CHAPTER 5 :DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

This chapter summarizes the overall findings starting from quantitative study to qualitative study, in accordance with research questions and hypothesis. The findings will be discussed with the support of related literatures.

5.2 Questionnaire Validation and Reliability

5.2.1 Content Validity and Face Validity

Adherence to practice guideline and knowledge on cupping questionnaires were developed to evaluate its aspects from the point of view of cupping practitioners in Malaysia. The initial evaluation of validity and reliability of questionnaire were performed, started with content and face validity.

Content validity which involved experts' opinion was established, showing an acceptable result. The degree of relevancy and representative of each item was adequate, in supplementary of revision and modification of selected items based on the feedback received from the experts. Items with lower content validity index were discarded, in which it is in consistent with prior study stated lower CVI represents lower validity and it does not measure the content it ought to (Masuwai et al., 2016; Yusoff, 2019). The original adherence to practice guideline items entailed 30 questions measuring 5

constructs, subsequently reduced into 23 items due to lower I-CVI. The pooled items then being face validated and it revealed to have clear and comprehensive items. Meanwhile for knowledge on cupping questionnaire, all 17 items showed relevancy to the domain with acceptable values and no items were deleted.

The main reasons why the experts rated some of the content validity as low and need to be omitted were due to items redundancy, double barrel, ambiguity and not applicable to the construct. For example, these two items were redundant, “plastic cups are to be discarded after use” and “used cups can’t be used to different patients”.

Face validity on the other hand happens when the respondents view the items of a questionnaire to see whether they are relevant to the context that being set and measuring the clarity and comprehensiveness. It need to be done after content validity has been published (Yusoff, 2019). The raters should be coming from nonprofessional but relevant to the participants as in real study (Taherdoost, 2016).

The raters expressed the relevancy of the items in relation to the topic covered, clarity and comprehensiveness of the items, ambiguity or vagueness of items or any detrimental issues that may affects the validity of the items, where it should be done prior to construct validity (Lam et al., 2018; Masuwai et al., 2016).

As for the face validity, it is imperative to get feedbacks from the representative of the same target population. These respondents were selected from different setting with different backgrounds. Majority of them had given positive responses regarding to the clarity and understanding of the items with no further articulation.

5.2.2 Exploratory Factor Analysis and Reliability

The next phase of validity is factor analysis, where it was applied to determine the construct to measure both adherence to practice guideline and knowledge on cupping among cupping practitioners separately. This technique is familiar for data reduction, where it reduced numerous variables into some important constructs or domains. In the meantime, Cronbach's alpha was used to determine the reliability and its internal consistency.

In order to determine whether the constructs were suitable for factor analysis, these two statistical analyses were used: Kaiser-Meyer Olkin (KMO) and Bartlett's test of sphericity. This study involving adherence to practice guideline questionnaire has KMO of 0.64, which is considered as mediocre in determining sample sufficiency. If the KMO is less than 0.5, the sampling is not adequate and remedial action should be taken. Meanwhile for the Bartlett's test of sphericity, it is functions to identify if the constructs of the factor were inter-dependent from each other. If the *p*-value is <0.05, it means we rejecting null hypothesis, in which Ho: there is no statistically significant inter relationship between variables/ items in measuring adherence (Anastasiadou, 2011). Consequently, factor analysis is valid to conduct. In the meantime, for knowledge on cupping questionnaire, the KMO was 0.59 and Bartlett's test f sphericity showed *p*-value of <0.05. This study demonstrated a quite low KMO, which remind us that desirable sample size is crucial to have a more precise sample factor loadings in estimating population loadings and thus having a stable factor (MacCallum et al., 1999). This is because as sample size increase, the loadings will have smaller standard errors, where it reduces the variability in factor loadings for all repeated samples. There are several recommendations on sample size for factor analysis, where the sample (N) should be 100 (MacCallum et al., 1999; Pearson et al., 2010). Others suggested to have

a minimum sample of 200 to 500 (MacCallum et al., 1999). Meanwhile for the ratio items with the variables suggested to have 3 to 6 ratios per variable.

Factor analysis of adherence to practice guideline questionnaire revealed final 23 items were loaded into 5 domains, which comprised of cupping/ treatment procedure, hand washing, standard precaution, documentation, and sterilization of equipment. Every construct has a good fitted items as all factor loadings were above 0.3 (Yong & Pearce, 2013). This questionnaire is valid and really measure what it intended to measure in determining adherence to practice guideline among cupping practitioners. Meanwhile for knowledge on cupping questionnaire also demonstrated all factor loadings to be above 0.3. A total of 17 items were loaded into 3 knowledge domains, which comprised of knowledge on the precautions, side effects and contraindications of cupping.

The evaluation of Cronbach's alpha is the most essential reliability index and it is based on the total number of items and correlation between the variables. In terms of reliability, adherence to practice guideline questionnaire was reliable and reproducible as it has internal consistency of Cronbach's alpha of more than 0.7 (Downing, 2004), except only for 1 domain with had lower value at 0.53. The low value of alpha could be due to low number of variables in that construct (Tavakol & Dennick, 2011), where it consisted only two variables. Reducing number of items will reduce in reliability of a domain. A factor should has at least 3 variables and those rotated factors that have 2 or fewer variables should be interpreted with carefulness (Yong & Pearce, 2013). However, the researcher is not going to drop these two items due to its importance and meaningful, where it became the core components of adherence measurement in daily practice of cupping practitioners. In order to improve the Cronbach's alpha in the future, number of items need to be amplified. Hence, this domain needs to be reviewed again

for improvement in the future. The items in that domain cannot being obliterated as both represent the importance core knowledge of the practice guideline and is it a must know concepts for the cupping practitioners. Meanwhile for knowledge on cupping questionnaire, all 3 domains showed acceptable Cronbach's alpha of more than 0.7, showing this tool is reliable and reproducible with its high internal consistency.

5.2.3 Confirmatory Factor Analysis (CFA) and Reliability

Both adherence to practice guideline and knowledge on cupping questionnaires were further explored its construct validity evidence through confirmatory factor analysis using AMOS.

Although this questionnaire has good internal consistency reliability, it is still insufficient to the construct validity, thus confirmatory factor analysis (CFA) able to provide stronger evidence of the validity. CFA is a type of structural equation model (SEM) that contracts with measurement model, where it measures the relationship between items and the factor or latent variable (Brown, 2006). It is capable to confirm the number of factors or domains and the item-factor relationship or factor loading. It is an indispensable analytic tool for construct validity, especially in social and behavioral sciences (Brown, 2006).

As for the adherence to practice guideline questionnaire, the original 23 items have been reduced to 18 items due to poor factor loading that lead to unacceptable factor indices, which contributed to 22% deletion. The 5 items deleted were derived from 3 different domains, namely cupping procedure, standard precaution, and documentation. This might be due to the forwarded items with low factor loadings from previous EFA stage (Arifin & Yusoff, 2016). The final 5 domains in latent variable of adherence,

which comprised of standard precautions, cupping procedure, hand washing, documentation and sterilization were in consistent with the practice guideline that has been introduced by ministry of health. Meanwhile for knowledge on cupping questionnaire, the initial 17 items were slashed into 13 items due to poor factor loading, which contributed to 23% deletion.

Several model fit indices were used to identify how well the model fits to data, namely goodness-of-fit index (GFI), adjusted goodness-of- fit index (AGFI), normed fit index (NFI), Tucker-Lewis Index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). It is then followed by assessing construct reliability (CR) for convergent validity and average variance extracted (AVE) for discriminant validity. A good model fit index may imply that the model is plausible. As in this adherence to practice guideline questionnaire, the CFI was a bit lower than recommended 0.9 value. This CFI analyze the model fit by assessing the discrepancy between the data and hypothesized model. Usually, the range is in between 0 and 1, with greater value indicates better fit. Based on prior study, the lower value of CFI and TLI might be due to the effect of number of variables. As the number of variable increases, the value for CFI and TLI tend to decrease, indicating a poorer fit (Kenny & Mccoach, 2009). In previous study reviewed that approximately 194 published research depicted that the median number of observations or items was 17, with 25% of total model had greater than 24 items, albeit many variables would more desirable and preferable to measure different perspectives (Shi et al., 2019).

All the CR with equal to or greater than 0.7 showed good convergent validity, however, the value between 0.6 and 0.7 are acceptable. All factors showed acceptable criteria. Low convergent validity indicates the items have information of other factors rather than its own factor. For good discriminant validity, AVE should be greater than

0.5. however, some of the AVEs were slightly lower than the suggested criteria. Albeit it's a little lower value, it should be larger than any correlation coefficients between the factor and another one (Kim, et al., 2016). If the AVE is smaller than correlation coefficients, it implies the factors are correlated and not able to measure the separated latent concepts very well. All the AVEs showed higher value than in its row and column, summarizing the discriminant validity for all constructs is valid.

5.3 Summary and Discussion of Findings in Phase One: Quantitative Study

In this section will discuss about quantitative study, in answering several objectives such as identifying adherence, knowledge, and attitude towards cupping guideline, as well as to determine the associated factors of adherence to cupping guideline.

5.3.1 Overall Adherence to Practice Guideline

The purpose of cupping is generally to remove and extract blood that appears to be harmful in getting rid of toxins and this procedure is believed to enhance circulation in stagnant musculature and fascia. Nonetheless, due to its invasiveness, practice guideline comes in to regulate the steps and safety. This cupping guideline is not only covering aspect of cupping techniques, but also includes the appropriate handling of patients and clinical wastes to prevent the transmission of blood borne infectious diseases such as HIV, hepatitis B and hepatitis C.

In this study, 76.3% of respondents adhered to cupping practice guideline. This finding is in consistent with prior study, where the overall compliance to standard precautions guideline among healthcare workers in Saudi Arabia depicted quite high at

90.1% attained 75% of the maximum score and more than half of the staff (52%) attained 90% of the score or higher (Haridi, 2018). Compliance on the standard precaution covered the area of wearing glove, hand washing, needles and sharps disposal, and safe disposal of clinical waste. Also, from another study conducted to determine compliance to infection control guideline among healthcare workers in Malaysia showed 75% of respondents adhered to all 10 items on universal precaution, and disposal of sharp and needles (Hamid et al., 2011). In another study conducted in Ethiopia, 65% of respondents had complied to standard precaution practices among healthcare workers (Beyamo et al., 2019). Besides, a prior study conducted among healthcare workers in Malaysia demonstrated that 34% adhered to universal precautions practices (Aziz et al., 2010). On the contrary, only 6.6% (Yousafzai, et al., 2015), and 12% of healthcare workers complied to the standard precaution guideline in their respective healthcare settings (Haile et al., 2017), Pakistan and Ethiopia respectively.

Currently, adherence to cupping practice guideline is not fully implemented by the practitioners because the T&CM premises are not sufficiently regulated (Traditional & Complementary Medicine Division, 2018). According to T&CM Blueprint 2018-2027, there is no appropriate mechanism in regulating and monitoring cupping premises, thus unable to adequately monitor the adherence to cupping practice guideline. Secondly, the reason of non-adherence to cupping practice guideline might be due to the difficulty in safeguarding the effective implementation of T&CM Act 2016 (Act 775) (Traditional & Complementary Medicine Division, 2018). This difficulty is mainly due to the complexity and variety of T&CM practices in Malaysia, shortage of qualified personnel, lack of facilities to conduct practical training and there is no mechanism to register cupping practitioners without formal training. These obstacles hinder fully adherence to cupping practice guideline among cupping practitioners.

Furthermore, another crucial justification can be due to the scarcity of budget during implementing some of the components in the guidelines, such as donning personal protective equipment and managing clinical waste. This is well-supported by the statement in current qualitative study saying they did not use alcohol swab, did not own sterilizer and yellow clinical waste bin because those are expensive and costly. This includes the management of waste products such as blood disposal in a proper way as calling for support service management incur tons of cost. All they did was exposing the blood product into domestic bin, burn it or flush it in the toilet bowl. Nevertheless, some recommendations for improvement can be considered such as implementing a phased approach to introduce the regulation to the practitioners, where it has been initiated by stages, started with the establishment of T&CM bodies. Next being done was the registration of all cupping and T&CM practitioners and development of Code of Professional Conduct, which include adherence to cupping practice guideline. The MOH is in the midst of developing an online system that give access to the public on the list of registered cupping and T&CM practitioners. Moreover, our health ministry is on the plan to implement online certification system for all cupping and T&CM practitioners and revise the Act 775 if needed based on the feedback gain when all necessary measures have been implemented (Traditional & Complementary Medicine Division, 2018).

As TCM modalities keep on growing over the years in Malaysia, the MOH advocates to integrate them into our healthcare system in order to achieve holistic healthcare for Malaysian, with the safety and best quality of services. The act 775 was gazette in 2016 and subsequently being enforced by stages to regulate TCM services in Malaysia. Phase 1 has been embarked to form TCM Council and is currently making necessary preparation for the enforcement of phase 2 which to include registration of

TCM practitioners as well as disciplinary procedures. Throughout the year 2020, the health ministry has conducted several briefings on Act 775 monthly, either through face to face or online platform to familiarize the practitioners with the act and moving towards its fully enforcement ("Official Portal Traditional and Complementary Medicine Division Ministry of Health Malaysia," 2020). It is to hope that when the act is fully enforced, adherence to practice guideline can be fully achieved and monitored to uphold the cupping professionalism at par with national healthcare system. Likewise, to restrain abuse by unscrupulous practitioners on top of to maintain the safety and quality of the services.

5.3.2 Adherence to Practice Guideline Items

Cupping practitioners are always required to adhere to practice guideline and one of its components is standard precaution which encompasses gloving. This study found out that majority of the practitioners (86.0%) wore gloves during treatment procedure. Gloves should be worn when there is possible exposure of blood or bodily fluid when dealing with patients, as it acts as protective measure from cross contamination or acquired infection. The crucial condition in which gloves are needed is when to release pressure cup after finished the session in wet cupping therapy. The higher proportion of gloving might be due to readily available and accessible gloves in the work settings. This quantitative finding is supported by current qualitative findings where majority of the participants wear gloves when dealing with patients, except for one who did not. This study is in congruent with a study from hospitals in South India, stated that 77% of healthcare personnel wore glove during performing procedures (Punia et al., 2014). Since there were limited literature discussing on the standard

precaution among T&CM practitioners, explicitly amid cupping practitioners, literatures involving healthcare providers are used to support the findings as it is believed that in clinical setting such as hospitals and clinics would have the same standard and management, as both circumstances were involving patients and invasive procedure. Furthermore, current findings are also in consistent with a study conducted in Northwest Ethiopia explained that 88.7% of healthcare staff always wear gloves whenever there is possibility of exposure to any body fluids (Haile et al., 2017). Another finding from Minnesota depicted 96% of healthcare workers wore disposable gloves whenever needed (Mcgovern et al., 2000). However, only 35% of healthcare practitioners in a hospital in Johor Bahru did hand gloving during procedure in prior study (Chang et al., 2012).

Next higher adherence component is the usage of disposable lancet to puncture the skin (78.9%). Lancet should be sterilized and limited to single use patient and needs to be discarded in a proper sharp bin. This finding is in coherent with prior study in China, whereby there was relatively higher mean score of compliance with disposal of sharp instruments (Luo et al., 2010). The high adherence score might be due to repeated education and training conducted by Ministry of Health and *GAPERA* itself ((T&CMD), 2015). The training also covered briefing on traditional and complimentary medicine regulations which mandating compulsory registration of all T&CM practitioners to ensure good quality of treatment provided.

This study also found preponderance of respondents (73.7%) sterilized the cups after each treatment. Occasionally, the practitioners reused the cups for several sessions until the cups can no longer be used. Therefore, all utilized cups need to be sterilized intensively as recommended. It shows that cupping practitioners in this study are having good awareness in keeping hygienic with sterilized gear. Similarly, a study from

Ethiopia supported the figure where 73.3% of their healthcare workers always sterilize all reusable equipment before being used on another patient (Haile et al., 2017).

Another high adherence component to practice guideline was proper hand washing when exposed to blood or bodily fluids (70.2%). This finding however lower compared to a study done in Ethiopia stated that 92.2% of healthcare workers always wash hand after contact with patients (Haile et al., 2017). However, this difference might be due to the fact that their respondents were healthcare workers who were undergone proper clinical training compared to respondents in this study who majority of them had no proper clinical training prior to their practices.

This study found that the least complied component of guideline was to record the estimated amount of blood that was released during cupping (49.1%). Blood loss during procedure needs to be monitored as the treatment need to be omitted when excessive bleeding is detected. The acceptable amount of blood withdrawn from a patient shouldn't exceed 10ml/kg of blood (Tradisional, 2013). The allowable maximum blood loss per procedure is 450 ml. By recording the amount of blood could assure the safety of the patients as early prevention can be taken up when mishap happened. This quantitative finding is validated by qualitative results stated that majority of the participants did not record the amount of blood loss after cupping treatment because they did not know they need to do it.

In addition, minimal proportion (36.8%) of respondents were recorded complications following the treatment. The patients need to be monitored for any complications or adverse events. Reddish ring mark at the cupping side was the commonest complication reported. The mark was due to the excessive length of the treatment duration and the strength of the suction cup (Chirali, 2014). Therefore, to reduce severity of the marks, practitioners need to start with medium strength of suction

pressure and intensify the strength proportionately in the following visits. This is because some patients may have sensitive and delicate skin especially the young and elderly. Also, in other cases, blisters may appear on the skin inside the cupping area (Chirali, 2014). Once the practitioners noticed the appearance of blister, they need to remove the cup the soonest possible and pierce the blister with a sharp sterilized instrument to release the fluid. The site of the blister needs to be completely healed before undergoing the treatment again. Hence, monitoring for the adverse effects is crucial to prevent from further injury. This finding is in line with qualitative finding expressing that they did not record any complication post cupping because they assumed to be unimportant.

This study found out that the least adhered component was disposal of contaminated blood products into yellow ‘clinical waste' bin. Clinical waste is waste which has the probability to cause harm, injury, or infection to public and the environment, such as blood or any body fluids of the patients. Disposal of these products at open space may cause environmental pollution and unpleasant odors that attracts disease-transmitted animals like rodents and insects to breed and transmit diseases such as hepatitis and typhoid. This finding is very much expressed in qualitative study saying that they cannot afford to call for support service management such as *Radicare* to dispose clinical waste products because it is too pricey. The practitioners just threw the blood and blood products into domestic bin or buried it in the soil. One of the participants mentioned that the procedure is complicated and saying *Radicare* would do the same as them, which is to incinerate or throw the blood to the soil.

Generally, the practitioners need to segregate their hazardous wastes from general waste and assigned a trustworthy waste carrier to dispose the waste appropriately. As in this study, only 39.5% of respondents were having yellow bin and

disposed accordingly. However, the rest of the respondents disposed their blood products into domestic waste, that eventually dumped into street garbage. This is in parallel with previous study stated that 47.6% of respondents handed over health care waste to street garbage collectors, while 15.9% of respondents disposed healthcare waste directly into open garbage bins in the street (Sudhakar & Chandrashekar, 2008). This is most probably due to the unavailability of appropriate waste management services and high-cost management to send for incineration. This is supported by a study conducted in India among private practitioners stated that the barriers in properly disposed clinical waste were non-availability of services (42.1%) and concerned about the expenses they needed to pay (10.7%) (Sudhakar & Chandrashekar, 2008). As in Malaysia, the current price to manage the clinical waste is RM5.20 per kilograms. Nevertheless, this is only for hospital consensus which it is in bulk quantity, when it comes to small centre, the price might be different (Razali & Ishak, 2010). Cupping practitioners usually generate big amount of waste cotton, gloves, cups, and others that are contaminated with blood and body fluids. These kind of clinical waste needed to be incinerated completely in a proper incinerator (DOE, 2009). Meanwhile, for the sharp waste it must be in the puncture-resistant container or bin and needed to be disposed completely to prevent from injury and infection. In Malaysia, the clinical waste being classified as scheduled waste that is controlled under the Environmental Quality (Scheduled Wastes) Regulations, 2005. (DOE, 2009). The Department of Environment (DOE) is authorized under the Environmental Quality Act 1974 to control and prevent pollution together to preserve the environment. Pertinent to this act, it stated that no person shall pollute any soil or surface of any land whether liquid, solid or gaseous. Whoever found guilty will be fined not exceeding RM100,000 or to imprisonment for a period not exceeding 5 years or to both (Tradisional, 2013).

5.3.3 Knowledge on Cupping Therapy

Knowledge is the facts, theoretical and practical understanding about something. In this study, the researcher would like to determine knowledge on cupping therapy among cupping practitioners. The components of knowledge that were highlighted in this study comprised of the indications, contraindications, and side effects of cupping therapy. The highest knowledge statement that was answered correctly, agree, or strongly agree was at 94.1%, where emergency medical services (999) should be contacted immediately if the patient is unconscious. Calling 999 for any medical emergency is crucial when the patient is extremely ill or injured and their life is at stake resulting from doing cupping. In Malaysia, starting 2008, MERS (Malaysian Emergency Response Service) 999 is an emergency number which covers all types of emergencies involving Royal Malaysian Police, Fire and Rescue Department, Health Ministry, Civil Defense Department and Malaysian Maritime Enforcement Agency. This is validated and supported by qualitative findings stated that they will call the emergency line, 999 if patient is going unconscious. On the other hand, majority of the respondents knew that Human Immunodeficiency Virus (HIV), hepatitis B and hepatitis C can be transmitted through cupping if they do not comply with infectious disease control measures at 94.5%, 87.0%, and 83.2% respectively. HIV, hepatitis B and hepatitis C can be transmitted through blood borne, where it can be spread through needle prick injury or direct contact of infected blood or body fluids with mucus membrane such as eyes, nose, and mouth. However, in the qualitative findings, there was one respondent who never heard of those diseases before. She has no idea on what hepatitis C is and its mode of transmission. Due to its highly probable risk of

transmission, a precautionary measure needs to be applied. Among the standard precautions are handwashing, wearing personal protective equipment (PPEs), also proper clinical waste and sharp disposal (Centre for Health Protection, 2005). As conferring to previous study conducted in US, 91 cases of health care worker-to-patient transmission of hepatitis B virus occurred in healthcare settings and 38 cases of hepatitis C transmission from health care workers to patient have been described (Perry et al., 2006). Bloodborne transmission in healthcare setting is tangible as supported by previous study conducted in Ethiopia, among healthcare workers who have been screened, 2.5% (n=6) had hepatitis B surface antigen (HBsAg) positive and 0.42% (n=1) had positive anti-HCV (Hebo et al., 2019). It was 60% of them reported ever exposed to blood or bloody fluids through splashing into the mucous membrane or through needlestick injury. As well, a meta-analysis of 357 clinical studies determined that wet cupping was a significant risk factor for transmission of hepatitis C (pooled OR 1.5) (El-Ghitany et al., 2015).

Nonetheless, the least correctly answered component was cupping should not be done on hemophilia patients. Only 41.2% of respondents either agree or strongly agree to this statement. Hemophilia is a bleeding disorder wherein blood doesn't clot normally due to insufficient blood clotting proteins (clotting factor VIII and factor IX) (Geraghty, n.d.). Bleeding incidents can occur at any parts of the body as there is an injury to the blood vessel wall. Usually, the bleeding will occur in soft tissue, muscles, and joints. This is the reason why cupping is prohibited to be done in hemophilia patients. There was a case report in 2008 showing that a 58-year-old woman presented with extensive bruising lead to compartment syndrome on her left thigh in 2 days post cupping (Weng & Hsiao, 2008). This patient was an acquired hemophilia A, in which she developed the factor VIII inhibitors later in life and not hereditary. Furthermore, there was another

case report of 6 months old infant presented with spinal epidural hematoma after having glass cupping therapy performed within 2 weeks of the onset of symptoms (Fruchtman et al., 2016). Furthermore, majority of the respondents answered incorrectly for the statement cupping may cause excessive bleeding. This is true as cupping may result in capillary expansion and rupture of blood vessel (Lowe, 2017). Finally, among the top three wrongly answered item was cupping should not be performed in the area of deep vein thrombosis (DVT). Only 46.9% of respondents agreed that cupping should not be done in DVT and varicose vein area. To consolidate this misconception, one of the non-adherence participants in this qualitative study mentioned that cupping can be done in varicose vein surfaces but with gentle and care to avoid from major bleeding. This is indeed a fallacy that might put the patients at risk for severe adverse events. DVT is a condition with blood clot in deep vein of the body, usually within the calf muscles. If the clot is detached from the original site, it may cause pulmonary embolism and thus is life threatening. Because typically the embolus/ clot will be carried up to the heart but eventually will get stuck in the lung blood vessel. On the other side, there was a previous case report involving 72-year-old man developing deep vein thrombosis with pulmonary embolism subsequent to acupuncture and cupping therapy (Dang & Yeung, 2015). This showed a causal relationship, in which it can be seen by the temporality of the event, as there were no other associated risk factors for thromboembolism. Even though deep vein thrombosis associated with cupping is reportedly rare, this life-threatening complication can still be happening, and prevention is a must.

Furthermore, only 21.3% had the knowledge on cupping cannot be done in cancer patients. This is because the procedure might cause bleeding as blood in cancer patients who is on chemotherapy may not clot properly and the possibility of metastatic cancer to spread. Moreover, cupping also contraindicated in patients with bone

fractured, as evidenced by prior study (Aboushanab & Alsanad, 2018). This is due to the negative pressure created during cupping therapy might be harmful to the site of fracture. The possible effect is fat embolism where pieces of intravascular fat from the fracture lodges within blood vessel and cause blockage of blood flow. These quantitative findings were supported by qualitative findings revealed that they did cupping on patients with bone fracture saying that there will be no effects if cupping was done on the fracture itself.

Therefore, in establishing licensing and authorization of cupping practitioners, it is advisable for MOH to include attending cupping training course, followed by written, oral and clinical examination (Khalil et al., 2018). By going through this phase, all practitioners are expected to have baseline knowledge on cupping and related safety standards. Nevertheless, to maintain long term retention of knowledge, refresher training or continuous professional development should be implemented to achieve lifelong knowledge gained (Khalil et al., 2019). A prior study conducted to measure post training knowledge among cupping practitioners in Saudi Arabia demonstrated that participants were retained 50% of the knowledge gained after 1 to 3 years of the previous training (Khalil et al., 2019).

5.3.4 Attitude towards Practice Guidelines

Conferring to attitude towards practice guideline, majority, in which more than 90% of respondents were having positive attitude as they were either agree or strongly agree that guideline issued by MOH are useful sources of advice and it was based on the scientific evidence to ensure the safety of patients. These findings are further supported by the qualitative findings where participants revealed that practice guideline

is an important tool to be practiced in ensuring the safety of the patients, "…I understand practice guideline is important, to protect the patient". The need of patient safety is noted to be the influencing factor to guideline use. The practitioners also believe that cupping practice guideline is a useful guidance, "…yes, we need some kind of guidance on how to perform cupping and its management".

Based on current findings, it was higher than prior study conducted among medical private practitioners in Malaysia measuring guideline use stated that 64% of them agreed guidelines are useful and 55% believed guideline able to improve care by practicing evidence-based medicine (Lian & Marnoch, 1999). In another study in US stated that staff in pediatric and ICU hospitals were significantly have more positive attitude towards practice guideline in general and hand hygiene guideline (Quiros et al., 2007). They concluded that practice guideline was important, helped to improve patient outcomes and vital in standardization of care. In addition, a study completed among private clinicians in Korea quantified that 91% of them agree that guidelines were valuable tool to increase quality of patient care (Jeong et al., 2014). Furthermore, another study conducted in Oxford yielded 77% of medical doctors were having good attitude towards any guidelines (Mansfield, 1995). In the same study, 58% of clinicians agreed that guideline helped in enhancing patient's outcome and 42% agreed that guideline was a tool that incorporated the scientific evidence based.

Obviously, they were aware on the importance of integrating the guideline into their daily practice. Though, 45% of the respondents were struggling to change their habits to follow the guideline. This is especially important given our interview findings which revealed that "…I have a bit difficulty in changing routine to follow guideline because I already familiar with my practice". Also, the struggling to change habit is coherent with explanation from qualitative findings where majority of the respondents

felt disturbed when the first-time government implementing the guideline, "…at first, I felt disturbed". This findings are in consistent with earlier study where 57% of medical personnel in Mexico stated that practice guideline is always essential for good medical practice (Constantino-Casas et al., 2011). The explanation might be due to long term behavior change is among the hardest challenges happen to anyone (Kelly & Barker, 2016). This is because the habits are already ingrained at a subconscious level. Nevertheless, it is breakable with the intention to change and practice.

5.3.5 Facilities and Basic Life Support Certificate

According to National Health & Morbidity Survey 2015, majority of respondents received cupping treatment at practitioner's house (37%), followed by receiving treatment at the premise of practice (31%), patient or user's own house (19%), private health facility (9%) and at the kiosk (4%) (Institute for Public Health, 2015). As in this study, 64% of cupping practitioners owned practice facilities, with general waste bin (93.2%), good lighting (98.6%), and ventilation (98.6%). The rooms also equipped with treatment bed and sharp bin. However, the least possessed facility was yellow clinical waste bin (71.2%). Clinical trash such as used and soaked gauzed, swabs and even blood products should be disposed properly in the clinical waste container and being incinerated to prevent from the spread of infection and contagious diseases (DOE, 2009). These findings are further strengthened by the qualitative findings where through the observation of the researcher during the interview at the field, no yellow clinical waste bin was noted. The practitioners interviewed indicated that "…its costly to manage for clinical waste disposal", and instead what they did without having clinical waste bin was "…I put the blood in a plastic and throw it in regular bin. It is costly to

call for a company to manage the blood [Radicare]". At this time, the current cost is at RM5.20 for every kilogram of waste, however it is projected to be more complex due to the rising cost of transportation and raw materials for making the bags and bins. (Razali & Ishak, 2010; Suhaimi et al., 2019). The clinical waste management services are handled by private consortiums under the supervision of the government, as mentioned in the Scheduled Waste Regulation 2005 (Yi et al., 2021). Currently for district health clinics, there is no specific concession company who manage clinical waste as government hospitals does. They need to send their waste to the nearest government hospital by their own. Same goes to any TCM premises or individual practice, they need to cater the agreement with the concession in managing the waste. Proper management of clinical waste is crucial to avoid health risks and damage to the environment (Yong, et al., 2009).

In relation to an emergency circumstance, only 14.6% of the respondents are having basic life support certificate and 60% of respondent do have first aid kit at the premises. In severe warning symptoms, first aid should be given to the patients while waiting for the help to arrive. This also includes cardiopulmonary resuscitation (CPR) (Tradisional, 2013). CPR is a lifesaving technique when a person is collapsed in the absence of breathing or heartbeat, where it could save someone's life in a predicament situation. Also, first aid kid and fire extinguisher should always be easily accessible.

5.3.6 Factors Associated with Adherence Towards Practice Guidelines

In current general linear model analysis, three factors were found to be significant and have an impact on the adherence to practice guideline. There were number of patients per week, gender, and education level. The rest of the factors such

as age, working experience, employment status, income, knowledge, and attitude were not significant.

When practitioners are having numerous numbers of patients treated per week, their adherence score is escalating. This is reflected in the quantitative findings where practitioners with the surge of 10 patients coming for treatment per week would increase adherence score by 3 points. The same finding was seen in prior study conducted among Japanese healthcare providers on the compliance to infection control guideline reported that those who treated more than 35 patients per day statistically had higher level of adherence (Tada et al., 2014). This might be due to practitioners with fewer visits per day consider practice guideline to be financial burden (Tada et al., 2014). The lesser patients may link to reduced income thus making them unable to adhere completely to practice guideline. This is especially important given our quantitative findings revealed that only 66.7% of respondents frequently disposed blood and blood products into yellow clinical waste bin and 83.5% of respondents frequently cleansed the skin with alcohol before puncturing. These two components were among the lowest proportion with regards to adherence practice due to high-cost requirement. This is further supported by qualitative findings showing that purchasing alcohol swab and managing clinical waste are costly and expensive, leaving them with no option but not to buy it.

Female were reported to be better adhered to cupping practice guideline as compared to male. This is in congruent with a study conducted among healthcare workers in Uganda stated that female had higher compliance to infection control guideline (p<0.001) (Komuhangi, et al., 2019). Same goes to prior study conducted among healthcare workers in Ethiopia reported that female found to be statistically complied to standard precaution as compared to male (AOR [95% CI] 2.18 [1.12–4.23]) (Haile et al., 2017). Female had better compliance most probably due to their natural

tendency to obey rules and regulations frequently as compared to male. They are also prudently watchful against infection as they do not want to bring infection back to their family.

Preferably, a good cupping practitioner ought to have higher education and having vast of working practices. Formal cupping education is essential towards standardizing and professionalizing cupping practice, and thus offering better quality of care. According to Malaysian practice guideline, a valid practitioner with diploma, he or she should have at least 6 months of cupping practice under supervision or equal to 40 case presentations (Tradisional, 2013). T&CMD MOH has set a benchmark of having a diploma or bachelor's degree in relevant studies as a requirement to be a cupping practitioner. This study discovered that practitioners who hold higher education level such as PhD, master and diploma were significantly had higher level of adherence as compared to lower education such as primary and secondary school leavers. This is in line with previous study from Ethiopia stated that education was one of the influencing factors towards adherence to practice guideline (Haile et al., 2017). In multivariate logistic regression analysis revealed those who were in higher education and training exerted 3 times more likely to always adhere to practice guideline as compared to lower education. The possible explanation might be due to the possession of higher education could adapt with new knowledge and skill as they effortlessly comprehend basic principles of the guideline and blend it consistently in their daily practice (Haile et al., 2017). Moreover, the more knowledgeable the practitioners are the more confident they will be in delivering the care. According to Malaysian T&CM blueprint 2018-2027, education and training in cupping can be developed through skills pathway or academic pathway. Skills pathway is relevant to Ministry of Human Resources, meanwhile academic pathway is related to Ministry of Higher Education

(Traditional & Complementary Medicine Division, 2018). After having a qualification recognized by T&CM Council, they need to undergo provisional registration with not less than 1-year residency or attachment with hospital or any T&CM institutions in Malaysia before being granted with registered practitioner. This practicing certificate need to be renewed annually (Soon, 2018). This is supported by qualitative findings where one of the participants who did not have formal education showed inadequate knowledge on cupping and less adherence to practice guideline such as failed to apply alcohol swab before puncturing the skin in wet cupping.

5.4 Summary and Discussion of Findings in Phase Two: Qualitative Study

This study aimed to explore barriers that hindered cupping practitioners from adhering to practice guidelines. Based on the in-depth interview conducted among participants, it is concluded that framework by Cabana et al. was effective in determining the objectives. The analysis revealed that the prominent barrier emerged was setting-related, which categorized under external barriers, and it covers increase cost, lack of practice resources and lack of time. Another protruding barrier remarked was knowledge related. Furthermore, being surrender or *redha* is notified as newly emerged barrier from the analysis.

In this qualitative study, cupping practitioners have varying reactions when asking related to the guideline, ranging from satisfactory to unsatisfactory. The reaction appeared to be influenced by the familiarity with the guideline contents. Largely, they were agreed with common recommendations such as treatment concepts, treatment procedure, application points and so forth. Nevertheless, they had aberrating opinions on some of unfamiliar recommendations for instance, standard precautions as they

assumed that no perils could be happened if they were to have good intention in treating patients. As according to Cabana's practice guideline framework, the three types of barriers comprise of knowledge-related barriers, attitude-related barriers, and external barriers.

5.4.1 Knowledge-related Barriers

Knowledge is one of the factors of behavioral change, where in order to have a good adherence, this is a prerequisite. In terms of knowledge, the most impediment reasons were insufficient of awareness and familiarity of the guideline, as supported by prior study (Fischer et al., 2016). The results from quantitative study supplement the qualitative finding where it indicated only 63.5% of respondents knew they can retrieve cupping guideline through online platform. The rest perhaps did not have comprehensive search technique skills for finding guidelines relevant to their practice, leaving them mostly relying on dissemination from colleagues (Jin et al., 2019). Having inadequate knowledge on the precautions, side effects and contraindications of cupping therapy making the practitioners to less adhere to practice guideline. Knowledge-related barrier findings were further supported by the quantitative findings showing the respondents had inadequate knowledge on the following components: only 21.3% respondents disagree that cupping can be done on cancer patients, 43.1% agree that cupping can cause excessive bleeding, 46.9% disagree that cupping can be done in the area of varicose vein, and 47.6% disagree that cupping can be performed on patients with anticoagulant treatment such as aspirin and warfarin. These are the components that concerned the researcher as all of this information can be found and clearly explained in the cupping practice guideline. To further support the importance of

knowledge, quantitative finding showed that 97.3% of participants believed that lack of knowledge made them difficult to treat the patients according to practice guideline.

Several studies have been found to be in consistent with the findings related to knowledge inadequacy as barrier of adherence among practitioners. A prior study conducted in Dublin, Ireland through focus group discussion mentioned about insufficient dissemination of the guidelines among their stroke caregivers as one of the threats of perceived barrier towards guideline, and thus introduced unsatisfactory awareness (Donnellan et al., 2013). Also, prior systematic review conducted in relation to assessing barriers to optimal healthcare which consist of quantitative and qualitative studies discovered that 65 out of 256 articles concluded barriers to be deficiency in knowledge, awareness or skill (Cochrane et al., 2007). Lack of knowledge is mentioned as not fully knowing the information related to practice guidelines. This is also supported by a prior scoping review conducted where lack of awareness and familiarity be the barriers towards guideline use among various types of disease guidelines (Rozenfeld & Kalichman, 2016). Moreover, in other recent qualitative study acknowledged that the foremost barrier to aseptic technique guideline was nurses' knowledge deficiency. They were uncertain about how to perform the procedure in relation to aseptic technique in clinical settings (Lin et al., 2019). On top of that, earlier study conducted in Netherlands also in agreeable with current study, where lack of knowledge was discovered to be one of the highly cited barriers (46%) (Lugtenberg et al., 2009). Despite knowing existence of guideline, some of them were unmindful with its contents.

As mentioned by the participants in this study, one of them was unaware on the existence of Malaysian cupping practice guideline. This can be due to insufficient access and training regarding to the practice guideline. Quantitative findings revealed

that 37.7% of the respondents never attended formal cupping education and training lessons, even 74.1% of respondents have had tertiary education from various backgrounds. The trainings were ranged from as short as one day to as long as three years. Those who did not attend to any cupping training have higher probability of not knowing and being unfamiliar with the guideline. Besides, as stated in the T&CM blueprint 2018-2027, in the past, cupping education was thought informally without a proper curriculum through institution of learning, nevertheless handed down the skill through oral communication and traineeship from their ancestors (Traditional & Complementary Medicine Division, 2018). This is supported by the practitioner interviewed indicated that she gained the cupping knowledge through observations and teaching from her grandfather since she was young, without attending any formal education. It is undoubtedly, MOH has developed a continuous training program in exposing as much practitioners as possible to the usage of guideline, however more coverage need to be implemented with stringent law for wider success.

In relation to inadequate knowledge on the guideline, some of the participants were unaware on the existence of the guideline itself even though the person has been practicing cupping therapy every now and then. This is because the participant never registered with any cupping or traditional and complimentary medicine council as active involvement and commitment certainly helped in updating information, skills, and knowledge among practitioners. This is supported by qualitative exploration where one of the participants did not register with any regulatory body listed under T&CM MOH. There are approximately 13,000 professional and non-professional traditional & complimentary medicine practitioners have registered so far, however, official figures on the exact number of T&CM practitioners in Malaysia are not available, especially the classification of different modalities (Tradisional, 2013). MOH also believe the

proportion of T&CM practitioners could be larger with many of them possessed no proper qualifications and credentials. The organization like *GAPERA* is having the responsibility to notify them with any upcoming events and it has become an intermediary body in collaboration between Ministry of Health and cupping practitioners' communities. This organization is imperative to promote professionalism in providing complementary role along allopathic medicine.

According to Knowledge-Attitude-Behavior Framework, practitioners need to be aware of the guideline and have some knowledge of its content. Afterwards, knowledge influences attitudes, and attitudes affect practice behavior (Fischer et al., 2016). Hence, implementation strategies should be focused on the improvement of knowledge and attitudes in order to improve the uptake of guidelines in clinical practice. An interactive education and active participation among practitioners revealed to be an effective way to gain knowledge (Lugtenberg et al., 2009). It is prudent to conduct continuous training sessions to update on any practice issues or enactment law related to the field. Additionally, feedback and evaluation can be done in the future by our ministry of health to assess the successful of guideline adherence. Even though the guideline can be easily available online, notification is imperative to spread its existence. As evidently mentioned in prior study, reminders and educational outreach are some of promising interventions to gain the awareness (Fischer et al., 2016; Michie & Johnston, n.d.).

5.4.2 Attitude-related Barriers

Attitude barriers explain characteristics of the practitioners, and self-efficacy. In this study, it covers lack of agreement with the guideline, lack of feeling expectancy, and new theme of surrender or *redha*.

5.4.2.1 Lack of Agreement with the Guidelines

The interpretation of the qualitative findings, seen together with the quantitative data showing difficulties engaging with the guideline among some practitioners due to disagreement with the evidence. A total of 26.9% agreed and 17.9% being neutral that they had difficulty in changing routine and habit to follow guideline. This is further supported with the field note and observation for nonverbal expression of feelings when talking about disagreement during the interview. Facial expressions are acknowledged as one of the most influential factors in non-verbal communication. The annotation of facial expressions in a piece of communication confirmed that participants were dissatisfied and irritated in some contents of the guideline expressing the disagreement, especially on the complexity of clinical waste disposal.

These findings are in consistent with prior systematic review discussing gaps between knowledge and practice indicated that 41 out of 256 studies identified the contents of the guideline itself as the hindrance to guideline adherence (Cochrane et al., 2007). They were disagreed on some parts of the contents, making them reluctant to uptake the contents of guideline. Furthermore, this study is in parallel with prior study conducted in Netherland revealed that the most perceived barrier was scarce agreement in practice guidelines (68%) (Lugtenberg et al., 2009). Likewise, in current study, this theme was emerged the second highest discussed.

The finding is also in coherent with earlier study revealed that lacking in evidence-based and inapplicability of guideline to be used in clinical setting to be the barrier (Ismaile, 2014). From the focus groups discussion, it appeared that majority of the physical therapists thought that the appearance and contents of guidelines generally does not fit in with their practical learning methods.

The disagreement towards practice guideline might be due to some of the components were unclear or confusing, and too complex in which it is not easy to apply in daily practice (Lugtenberg et al., 2009). The aberration components therefore making them disinterest in practicing it. For instance, in terms of infection control in disposal of blood products in cupping therapy, it is mentioned to be complicated when they need to call for the third party to dispose it. Yet, it would be easier to dispose it at any domestic waste bin as in their judgment. Without supported evidence such as comparative feedback on their performance, the practitioners would tend to keep on trusting their professional experience and rely on their own judgements rather than following the guideline.

5.4.2.2 Lack of Feeling Expectancy / Lack of Motivation

In this lack of feeling expectancy, the practitioners tend to have difficult feelings in following the guideline, meanwhile lack of motivation describing about impediment in changing habits. Provocation of difficult feeling may utterly affect in changing habits. This may possibly be due to moving from previous ways of doing things is tough and undeniably a resistance to change, other than feeling disturbed for the first time. This finding is in line with available prior exploration studies conducted in Houston, United States, expressing that some of the respondents revealed that changing from long-

standing habits on everyday practice to new guideline initiation were a challenged (Cavazos et al., 2008). In another study, 35% of the general practitioners (GPs) reported difficulties in changing routines and habits to follow guidelines survey among general practitioners in Netherlands (Lugtenberg et al., 2011). Practice inertia is defined as the failure of practitioners to diverge from existing clinical practice. This can be due to unfamiliarity, disagreement with guideline components or overestimation of current quality of care. The need of extra effort in understanding and applying the guideline might also become the reasons.

5.4.3 External Barriers

External barriers revealed to influence the uptake of guidelines. If intervention strategies are tailored to specific barriers, behavior change is most possible.

5.4.3.1 Lack of Time

Several practitioners suggested that they don't have enough time to follow guidelines due to the urgency to treat the patients. As the patients were in pain, resulting in the pressure to get the treatment imminently. When looking at the quantitative finding on the frequency of patients treated in a week, the mean was 9 patients. Nevertheless, with the average of one or two patients coming for treatment everyday should provide the practitioners with ample time to perform cupping therapy in adherence to practice guideline.

The 'lack of time' theme emerged in this study stays in line with earlier qualitative research conducted among nurses in Australian tertiary hospital, revealed that in relation to performing handwashing before and after dealing with patients as

stated in the guideline, time constraint emerged as a barrier (Lin et al., 2019). The reason was because they were fully occupied with procedures and ward rounds which eventually, made them distracted and overlooked in regards with handwashing procedure. A dreadful workload among the nurses utterly hindered them from sticking to the guideline.

In another study conducted among Palestinian healthcare workers through focus group discussion, mentioned that time constraint as one of the major reasons hampering them from implementing the guideline (Radwan et al., 2018). This is in consistent with current study, where due to the urgency to treat patients, challenged them to comply with some of the recommendation.

5.4.3.2 Lack of Resources, Increase Costs

Environmental factors such as infrastructure and resources had important influence on the guideline use. Several participants suggested the most important barriers in adhering to practice guideline were insufficient practice facilities and limited resources. These findings are further strengthened by the quantitative findings, where among respondents who had cupping premises with treatment facilities (64%), 29% and 19% of them did not have clinical waste bin and sharp bin respectively. What more if the practitioners were doing cupping at home or mobile-based treatment. When asked about their facilities and resources, replies included, "…disposal of clinical waste including blood and contaminated equipment require high cost", "…its expensive if we really follow exactly the guideline", "..its easier to just throw the blood and contaminated gauze into domestic waste bin" and "…alcohol swab is expensive". From the observation at the premises during the interview, some of the participants were not

professional, with only small room provided for the treatment. There was no proper arrangement of the equipment, where everything is accumulated and stacked together on a shelf without proper tagging. Professional conduct is associated with increased patient trust, satisfaction and compliance to treatment, which eventually leads to improved health outcomes (Kwan et al., 2020). Compliance to treatment is also included adhering to cupping practice guideline, from providing proper and safe facilities, being competent and responsible, maintaining patient confidentiality, improving quality of care, and having scientific knowledge to support the practice. To ensure better health outcomes for patients, all cupping practitioners should cultivate good medical professionalism.

As mentioned in the findings, it was in coherent with available studies revealed that it was really difficult and burdensome to uptake policy due to poor resources (Donnellan et al., 2013). Poor resources implied to insufficient materials, staff, or reimbursement, and can't cover for the increased cost incurred following to the guideline. All participants in current study agreed to describe resource inadequacy as the main barrier to adopt the guideline and to ensure best care in cupping patients. In any organization, constraint resource is a common circumstance but need to be tackled efficiently for an optimum result (Donnellan et al., 2013).

Moreover, another study is in agreeable with current study, where 69 out of 256 studies came out with emerged themes on lack of resources and time as barrier to guideline implementation (Cochrane et al., 2007). A similar theme was elicited from prior study conducted among healthcare workers in primary healthcare clinics in measuring barriers to practice guidelines, where environmental factors which emphasized on lacking of reimbursement and resources to be the protruding barrier identified (Radwan et al., 2018). Limited resources such as the shortage of medical

supplies and appliances was challenging and had disturbed the process of medical intervention, and this was against the guideline policy.

In prior study conducted in Netherlands also in agreeable in which environmental-related barrier such as insufficient time and insufficient resources was the second most highest theme (52%) discussed among participants when they talked about barriers hindering health practitioners from adhering to practice guidelines (Lugtenberg et al., 2009).

As mentioned by the respondents, every cupping premise need to cater for non-clinical support services such as *Radicare* to manage clinical waste appropriately. However, this decision would incur a lot of money which inhibits them from adhering to the guideline, with the problem projected to be more complex due to the escalating cost of transportation and raw materials for making necessary equipment such as bags and bins. (Suhaimi et al., 2019). Taking example of clinical waste management by government hospitals, in small hospitals, the concession scheduled to collect the waste once in every few days, thus there is a need for a central storage to store full bags of clinical waste before being collected. The clinical waste in central storage will be refrigerated for no longer than 48 hours before collected by porters and transported to the incineration plant (Yi et al., 2021). This gives challenges to cupping practitioners who already have financial constraint, as they mentioned. This is supported by our quantitative finding, where the median income of the respondents was RM 1500. Also, some of private clinics fail to adhere to standard procedures of clinical waste disposal and segregation due to soaring costs of clinical waste management and the small quantity of wastes that are generated in most of the small scale private medical clinics (Tiong et al., 2012). That become the reason why some of participants opted to dispose clinical waste by burying them in the ground or throwing them away in domestic bin.

According to Social Cognitive Theory, physical factor such as having an efficient treatment facility which include proper room with bed, lightning, ventilation, and the presence of clinical waste bin, and sharp bin constantly influence practice behavior to guideline.

5.4.3.3 Increased Malpractice Liability

Practice guideline is a tool protocol that has been systematically developed to assist in decision making and to enhance the quality and safety of procedures given. If any malpractice were to happen, this practice guideline can be an information source and able to determine whether the practice is in congruent with acceptable standards. As according to Cabana et al.'s framework, one of the barriers that impede practitioners from adhering to practice guideline is increased malpractice liability, that is the risk of legal actions. Majority of the practitioners were aware on the TCM Act 2016 (Act 775) implementation to regulate traditional and complimentary medicine services in Malaysia. The participants mentioned that it is a good measure in controlling aberrations and abundance of practices for the benefits of the patients. It was started with the mandatory registration of all TCM practitioners under MOH to monitor all sorts of treatment modalities. At the same time, they were anxious as well, hoping that they will not get penalized due to nonadherence to practice guidelines. This can be seen through their facial expression when talking about fully enforcement of this act. More facial movements involving elements of fear expression and more eye blinks. In addition, according to Radwan et al. (2018), another barrier noted was lack of clinical audit and feedback following to guideline mandatory implementation. Regular audit and feedback to monitor the adherence such as through observations, field visits and others might

help in keeping the healthcare workers including cupping practitioners to adhere to practice guidelines.

5.4.3.4 New Theme: Surrender/ *Redha/ Tawakkal*

There was a newly emerged theme regarded as barrier, namely surrender (*redha / tawakkal*). Surrender in spirituality and religion as according to Islam is when a person is completely submitting one's will to God (Nygard, 1996). Muslims should strive for excellence after full measurements have been employed.

However, surrender concept that has been applied among some of the practitioners was not appropriate where they utterly believed in the concept without practicing a proper guidance. For example, some of them did not wear gloves when touching blood or bodily fluid in order to protect themselves from getting the infection, enough with only to pray not to be infected.

All participants were Muslim, and they are familiar with the quote keep trying and leave the rest to Allah/ God. As stated in the Quran Surah At-Talaq 65: verse 3 showed that "and whoever relies upon Allah, He will be enough for him". This is the concept of reliance to Allah/ God alone or a perfect trust in God's plan. This can be described as spiritual state in being *tawakkal* or rely solely in God's plan. However, this need to be in line with the presence of effort and trying our best before leave everything to Allah. Islam encouraged their worshippers to do as much as they can before making du'a (prayers), surrender and accept. This is in consistent with the act of adhering to practice guideline in treating patients before being surrender to Allah and asking help to protect themselves from any harms such as blood borne diseases. In Islam, *tawakkal* is related to the spirit of striving and working. It is a duo concept that requires the

presence of both components to appropriately function. Without effort in adhering to practice guideline while treating patients, *tawakkal* become futile and vice versa. *Tawakkal* should not be an excuse to justify their non-adherence to practice guideline, as the true concept is to have faith in whatever happened only after all efforts have been performed. One of the benefits of true *tawakkal* is in any hardship of circumstances, it will be accepted without scare and remains strong in facing the obstacles. This newly developed theme was in consistent with previous study conducted in Indonesian, where the same theme of 'surrender and accept' was emerged in exploring how religion influence in managing diabetes self-care (Permana et al., 2019). Malaysia has an equal setting as in Indonesia where majority of the population was Muslim. Malaysia is a multicultural country with Islam as the official religion. Majority of Malaysian population is Muslim, at 61.3% (2020). Religion is very much related with everyday practices, as such in treating the patients among cupping practitioners.

5.5 Implications of the Study

This research intended to shed some lights on the adherence to cupping practice guideline among cupping practitioners and factors associated with it. Based on the findings, the following implications for practice are recommended.

Firstly, the provision of recognition and awareness on the current state. This study provides a new prevalence data on adherence to practice guideline and explore barriers to it. The data may offer a good information to the Traditional and Complimentary Medicine Division of Ministry of Health in understanding practice guideline utilization among cupping practitioners. This will help the government to escalate the full enforcement of T&CM Act 2016 (Act 775) in regulating the T&CM

services in Malaysia. Any practitioners who practice without being registered with T&CM Council and not adhering to practice guideline will be imposed with legal actions.

Secondly, this research able to address ongoing education and competency. Education and training must include available electronic resources and easy access to the guideline. This study serves as an assessment to identify high risk practitioners with low incidence of guideline use which will require reinforcement during competency assessment, if any. Also, it offers the idea of regular ongoing education given by T&CM MOH to all TCM practitioners on the importance of abiding to infection control regulation and proper conduct of practice. In terms of competency, every cupping premise and practitioner must adopt a vision that embraces evidence-based practice, leadership support and a focus on teamwork and collaboration within cupping association. Identification of champions from all members of cupping practitioners in implementing guidelines may improve the consistency of behavior. Since improving patient outcomes was associated with the use of guideline, audit, and feedback mechanism specific to pertinent guidelines is necessary. The development of a quality record based on performance would not only reinforce the learning culture but allow the practitioners to adjust the performance to improve patient care.

Thirdly, in terms of theoretical implication, the findings of this study signify that Social Cognitive Theory model mooted by Albert Bandura is useful in assessing the adherence to cupping practice guideline among cupping practitioners and factors associated with it. The three important predictors were personal factors or cognitive, behavior factor and environmental factors contribute to the application of the theory. There were significant association between personal factors such as gender and education level with adherence, as well as important emerging themes were noted to be

environmental factors. Although the findings showed that attitude was not associated with adherence to practice guideline, it still plays crucial part in behavioral change.

5.6 Recommendations of the Study

In overall, adherence to cupping practice guideline is crucial to ensure safety and effectiveness of the treatment, meant to professionalize cupping profession. Hence, there should be more efforts to encourage the application of cupping guideline. Firstly, it is suggested to use a simple language and easy summary to easily comprehend the contents of the guideline. This is because 26% of respondents were having the highest education at either primary or secondary level. Too clinical or bombastic terms impeding them from adhering to it. Secondly, there should be an alternative way to dispose clinical waste properly and that is to do tagging system with the experienced cupping or other TCM practitioners. This is to familiarize themselves with the proper waste management and professional conduct.

The findings of this study will be communicated to *GAPERA* and may discuss on the possible ways on how to increase the awareness and practice of the guideline. Besides, to professionalize cupping practice, several criteria need to be achieved, such as acclaimed qualification and competency, approved education and training, well-established professional body, and research implementation.

In terms of cupping education and training, there are some issues and challenges that need to be looked into. That is insufficient mechanism of proper accreditation for cupping courses due to diversity of cupping training in Malaysia causing it difficult to formalize the education and training. It is recommended to develop Joint Technical Committee (JTC) under T&CM Council to provide proper accreditation process

(Traditional & Complementary Medicine Division, 2018). Next is the scarcity of cupping education and training which include theoretical and practical components. Prior knowledge transfer was through their ancestors and non-accredited crash courses (Traditional & Complementary Medicine Division, 2018). This can be improved by establishing programme that permit cupping practitioners to upgrade from the skills pathway to the academic pathway. Also, there is low level of knowledge and awareness of cupping incorporating among medical and healthcare providers. Cupping knowledge can be improved and strengthen among modern medicine practitioners to encourage mutual understanding through forum, seminar, conferences and even continuing medical education (CME).

5.7 Strengths of the Study

There are few strengths that can be highlighted. This study has contributed to giving the prevalence of adherence to cupping practice guideline, knowledge, and attitude towards the guideline among Malay cupping practitioners in Malaysia. To the best of our knowledge, this is the first study specifically identified barriers hindering guideline use. This information can be used by TCM MOH and other parties to anticipate and properly assess how things are being impacted to tailor specific interventions. This study also includes Malay cupping practitioners from different professional backgrounds working in Selangor and Johor area.

In addition, to our knowledge, this study is the first to explore Malay cupping practitioners' level of adherence and views on practice guideline using a mixed study design. Mixed method research draws on potential strengths of both quantitative and

qualitative methods, allowing researchers to explore diverse perspectives and uncover relationships that exist between the intricate layers of multifaceted research questions.

5.8 Limitations of the Study

It is important to highlight some limitations in this study. First and foremost, in terms of validation for quantitative study, it has limited sample size, as shown by the KMO, where it has mediocre level of sample adequacy. It would be best recommended if in future study, they include bigger sample with variability to represent Malaysian population. The way to get better sample might include clearer explanation on the project and the significance of the study among cupping practitioners, as the outcomes can be the steppingstone to improve the policy. As in validation study, some of the resources cited that the best sample size is to have 10 subjects per item (Williams & Brown, 2013).

Secondly, is the sampling method, where universal sampling is involved. It is unable to generalize the results of the study to the population as a whole. In the future, the study design can be replaced by probability sampling to reduce bias. Nevertheless, this study can become a preliminary to measure adherence to practice guideline among cupping practitioners in Malaysia as the samples were originated from different states and districts.

Thirdly, recall bias could be a problematic due to total reliance on self-report data. Adherence to practice guideline data was taken only from self-reported perception of the cupping practitioners, without observing their real practices. A robust conclusion might best to have both perceptions and observations measuring the same thing, deem

for data validation as well. However, the questionnaire has gone through validation process as a reliable self-rated tool in measuring adherence to practice guideline.

Last but not least, insufficient number of participants involved in the interview. Participants from various backgrounds need to be increased to have richer understanding, thought and groundedness regarding to the issues. More number of practitioners from greater boundaries such as Sabah and Sarawak should be included to have a greater exploration. In addition, it would be great if this study is able to include observational method despite in depth interview alone to validate the adherence components towards practice guideline. Though, triangulation technique has been done to validate the data.

5.9 Conclusion

In conclusion, overall adherence to cupping practice guideline among Malay cupping practitioners was adequate with three quarter of participants adhered to practice guideline. However, some improvements on the practice need to be focused such as to record the estimated blood released during cupping, frequently cleanse the skin with alcohol swab and to dispose blood or waste related to bodily fluid into clinical waste bin. Besides, more than half of respondents had adequate knowledge on cupping, with one quarter had difficulty in changing routine. Multivariate analysis revealed that number of patients per week, gender, and education level were significantly associated with adherence to practice guideline.

Our study had sheds light on various barriers to guideline use among Malay cupping practitioners with the support of Clinical Practice Guidelines Framework for Improvement (Cabana et al., 1999). The leading themes emerged from this study were

similar to the theory, with additional theme emerged. This theory classified barriers into three major components, namely knowledge-related, attitude-related, and external barriers. The predominance barriers identified in this study were pertaining to external barriers which explained adherence to guideline incurred loads of cost and expenses. This is followed by the second most revelation which was lack of agreement with the guideline linked to attitude-related barrier. The knowledge-related barrier also identified to be quite a hindrance in satisfying the intention to guideline adherence. To be specific, it was lack of knowledge on the guideline.

In overall, this explanatory sequential mixed method study successfully identified level of adherence, knowledge, and attitude towards practice guideline, determined factors associated with adherence and discovered barriers of guideline use.