subtheme as well. Qualitative Data Analysis (QDA) Lite software certainly help in forming the themes by using visual description such as tables. The next stage is reviewing themes. Based on the devised proposed themes, data will be fitted to support the themes, but in this process some themes might need to be separated or collapsed as evident from the data collated. Data contained by themes need to represent the same meaning which also considered as internal homogeneity. Meanwhile, there must be a distinctive separation in between the themes, which called as external heterogeneity in reviewing the themes (Braun & Clarke, 2006). For internal homogeneity, all coded related themes need to be read to determine the coherence within the themes. Those unrelated codes need to re-themes and non-evident existing themes need to be discarded. Further possible modification may include generating new theme as the codes do not fit to any existing themes. Moving on to the next step is to define themes. In this step, the themes were identified based on the contents of the data, where it is established in a coherent and consistent manner. The names need to be concise and clear so as to brief the reader regarding to the themes. In the last step of writing a report, it ought to have an adequate evident from the data to support the themes. Code extraction is prevalent enough to represent the themes and the thematic analysis map need to be explained and described in a compelling way.

### 3.6 Study Protocol

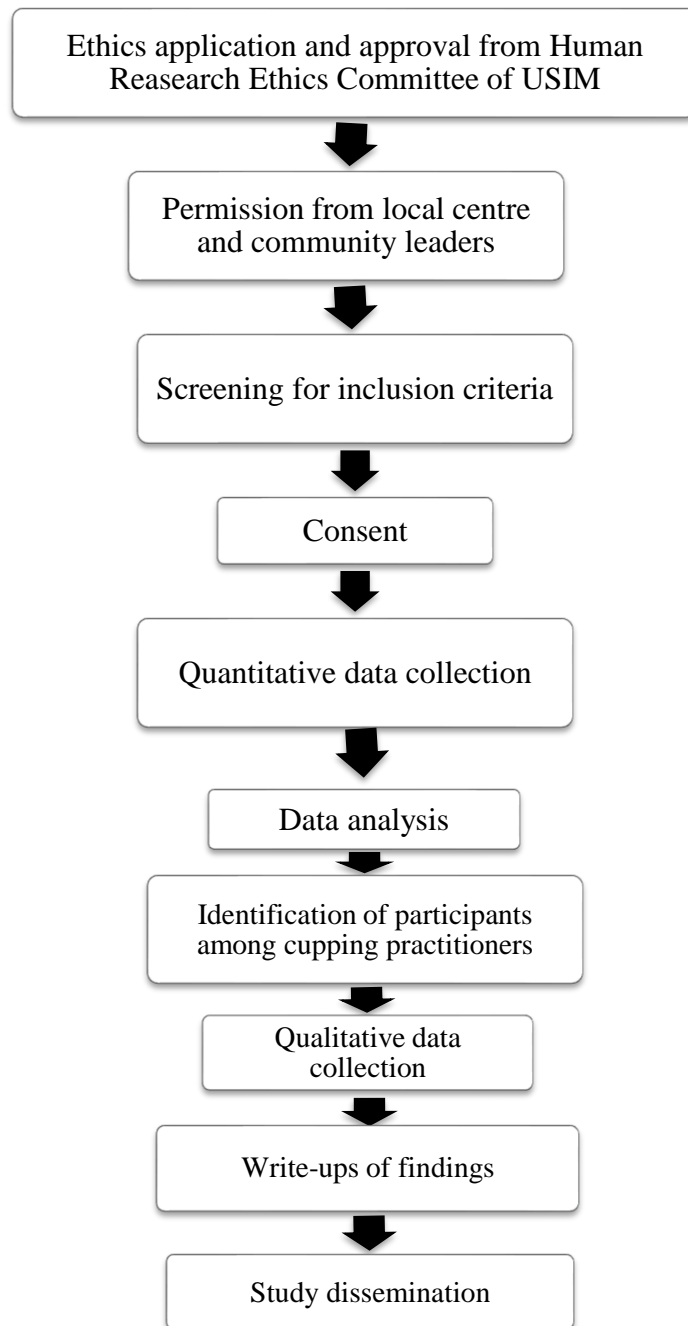


Figure 3.7 Study protocol

### **3.7 Ethical Consideration**

Ethical approval was obtained from Medical Ethics Committee of Universiti Sains Islam Malaysia (USIM), the Ethic code USIM/JKEP/2017-21 dated 26 September 2017. While permission to involve cupping practitioners in Malaysia was granted from *GAPERA*. Informed consent was gained from practitioners who agreed to participate in this study.

### **3.8 Conclusion**

In conclusion, research methodology involving quantitative and qualitative studies have been thoroughly discussed in terms of research approach and design, location of the study, population and sampling, research instrument and data collection and procedure.